

**INDUSTRY
COMMISSION**

**THE GROWTH AND REVENUE
IMPLICATIONS OF HILMER AND
RELATED REFORMS**

**A report by the Industry Commission
to the Council of Australian Governments**

FINAL REPORT

March 1995

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7 March 1995

Mr E A Evans
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Dear Mr Evans

I have pleasure in presenting the Commission's report in response to the request of the Council of Australian Governments for the Industry Commission to undertake an assessment of the benefits to economic growth and revenue from the implementation of Hilmer and related reforms.

I am sending a copy of this letter and the report to each of the State and Territory Heads of Treasury. The timing of the report has been varied as agreed from that in the terms of reference.

Yours sincerely

A handwritten signature in cursive script that reads "Bill Scales".

Bill Scales AO

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PREFACE

The Council of Australian Governments has asked the Industry Commission to undertake this assessment of the growth and revenue implications of Hilmer and related reforms. The Commission has endeavoured to provide as complete and meaningful an assessment as possible in the time available. Nevertheless, it has had to be selective in the reforms considered and in the way they are considered.

While pressures of time have been a constraint, it is clear that no single number can be produced to capture accurately the full benefits and costs of these reforms — no matter how much time might have been made available. Some of the reforms being considered are broad strategies rather than specific policy changes; or may even have the important but intangible effect of locking in gains from changes that have already been introduced. Moreover, some of the big gains from reform are likely to be of the dynamic kind that are difficult to predict, let alone measure.

The Hilmer and related reforms are very significant for Australia's economic future. Judgments about how significant they will be can be supported — to some extent — by technical modelling exercises such as this one. But technical modelling exercises cannot provide the complete measure. The best they can do is provide general indications of the direction and magnitude of the benefits that flow from these reforms of different sectors of Australian society.

A1 INTRODUCTION

A1.1 What the Commission has been asked to do

The Industry Commission has been presented with the formidable challenge of estimating the benefits of a national approach to competition policy in short time.

Recent moves toward a national approach to competition policy arose out of an independent committee of inquiry (the Hilmer report). The Hilmer report saw the imperative for national competition policy resting on three factors:

- the need for more rapid reform of infrastructure and regulatory systems to service the trend toward integrated national markets and national orientation of commercial life;
- the need to address the fact that a number of sectors of the economy are currently sheltered from competition; and
- the need to establish a policy framework or process to promote broader and nationally consistent approaches to reform (Hilmer 1993 p.xvii–xviii).

The Council of Australian Governments (COAG) has been the focal point for deliberations about the recommendations of the Hilmer report.

At its meeting on 19 August 1994, COAG requested the Industry Commission to undertake an assessment of the benefits to economic growth and revenue from implementing Hilmer and related reforms. This followed agreement at the meeting that ‘all Governments should share the benefits to economic growth and revenue from Hilmer and related reforms to which they have contributed’.

The terms of reference for the Commission’s assessment were provided by Heads of Treasury at the end of September 1994. Reforms to be considered in the Commission’s assessment cover both Hilmer and ‘related’ reforms. The Hilmer reforms essentially cover legislative and regulatory changes in order to provide a national competition policy framework and to broaden the coverage of competition policy instruments. ‘Related’ reforms essentially cover moves to foster competition in national infrastructure areas such as electricity, gas, water and road transport and promote the free movement of goods and occupations between states. The terms of reference are included in this report as Appendix D1.

The exercise is technical in nature. The Commission has been asked to provide quantitative estimates of:

- what the gains from Hilmer and related reforms will be in terms of economic growth (specifically GDP) and increased revenue;

- who will gain in terms of revenue to
 - the Commonwealth and
 - the States and Territories and local governments in aggregate; and
- who will contribute in terms of reform by
 - the Commonwealth and
 - the State, Territory and local governments in aggregate.

The Commission has also been requested to provide information, as far as possible, on the timing of benefits, the sensitivity of results to key assumptions and comparisons with the results of other relevant studies.

In short, the Commission's task is not to comment or advise on the implementation of Hilmer and related reforms or on the distribution of the gains from reform; but it is to provide information on the impacts of implementing reforms. That information is to be available for governments to use in their deliberations.

As requested, the Commission delivered a draft report to Heads of Treasury in mid-December. This final report has been completed after comments were received from Commonwealth, State and Territory Treasuries at the end of January and into February.

A1.2 What the Commission can deliver

The Commission has sought to provide the highest quality information possible in the time available.

However, it needs be made clear at the outset that no single number can capture the full benefits of reform. Precision is neither attainable nor claimed. The lack of precision comes from two sources — the nature of the reforms in question and the nature of modelling assessments.

A full investigation of the implications of Hilmer and related reforms needs to cover the following basic elements:

- the scope of reforms — which activities and enterprises are going to be affected;
- the nature of the direct impacts — how activities and enterprises are going to be affected (both initially and over time); and
- the flow-on effects to others — users, consumers, employees, governments.

Tying down the full extent of each of these elements is particularly difficult in this case. Hilmer and related reforms, at this stage at least, are more about concerted strategies to foster a climate for improved economic prosperity than

they are about implementing specific, known and tangible changes. For example, the proposals cover reviews of anti-competitive legislation rather than specify the nature of changes in legislative or regulatory restrictions on competition. A vast number of changes could be attributed to Hilmer and related reforms.

Implementing Hilmer and related reforms is likely to produce very significant benefits for Australia. But the unknowns and intangibles in implementation mean it is difficult to say now just how significant they will be.

The point that needs to be made is that, if the implications of this package of reforms are difficult to tie down in principle, a modelling exercise cannot manufacture certainty out of the unknown.

Gaps in knowledge about the ‘in-principle’ impacts are much greater in relation to Hilmer and related reforms than in relation to the modelling assessments that the Commission typically conducts. While the flow-on effects can be investigated with the usual degree of confidence, the focus of reforms and the nature of the initial impacts are far less well-specified and specifiable than usual.

The Commission has chosen the ORANI model of the Australian economy and made modifications to the model to simulate the impacts of Hilmer and related reforms (see Chapter A3). ORANI simulations can help place some broad orders of magnitude on the gains from some of the Hilmer and related reforms and on the distribution of the gains.

But even in areas that can be quantitatively assessed, the modelling results can only provide part of the answers. While the information based on the ORANI simulations is the best that can be provided in the time available, there is still a need to exercise considerable judgment in reaching a conclusion about the gains from reform. The need for judgment stems from three main factors (apart from the uncertainties about the reforms themselves mentioned above):

- models are inherently imprecise — while they attempt to capture the main factors at work to analyse a particular set of issues, they do not capture all factors;
- the strictures of time for this exercise ruled out some desirable modifications to the model to enhance its ability to analyse the particular issues or to provide additional information; and
- timing strictures also militated against the degree of thoroughness with which the Commission would ordinarily investigate and set up the model experiments.

Because of these factors, the Commission has sought to make the assumptions, approximations, workings and limitations of the model simulations clear and

transparent. Transparency is an essential ingredient in making informed judgments about model results. Over the years, the Commission has developed a thorough understanding of the strengths and weaknesses of model simulations and the place that modelling can appropriately assume in forming its own judgments (eg about the merit of industry policy proposals). However, the Commission is acutely aware that the overall judgments in this case are to be made by others.

The presentation of a draft report has meant that the various government agencies have been able to trace any misgivings about the interim results to particular features of the assessment exercise. As a result, some improvements have been made possible, while contention has been narrowed to differences of view about certain features of the exercise rather than with the exercise as a whole.

A1.3 Operationalising the exercise

In the very tight time frame available, the Commission could not investigate every possible reform and every possible implication. Some strategic decisions had to be made in order to cover the major reforms and impacts and produce as complete a picture as possible. Some rough approximations have had to be made and some gaps have had to remain in order to concentrate on priority areas. As will be seen, a lot of work has had to be devoted to modelling the revenue consequences of reform and to investigating the sensitivity of results to key assumptions.

The two principal steps in the exercise have been to investigate the direct impacts of major, measurable reforms and then to model the growth and revenue impacts of those reforms. The first step of investigating the areas affected by reform and the likely direct impacts of reform is reported in Chapter A2, with supporting detail in Part B. The second step of modelling is reported in Chapters A3 and A4, with supporting detail in Part C.

Hilmer reforms have been taken, as far as possible, to be those under consideration by governments rather than necessarily as proposed in the Hilmer Report (see Appendix D2 for a discussion of the differences).

Reforms that fall under the ‘Hilmer’ heading have generally been taken to be prospective, since they have yet to be introduced. ‘Related’ reforms, on the other hand, have been taken to include reforms that have already been initiated where those reforms were deemed necessary to achieve the outcomes specified in the terms of reference. For example, the terms of reference refer to the changes necessary to allow a competitive electricity market to commence from 1 July 1995 or as soon as possible thereafter. This has been

taken to include, for example, steps towards the formation of interstate transmission grids that are already underway.

It has not been possible to take account of differences between jurisdictions in the timing and extent of reform. As a general starting position, reforms have been taken to be implemented at the same time and to the same (maximum) extent. (This is referred to later as the ‘outer envelope’ of reforms). Any exceptions to this starting position are noted. No account has been taken of any transitional arrangements that may be introduced.

Reforms have been assessed by subject area rather than reform type. For example, relevant reforms (eg structural reform, competitive neutrality and so on) were investigated for the electricity industry collectively. While this treatment in itself should make no difference to the estimate of the total benefits from Hilmer and related reforms, it does make a difference to the nature of the compositional detail that can be provided.

As the terms of reference specify, the assessment is about the benefits of Hilmer and related reforms. No attempt has been made to capture any costs that might arise, for example, through adjustment to more competitive conditions or through the modification or removal of regulation.

A2 MEASURING THE BENEFITS FROM HILMER AND RELATED REFORMS

This chapter explores the scope of Hilmer and related reforms and their likely impacts in directly affected areas. It calls on details of investigations of individual reforms which are included in Part B of this report. The end result is a series of measured direct impacts that form the basis for the modelling of growth and revenue implications reported in the chapters that follow.

As pointed out in the previous chapter, some of the reform proposals under consideration are more in the nature of broad strategies, rather than specific, concrete changes. Consequently, it is not immediately obvious where the full impacts of reforms are likely to be.

The Commission has had to be selective in its investigation of Hilmer and related reforms. It has had to concentrate on reforms that are judged to have the greatest impacts in order to complete as comprehensive a picture as possible in the time available. There has been no attempt to provide the definitive guide as to the scope and implications of Hilmer and related reforms.

A2.1 The scope of reforms

The Hilmer and related reforms under consideration by Commonwealth, State and Territory Governments cover an amalgam of regulatory and deregulatory measures to promote competition. A brief outline of the reforms is provided in Boxes A2.1 and A2.2. The Hilmer reforms, as under government consideration, are discussed in greater depth in Appendix D2.

Hilmer and related reforms can be grouped into four broad areas:

- extension and revision of the market conduct rules of the Trade Practices Act;
- systematic review of regulatory restrictions on competition by all governments;
- extension of prices oversight to government businesses; and
- extending competition and improving efficiency in infrastructure provision.

Each of these areas is considered in turn.

Box A2.1: The Hilmer reforms to be assessed

The August 1994 COAG meeting considered a package of proposals to promote national competition policy, based on the Hilmer committee of inquiry into National Competition Policy.

The terms of reference for the Commission's assessment specify the following areas as Hilmer reforms for investigation. The terms of reference are presented in full as Appendix D1.

The Commission has been asked to assess implementation of the proposed national competition policy, as submitted to the August 1994 COAG meeting, including:

- **extending application of Part IV of the Trade Practices Act to all currently exempt sectors** (including unincorporated businesses and State and Territory businesses within the shield of the Crown);
- **minor amendments to Part IV provisions** (such as permitting the authorisation of resale price maintenance and price fixing agreements for goods and the repeal of the prohibition against anti-competitive price discrimination);
- establishing a **legal right to negotiate access** to declared essential facilities on commercial terms;
- **extending the price notification provisions of the Prices Surveillance Act** to State and Territory businesses;
- Governments **applying the principles contained in the draft Competition Principles Agreement**, especially
 - applying competitive neutrality arrangements that seek to equalise net competitive advantages of government agencies arising from their public sector ownership;
 - developing a program to review anti-competitive legislation (which may affect licensing arrangements for certain occupations and the professions and Statutory Marketing Authority arrangements);
 - undertaking a review to establish appropriate structures for public monopolies and remove regulatory functions from public monopolies before they are exposed to competition;
- transitional arrangements and the application of revised exemption mechanisms.

Box A2.2: The 'related' reforms to be assessed

The terms of reference (see Appendix D1) specify the following ‘Hilmer-related’ reforms for investigation.

- **Electricity reform:** The necessary changes to allow a competitive electricity market to commence from 1 July 1995 or as soon as possible thereafter.
- **Gas reform:** The necessary changes to enable free and fair trade in natural gas by 1 July 1996.
- **Water reform:** A strategic framework to reform the water industry over the next 5 to 8 years, covering both urban and rural water supply.
- **Road transport reform:** The implementation, by 1 July 1996, of the package of road transport reforms being progressed by the National Road Transport Commission.
- **Mutual recognition:** The implementation of the principles of mutual recognition for goods and occupations embodied in mutual recognition legislation and the associated Intergovernmental Agreement.
- **Review of partially registered occupations:** A national approach to the treatment of partially registered occupations (ie those occupations which are registered in some States and Territories but not others), based on the response of jurisdictions to the report of the Vocational Education, Employment and Training Advisory Committee (VEETAC)
- **Ports:** Port reforms with the details to be indicated to the Commission by individual jurisdictions.

A2.1.1 Market conduct rules

Part IV of the Trade Practices Act is about promoting competition in markets. It prohibits anti-competitive agreements, anti-competitive price discrimination, the misuse of market power, resale price maintenance, and certain mergers and acquisitions. It covers voluntary conduct which restricts competition and not anti-competitive arrangements imposed or sanctioned by government regulation.

The proposed changes involve extension of the Part IV provisions to all currently exempt sectors, including unincorporated businesses, statutory marketing authorities and State and Territory government business enterprises (GBEs). Other changes, important in their own right but of less significance overall, include permitting authorisation of resale price maintenance and repeal of the specific prohibition on price discrimination.

Transitional arrangements will mitigate the impacts of the changes. For example, existing contracts which are currently outside the coverage of those rules will not be affected; and persons and businesses not previously covered by the Trade Practices Act will have a twelve-month transition period to adapt to the new rules, while a further twelve-month period will apply before pecuniary penalties are imposed.

Professional services is one area most likely to be affected by extension of the Part IV provisions to all exempt sectors. Professional services comprise a significant proportion of the economy and are a significant input for many businesses. Reduced anti-competitive conduct would result in lower prices to the users of these services.

The impact of removal of the exemption depends largely on the legal form that businesses take. Partnerships and other non-corporate forms are excluded from the Act on constitutional grounds unless they are engaged in trade or commerce across State or national borders or within a Territory. Legal form varies widely across the professions. For example, at the end of 1988 some 50 per cent of engineering firms and 22 per cent of accounting firms were incorporated, compared with less than 2 per cent of legal practices (TPC 1990). Further, where anti-competitive restrictions are imposed by law — such as through a licensing regime — compliance with the law would not involve conduct in breach of Part IV of the Act.

Statutory marketing authorities are also likely to be affected. Benefits of the extension to statutory marketing authorities include lower prices to consumers and improved international competitiveness of the food processing industry. But the impact depends on whether the marketing arrangement operates by government mandate or through voluntary arrangements between growers. Arrangements mandated by government legislation, for example, where a law provides for compulsory acquisition or vests monopoly marketing powers in a single body, cannot be affected by extension of Part IV. However, as mandatory schemes are deregulated, the number of voluntary arrangements could increase and the application of competitive conduct rules could become important for ensuring that arrangements under mandatory regimes are not continued through private arrangements.

The impact on GBEs needs to be considered in the light of other reforms proposed under the new national competition policy. On its own, extension of Part IV is not likely to be significant. Commonwealth-owned GBEs are becoming subject to the same competitive conduct rules as private businesses. Application to State and Territory GBEs will not over-ride existing regulatory restrictions on competition or oblige governments to permit competition. The new arrangements would prevent existing monopoly GBEs from expanding

their monopoly through private anti-competitive arrangements. As GBE reform proceeds and legislative barriers to competition are dismantled, the application of the competitive conduct rules will become more important.

While the terms of reference specify the removal of all exemptions from Part IV the Hilmer report recommended that certain other exemptions remain in place such as intellectual property, labour and approved standards. These exemptions have not been considered in this exercise.

A2.1.2 Regulatory restrictions on competition

The Hilmer Review describes restrictions imposed by regulation or government ownership at all levels of government as the greatest impediment to enhanced competition in many key sectors of the economy (Hilmer 1993 p. xxix). Such restrictions on competition may be imposed by statute and subordinate legislation or as a consequence of government ownership. As such, they are distinguished from those arrangements to be covered by extension of the application of the Trade Practices Act, which arise from private arrangements. Examples of regulatory restrictions include legislated monopolies for public enterprises, statutory marketing arrangements and licensing arrangements for various occupations, businesses and professions.

The draft Competition Principles Agreement makes provision for a systematic program of review of these existing restrictions on competition to ensure there are no regulations which significantly restrict competition unless they are in the public interest. Hilmer-related reforms such as mutual recognition of regulation and road transport regulation reform are key features of the program to reform government regulation.

Perhaps the largest and most likely impact of these reforms will come from improvements in the operating environment of GBEs. GBEs comprise some 10 per cent of gross domestic product and many governments have indicated an intention to reduce barriers to entry in selected industries in which GBEs operate. Commission inquiries have consistently found that major improvements in GBE efficiency and the competitiveness of user industries are likely to come from greater competition for these enterprises.

Deregulation of statutory marketing authorities to remove or reduce anti-competitive arrangements is likely to reduce domestic prices of agricultural commodities and so benefit consumers and improve the international competitiveness of the food processing industry. For example, it has been estimated that in 1988–89, statutory marketing arrangements directly raised consumer prices by about 0.3 per cent and taxed user industries and consumers of food products directly by some \$550 million (IC 1991, p.5).

The potential gains from removal of regulatory standards which restrict competition in several professions and trades and in product markets are also significant. Regulation review processes and reports in several jurisdictions have documented this potential. The agreement on mutual recognition of regulatory requirements and occupational licensing is expected to contribute to greater competition and enhanced product choice for consumers. However, limited data are available to date on its impact (IC 1994a).

There is considerable uncertainty as to the timing and actual impact of these reforms. The nature and scope of reforms have only been agreed in principle and will depend on review programs carried out in each jurisdiction over several years.

A2.1.3 Price monitoring and surveillance

State and Territory governments have agreed to consider establishing independent sources of prices oversight where these do not already exist for government businesses. The impact of this extension of the prices oversight provisions of the Prices Surveillance Act to Commonwealth government businesses is not likely to be large. The degree of monopoly pricing by GBEs appears to be quite limited at present. But, the effects of more market-oriented pricing are inseparable from the structural reform of public monopolies and access to essential facilities and the combined reforms could yield substantial gains in the future.

A2.1.4 Infrastructure provision

Many of the Hilmer and related reforms will serve to extend competition and to improve efficiency in infrastructure provision. They include arrangements for the structural reform of public monopolies, to ensure access to essential facilities, to develop competitive neutrality between public and private businesses and a range of strategies and reforms already agreed between governments, but not fully implemented, in the electricity, gas, water, and maritime industries. Proposals for 'pro-competitive' reforms stem from the recognition that removing barriers to entry may not be sufficient to promote effective competition in infrastructure provision.

GBEs are an important focus of the reforms but they also apply to private sector firms involved in infrastructure provision. In addition, the proposals to promote competitive neutrality apply generally to commercial activities where government and private sector firms may be competing for business.

The focus of competition policy in this area is to dismantle excessive market power that may impede the introduction of effective competition even when

legislative barriers to entry are removed. It involves the separation of regulatory and commercial functions, the separation of natural monopoly and potentially competitive activities, and the separation of potentially competitive activities within the same enterprise. Introduction of competition may require regulation to assure potential competitors of access to essential facilities on fair and reasonable terms. While not exclusively concerned with enterprises in infrastructure provision, the agreements of governments to ensure that government-owned businesses comply with neutrality requirements when competing with private firms will expose those enterprises to more effective competition. In addition, the Hilmer-related reforms in various industries involve extensive changes in market structure, removal of regulatory barriers, changes in pricing regimes, investment appraisal and the development of more integrated systems across jurisdictions in the interest of greater competition and efficiency in infrastructure provision.

Such reforms have the potential to dramatically change the operating environment of existing enterprises in several key areas of infrastructure provision. The actual impact, however, is uncertain. Some of the Hilmer-related reforms are already under way but others in key sectors are yet to be agreed in detail between governments and the timing and extent of the Hilmer reforms will be in the hands of individual jurisdictions.

The actual gains of many of the Hilmer reforms will depend on the future decisions of different governments about the nature and extent of structural reform in different industries. Assessments of the potential costs and benefits will depend on the specific characteristics of the industries under consideration and are likely to vary between jurisdictions.

A2.1.5 Summary

Table A2.1 provides a summary of the main areas likely to be affected by Hilmer and related reforms and the reforms that will have influence.

Table A2.1: Summary of areas affected by Hilmer and Hilmer-related reforms

A. Product markets	
1. Product markets in general	<p>Extension of Part IV</p> <ul style="list-style-type: none"> • revision of exemption mechanisms for general conduct rules • revisions of conduct rules • removal of exemptions for unincorporated businesses • removal of exemptions for approved standards, intellectual property and other areas of activity (*) <p>Review of anti-competitive legislation</p> <p>Mutual recognition (R)</p>
2. Statutory marketing authorities	<p>Removal of exemption from Part IV</p> <p>Review of anti-competitive legislation</p>
3. Infrastructure provision — private	<p>Review of anti-competitive legislation</p> <p>Right of access to essential facilities</p>
Infrastructure provision — public	<p>see ‘GBEs’ below</p>
4. Shipping (*)	<p>Removal of exemption from Part IV</p>
5. Road transport	<p>National approach to regulation of road transport and changing for heavy vehicles (R)</p>
B. Factor markets	
1. Labour (*)	<p>Removal of exemption from Part IV</p>
2. Professions/occupations	<p>Removal of exemption from Part IV</p> <p>Review of anti-competitive legislation</p> <p>Mutual recognition (R)</p> <p>Review of partially registered occupations (R)</p>
C. Government sector	
1. GBEs	<p>Removal of exemption from Part IV</p> <p>Review of anti-competitive legislation</p> <p>Structural reform proposals</p> <p>Right of access to essential facilities</p> <p>Extension of prices surveillance and monitoring</p> <p>Competitive neutrality regime</p> <p>Strategic Framework to reform the water industry (R)</p> <p>Regulatory and structural change to enable free and fair trade in national gas (R)</p> <p>Structural change to allow an interstate competitive electricity market (R)</p> <p>Port reform (R)</p>
2. Other government services	<p>Review of anti-competitive legislation</p> <p>Competitive neutrality regime</p>

* Not considered in the Commission’s assessment

R Hilmer-related reforms

A2.2 Impacts of reforms

The above discussion covered some of the main areas likely to be affected by reform and some of the likely impacts. The two main impacts are:

- greater pressure on monopoly elements of public and private business; and
- greater efficiency in the provision of infrastructure through greater network economies and competition in supply.

Government business enterprises, statutory marketing authorities and the professions are most obvious candidates to be affected in substantial ways. Public and private provision of infrastructure and activities affected by reviews of anti-competitive legislation will also be significantly affected.

The timing of reforms is subject to considerable uncertainty, with various grandfathering provisions and transitional arrangements operating on the extension of the Trade Practices Act, the need for prior review before introducing legislative and regulatory reform and the need to co-ordinate efforts in many of the Hilmer-related reforms.

However, as competitive pressures build, a major impact will be the reduction in opportunities for monopoly ‘rents’ — returns generated by enterprises with some degree of monopoly power over and above the returns that would be typically generated by enterprises in a competitive environment. Monopoly rents can be:

- captured by employees through overstaffing and/or above normal wages and conditions;
- dissipated through over-investment (excess capacity, maintaining rates of return on under-utilised plant and preventing asset devaluations);
- earning normal rates of return on over-valued assets (through high prices), or earning high rates of return more generally;
- dissipated through excessive cost structures (by either paying too much for inputs or using inputs inefficiently);
- used to provide community service obligations (CSOs) to various groups of consumers at the expense of other consumers (through a cross-subsidy);
- used to provide some other (non-CSO) cross subsidy to various groups of consumers at the expense of other consumers;
- used to provide excessive quality of service to customers; and/or
- absorbed in lobbying governments to maintain or extend treatment favourable to the enterprise(s).

Consequently, implementation of the reforms could see a reversal of these manifestations of monopoly rents adding up to improvements in capital and labour productivity (productive efficiency) and pricing policies to introduce more cost-reflective pricing and to do away with cross-subsidies (pricing efficiency). Over time, greater competition can stimulate further productivity gains through greater emphasis on innovation and improvements in production methods and distribution systems (dynamic efficiency).

Not all impacts will be in the direction of lowering prices. The proposals before governments include the application of the principle of competitive neutrality between public and private enterprises. That principle requires that government-owned enterprises should not have a competitive advantage or disadvantage over an actual or potential competitor by virtue of their public ownership.

The particular form of the principle under consideration is to equalise *net* competitive advantages arising from the public ownership of government agencies. Presumably, therefore, advantages and disadvantages need not be addressed in each and every aspect. The possible components that could be addressed as part of the net competitive advantage principle include: achieving commercial rates of return, imposing commercial capital structure (debt/equity ratios), debt guarantee fees, commercial dividend payout ratios and payments of income and indirect taxes. Addressing these components of competitive neutrality may incur additions to costs and prices of GBEs (see Section A2.4).

Moves have been underway to address competitive neutrality, especially through the requirement governments have placed on GBEs to make tax equivalent payments for the income and indirect tax liabilities they would otherwise incur. Following the Premiers' Conference of 25 March 1994, a *Statement of Policy Intent* agreed to establish a process for achieving tax uniformity and competitive neutrality between activities undertaken by GBEs and the private sector. Under this agreement, the States are to collect tax equivalent payments directly from their own wholly-owned GBEs while the Commonwealth is to continue to collect tax from privatised State GBEs and comprehensively apply income tax and wholesale sales tax to its own GBEs. The tax equivalent regimes are to be established by the States on a uniform basis within three years and are to match the Commonwealth taxation system.

The Commission's approach to assessing the implications of competitive neutrality for the treatment of CSOs is discussed in Section A2.4.

A2.3 The reforms considered

A key component of the Hilmer reforms is a proposal to extend application of Part IV of the Trade Practices Act to currently exempt sectors. The main areas affected are statutory marketing arrangements, the unincorporated sector and government business enterprises. The Commission has analysed a package of reforms under each of these headings.

In the case of statutory marketing arrangements, it has been relatively easy to identify practices designed to restrict or manage competition (Chapter B1). The Commission has been able to estimate the direct impacts of most of them, as summarised in Table A2.2.

Although the Commission has endeavoured wherever possible to identify an ‘outer envelope’ of potential reforms, those it has identified as affecting the unincorporated sector are selective and somewhat ‘inner envelope’ in character. This is because Part IV of the Trade Practices Act is about controlling abuses of market power. Within the unincorporated sector, abuses of market power are judged to be limited to some specific occupational groupings (Chapter B2). But in a sector employing close to 1.5 million across a range of industries, identifying all possible exceptions would have been a major research task.

The Commission has therefore examined a selected number of areas where uncompetitive practices, either self-imposed or sanctioned by government regulation, might have been restricting the entry of competitors and thereby creating the environment for abuses of market power. Of these, the Commission has selected a subset where the restrictions were judged to be sufficiently stringent to be having an impact on competition, and where estimates could be found of the likely direct impact of reform. The result is a relatively short list of relatively specific reforms (Table A2.2).

By contrast, the list of Hilmer-specific GBE reforms is broader and more all-encompassing (Chapter B4 and Table A2.2). This is because GBEs are not only to be brought under Part IV of the Trade Practices Act, but also to be subject to other principles primarily involving:

- allowing competitors access to ‘essential facilities’ — those infrastructure components with natural monopoly characteristics (eg. railway tracks), access to which is essential in order to provide a competitive service (eg. rail freight service),
- structural reform so that areas not having natural monopoly characteristics can be exposed to competition; and

- competitive neutrality, whereby GBEs be afforded no net competitive advantage by dint of their government ownership.

Because the principles are broad, so too are the reforms they can imply.

Table A2.2: Direct impacts of Hilmer and related reforms

<i>Area of activity</i>	<i>Jurisdiction</i>	<i>Reform</i>	<i>Direct impact</i>
Statutory marketing arrangements	States	Remove quantitative restrictions on potatoes in WA, on rice, sugar cane and market milk	Reduce quota rents received by primary producers so that their output prices fall by 22.0%, 11.5%, 13.0% and 30.5% respectively
	Commonwealth	Remove the all milk levy used to subsidise exports of milk products	Eliminate subsidy on milk products export (rs (reduce unit returns to exporters by 11.5%)
		Remove the implicit levy associated with local content requirement on tobacco products	Raise returns to whole milk producers by equivalent dollar amount Remove implicit levy on tobacco leaf imports (lower import prices by 38.3%)
Unincorporated enterprises	States	<i>Dentists:</i>	
		Remove restrictions on employment of dental auxiliaries	Reduce labour costs in dentistry industry by 4.35% (reduce labour costs in health industry by 0.19%, modelled as 0.19% labour productivity improvement)
	States	<i>Legal profession:</i>	
		Remove monopoly on conveyancing in Vic, Qld, Tas and ACT	Reduce conveyancing costs in those States by 50%
		Remove restrictions on barrister contact with clients in Vic, NSW and Qld	Reduce costs of barrister services in those States by 50%
	Remove advertising restrictions on barristers	Reduce costs of barrister services by 13%	
	<i>Total :</i>		Raise productivity of legal services industry by 12.0% (raise productivity of business services nec by 1.53%)
States	<i>Medical profession:</i>		
Remove restrictions on entry to specialist professions	Reduce earnings of medical specialists by 1.25% (reduce wage costs of broad professional occupation in health industry by 0.17%, reduce professional wage costs in other industries by much smaller amount)		
States	<i>Optometrists:</i>		
Remove restrictions on consulting services for optical dispensers	Allow one-stop-shop in optometry and optical dispensing industry, reducing operating costs by 10% and replacement cost of capital facilities by 20% (reducing operating costs by 0.14% and capital replacement costs by 0.29% in health industry)		
States	<i>Pharmacists:</i>		

		Remove geographic monopoly enjoyed by existing pharmacies	Reduce retail margin on pharmaceuticals sold to households by 15% (modelled as productivity improvement)
Review of anti-competitive legislation	States	Remove unnecessary building regulations and standards	Reduce costs by \$100m or 0.8% in residential building construction and \$250m or 2% in non-residential building construction (improve overall productivity by 0.8% in residential construction industry and by 0.9% in other construction (non-residential building, road and bridge construction and maintenance) industry)

Table A2.2: (continued)

<i>Area of activity</i>	<i>Jurisdiction</i>	<i>Reform</i>	<i>Direct impact</i>
	States	Remove unnecessary delays in building approvals	Reduce costs by 3% for residential and non-residential construction (modelled as equivalent capital and labour productivity improvements)
	Commonwealth and States	Increase extent of competitive tendering to provide general government services	Reduce costs by 20% in areas where further contracting out is possible
	States	Remove private sector monopolies: Taxis	Reduce rate of return on physical capital in the road passenger transport industry so that total costs fall by \$320 million
	States	Newsagents	Reduce retail margin on newspapers sold to households by 30% (reduce retail margin on publishing and printing sold to households by 8%)
	States	Replace prescriptive regulation of quality with a self-regulatory quality assurance approach	Reduce costs by 1% in areas currently affected by prescriptive regulation, indicatively judged to be 10% of the economy (modelled as an 0.1% productivity improvement across the entire economy)
Hilmer-specific GBE reforms	States	<i>Rail:</i>	
		Remove statutory monopoly on transport of some commodities	No direct cost saving modelled. Impact reflected in value of model parameters capturing ease of substitution between transport modes
		Continue corporatisation and moves to best practice	Improve capital, labour and materials productivity by around 15% by moving to best practice
		Prices surveillance, recognition of CSOs and competitive neutrality in pricing	Prices reflect full recovery of best-practice costs in bulk freight operations, 81% recovery of best-practice costs in non-bulk freight and 61% recovery of best-practice costs in passenger rail (modelled as 9% price reduction for grain freight, 39% price reduction for other bulk, 15% price increase for non-bulk freight and 20% price increase for passenger rail)
	Commonwealth	Competitive neutrality in financing structure (50% debt/asset ratio, equal rates of return on debt and equity, 75% dividend payout rate, and payment of income tax equivalents to State governments)	Gross (pre-subsidy) dividend payments fall and interest and tax equivalent payments rise, leading to 8.5% increase in Commonwealth's effective tax rate and 6% increase in State share of disposable income
	Commonwealth	<i>Telecommunications:</i>	

End legislated duopoly by 1997	Reduce prices as under cpi-x formula, with prices being 20% lower in real terms after 6 years
Competitive neutrality in financing structure (50% debt/asset ratio, equal rates of return on debt and equity, and 75% dividend payout rate)	<p>Improve labour productivity by 45% and capital productivity by 22% by moving to international best practice</p> <p>Gross dividend allocation and interest rise, retained earnings fall, leading to 4.2% reduction in Commonwealth's effective tax rate and 26.3% increase in Commonwealth share of after-tax disposable income</p>

Table A2.2: (continued)

<i>Area of activity</i>	<i>Jurisdiction</i>	<i>Reform</i>	<i>Direct impact</i>
	Commonwealth	<p><i>Postal services:</i> Remove Australia Post's monopoly over letters delivered within Australia and overseas</p> <p>Competitive neutrality in financing structure (50% debt/asset ratio, equal rates of return on debt and equity, and 75% dividend payout rate)</p>	<p>Price restraint as under current PSA ruling, leading to prices being 9% lower in real terms by 1997</p> <p>Improve labour productivity by 12.2% over next 4 years, in line with recent experience</p> <p>Gross dividend allocation and retained earnings fall, interest rises, leading to 22.5% reduction in Commonwealth's effective tax rate and 19% reduction in Commonwealth share of disposable income</p>
	Commonwealth	<p><i>FAC and CAA:</i> Competitive neutrality requires a commercial return on non-regulatory services</p> <p>Competitive neutrality in financing structure (50% debt/asset ratio, equal rates of return on debt and equity, and 75% dividend payout rate)</p>	<p>Improve productivity sufficiently to reduce total costs by an average 15.1% (modelled as a 15.1% productivity improvement in services to transport sold to domestic and international aviation)</p> <p>Gross dividend allocation and interest rise, retained earnings fall, leading to 1.25% reduction in Commonwealth's effective tax rate and 44.5% increase in Commonwealth share of disposable income</p>
Electricity	States	<p>Establish an interstate electricity transmission network, allow free trade in bulk electricity for private generating companies, public utilities and consumers, allow competitive sourcing of generation capacity</p> <p>Prices surveillance, cost-reflective pricing</p>	<p>Competitive pressures improve labour productivity by 50% and capital productivity by 4% as all States move to best practice</p> <p>Competitive pressures reduce replacement cost of new generating capacity by 20%, eg. as States move towards gas-fired power stations (this impact dependent on gas reform)</p> <p>Reduce bulk supply tariff as under NSW proposal, with tariff being 26% lower in real terms by 2000</p>

			<p>Reduce prices to large users (pulp, paper and paperboard; cement; non-ferrous metals and products; and electricity distribution industries) by 26% in line with bulk supply tariff</p> <p>No change in prices to domestic and rural customers (households, agricultural and forestry industries)</p> <p>Reduce prices to other industries by 29%</p>
		<p>Competitive neutrality in financing structure as under Hilmer proper (50% debt/asset ratio, equal rates of return on debt and equity, 75% dividend payout rate, and payment of income tax equivalents to State governments)</p>	<p>Dividend plus income tax equivalent payments rise, interest payments and retained earnings fall, leading to 6.1% reduction in Commonwealth's effective rate and 14.3% increase in State share of disposable income</p>
Gas	States	<p>Remove barriers to interstate trade in gas</p> <p>Remove restrictions on use of gas (eg. for electricity generation)</p>	<p>Interconnection makes gas prices 4% lower than otherwise by 2005</p> <p>Reduce unit requirements of black coal by 1%, brown coal by 36% and increase unit gas requirements by 95% in electricity supply industry</p>

Table A2.2: (continued)

<i>Area of activity</i>	<i>Jurisdiction</i>	<i>Reform</i>	<i>Direct impact</i>
		Prices surveillance as under Hilmer proper	Reduce rate of return in gas industry by 3 percentage points
		Competitive neutrality in financing structure as under Hilmer proper (50% debt/asset ratio, equal rates of return on debt and equity, 75% dividend payout rate, and payment of income tax equivalents to State governments)	Dividend plus income tax equivalent payments and retained earnings to fall, interest payments to rise in government-owned portion of the industry, leading to 24.1% increase in Commonwealth's effective tax rate and 40.1% decrease in State share of disposable income
Water	States	Eliminate cross-subsidies, achieve positive rates of return, and adopt best practice in urban water. Recoup operating and maintenance costs in rural water.	Improve labour productivity by 15% and capital productivity by 6.7% on average across entire water industry, increase rate of return by 1.07 percentage points, reduce purchase price to commercial and industrial users relative to supply price by 18.1% and 2.1% respectively, increase purchase price to residential and other users relative to supply price by 7.5% and 31.5% respectively
		Competitive neutrality in financing structure as under Hilmer proper (50% debt/asset ratio, equal rates of return on debt and equity, 75% dividend payout rate, and payment of income tax equivalent to State governments)	Dividend plus income tax equivalent payments and retained earnings to rise, interest payments to fall, leading to 14.6% reduction in Commonwealth's effective tax rate and 13.4% increase in State share of disposable income
Road transport	States	Adopt NRTC proposed uniform registration charges for heavy vehicles (charges to fall on average in NSW and ACT, to rise in other States)	Cost of transporting some commodities by road to rise (eg 0.37% for wheat and 0.05% for sheep), costs to fall by up to 0.65% for other commodities Reduce cost of own-use road freight transport by 0.48% Reduce cost of road passenger transport by 0.15%
		Adopt NRTC proposals for uniform vehicle regulations	No static cost savings modelled. Dynamic gains from seamlessness in regulation modelled to improve capital and labour productivity in road freight transport by an indicative 5%
Mutual recognition and review of occupations	States	Mutual recognition of regulatory requirements among States and with New Zealand Remove licensing requirements for selected occupations	No direct impacts modelled
Ports	States	Corporatise port authorities, separate regulatory and commercial activities, contract out or privatise berthing and other facilities	Improve productivity sufficiently to reduce total costs by an average 13.5% (equivalent to a 9.2% productivity improvement in services to transport sold to the water transport industry)

Competitive neutrality in financing structure as under Hilmer proper (50% debt/asset ratio, equal rates of return on debt and equity, 75% dividend payout rate, and payment of income tax equivalent to State governments)

Dividend plus income tax equivalent payments and interest payments rise, retained earnings fall, leading to 2.7% increase in Commonwealth's effective tax rate and 37.1% increase in State share of disposable income

Nevertheless, the Commission has had to face a number of boundary issues in regard to the scope of GBE reforms to include in its assessment. Since the boundaries are not precise and in view of the time available for this assessment, the Commission has had to make some judgments.

A range of GBE reforms was commenced by Commonwealth and State Governments prior to the publication of the Hilmer Report and the Draft Competition Principles Agreement, for example, in telecommunications. It has not been possible to separate the effects of these reforms from those that would likely follow the implementation of a national competition policy. In many cases, ongoing reform programs had been announced by governments and it is not possible to distinguish between those that would have been implemented in the absence of a national competition policy and those attributable to such a policy. As a result, the Commission has included in its assessment those reforms implemented or announced in recent years which fall within the scope of the principles of the draft national competition policy. Telecommunications, for example, has been included on this basis and because the terms of reference for the Telecommunications Policy Review make specific reference to the need for the review's findings to be consistent with national competition policy.

The effects of privatisation of GBEs are outside the scope of the terms of reference and effects flowing solely from changes of ownership have not been included in the Commission's assessment. However, a boundary issue arises in cases where governments have indicated that certain GBEs will be privatised in the near future. For example, both ANL and the FAC are Commonwealth GBEs potentially affected by the application of Hilmer's competition principles. Yet policy statements have been made that ANL will be sold outright while the FAC will lease the airports it currently owns and essentially become an airport management company. The Commission has had to make a judgment as to whether such enterprises should be excluded from its analysis.

In the case of several GBEs for which announcements have been made about impending privatisation, substantial reforms have been implemented which are consistent with the principles of the draft national competition policy and scope exists for further improvements of their competitive position before

assets are sold. Examples of enterprises in this category include FAC and electricity distribution authorities being put up for sale. In addition, the proposed national competition policy will impact on the operation of some of these GBEs after privatisation because of the provisions for review of anti-competitive legislation and to ensure access to essential facilities. In the case of ANL, the judgment is that its privatisation is sufficiently imminent for it not to be included in the assessment.

The terms of reference for the Commission included extension of Part IV of the Trade Practices Act to *all* currently exempt sectors. While the Commission has analysed removal of exemptions to statutory marketing arrangements, the unincorporated sector and GBEs it has not included several other exemptions in this analysis. A major factor was that the Hilmer Report itself saw a continuing role for some specific exemptions in the Trade Practices Act. It recommended that the current limited exemptions for labour agreements, approved standards, restricted covenants, export contracts and consumer boycotts should be retained. Further, the report did not recommend the exemption be removed for intellectual property matters because it raises issues which warrant a separate review.

The Hilmer report also considered that the current exemption for overseas shipping is a clear candidate for sweeping reform but did not make any recommendation in the light of a concurrent inquiry into overseas shipping arrangements. Clearly there is a strong case to discontinue the exemption of overseas shipping from the Trade Practices Act. However, the Commonwealth Government has confirmed that this exemption will continue following the report on liner shipping by the Part X Review Panel (Brazil Report). The Commission has not included removal of this exemption in its analysis.

The Draft Competition Principles Agreement also proposes a program to review anti-competitive legislation. Some of the reforms of statutory marketing arrangements and within the unincorporated sector would require repeal of specific pieces of State legislation, and are therefore predicated on such outcomes under this review mechanism. But there is a range of other anti-competitive legislation that could be targeted under such a review process.

The Commission could have taken one of two approaches. It could have compiled a specific list of pieces of legislation deemed to be anti-competitive. This would have led to a similarly narrow, specific list of reforms as for the unincorporated sector. In part the Commission has done this, by identifying potential reforms in the building industry, as well as legislation sanctioning several specific private sector monopolies (Chapter B3 and Table A2.2). But the Commission has also appealed to the broader principles underlying

Hilmer's recommendations about regulation, so as to include uncompetitive practices sanctioned by policy decisions rather than by specific regulation (ie. competitive tendering of government services). It has also included a more indicative scenario showing the potential benefits of moving from a prescriptive to a self-regulatory approach to quality assurance, a scenario in line with Hilmer's broad principle that regulation become a last, rather than a first resort.

The Hilmer-related reforms the Commission has been asked to assess are in most instances more concrete and easily identified (Chapters B5 to B10 and Table A2.2). The exception has been in the review of occupations and mutual recognition. There, while the Commission has been able to document the scope of reforms, it has in the time available been unable to find estimates of the direct impacts. With little basis on which to even hazard a guess, the Commission has chosen not to model any flow-on effects.

Several of the related reforms have raised boundary issues.

GBEs operating in the electricity, water and gas industries, as well the port authorities, would be subject to Hilmer-specific competition principles as well as to their respective related reforms. The reforms that would be required under 'Hilmer proper' are in most cases strongly complementary with the related reforms, and in some cases would be essential prerequisites. For this reason, it has proved impossible to distinguish separately their direct impacts. The Commission has accordingly extended the scope of some of the related reforms to include actions that would be suggested or required under 'Hilmer proper'.

There is also a very strong complementarity between the Hilmer-related reforms in electricity and gas. The reforms are discussed separately, and separate direct impacts identified, in Chapters B5 and B6. However, the separation is artificial because some of the productivity improvements required in the electricity industry, in order for it to be able to live with the price constraints being proposed, would only be available were the gas industry to succeed in its reforms. In recognition of this, only results for the two reforms combined are presented in the summary of results in Chapter A4.

A2.4 Competitive neutrality

A2.4.1 Rail transport

In the Commission's draft assessment, rail reform had a major influence on the government revenue results, showing significant benefit to revenue net of

subsidies for the States and Territories. This was a principal result of the assumption of competitive neutrality and the associated assumption of vastly improved cost recovery on the potentially competitive freight and passenger service components of the industry.

In response to the Commission's draft report, several governments commented that price changes should not be included in the estimation of the direct impacts of rail transport reforms on the grounds that price changes were outside the scope of Hilmer and related reforms.

In the Commission's view, however, the principle of competitive neutrality applies as much to direct government influence over GBE pricing policies as to taxation and dividend requirements, debt guarantee fees and other government charges which directly influence the competitive advantage or disadvantage of GBEs. Enterprises which are not required to achieve a commercial rate of return derive a competitive advantage over actual or potential competitors because prices can be set below commercial rates. Removal of this advantage and improvement in the rate of cost recovery may be achieved by productivity improvements, price increases or a combination of both.

Improvements in cost recovery for rail transport are likely to be achieved only through a combination of productivity improvements and price increases even when allowance is made for CSOs (IC 1991b, 1994b). Productivity improvement to the level of world best practice will not be sufficient to achieve the target cost recovery rate. Consequently, price increases are likely to follow from the implementation of the principle of competitive neutrality in the case of rail transport.

The Commission also notes that the Hilmer Report itself stated that pricing directions to GBEs to fully recover costs were one option to deal with competitive neutrality concerns:

In the absence of privatisation or corporatisation, efforts to comprehensively address net competitive advantages typically involve directions aimed at ensuring that the full economic costs of the resources deployed by the government businesses are reflected in its prices. Under this approach, government businesses would be required to account for costs incurred by the business itself (such as wages), other associated costs (such as accommodation) and implicit costs (such as a commercial rate of return and income tax equivalents). This approach would lead to net competitive advantages held by a government business being offset, thus preventing them from pricing below equally efficient private firms. [p.302]

Implementation of the principle of competitive neutrality will require rail authorities to operate on a commercial basis. However, the impact of commercial pricing to recover full costs can be modified to take account of

factors such as government policies to directly fund the capital costs of the rail network because of its natural monopoly aspects and the community service obligations (CSOs) of rail authorities. The Commission's estimate of the impact of rail reform is based on the recovery of operating costs adjusted for the cost of CSOs, that is, specific allowance has been made for CSOs in the Commission's analysis.

Several governments submitted that a considerable portion of rail transport deficits are incurred in the provision of CSOs and questioned the allowance made in the draft report for CSO costs in rail passenger and freight transport.

The difficulty for the Commission in making allowance for the CSOs is that rail authorities do not accurately identify and cost all their obligations. In addition, there are problems of comparability in data for those authorities that do provide cost estimates for CSOs and in some cases they do not distinguish between social objectives and expenditures directed at other objectives such as improving the environment. The lack of reliable data is, in part, a reflection of the lack of management information systems and the lack of transparent cost accounting (see IC, 1994b).

As a result of comments by governments, the Commission has revised the allowance made for CSOs in modelling the impact of reforms of rail freight and passenger transport. It has acknowledged the existence of CSOs in the provision of rail freight services and set a cost recovery target for operating costs of 81 per cent of best practice costs in non-bulk freight. In the case of passenger rail services a cost recovery target of 61 per cent of best-practice operating costs has been used. For both freight and passenger services, the Commission's estimates of the cost of CSOs was based on the CSOs identified and costed by rail authorities together with a 50 per cent loading added to make an allowance for those CSOs that remain unidentified and uncoded (see Section B4.5). This has resulted in a fairly generous allowance for CSOs in modelling the impact of rail reform.

It was suggested that the Commission should assume that whenever a subsidy is currently being paid it is a payment in respect of a CSO. However, this approach adopts an 'ex post' definition of CSOs. It is contrary to the trend of government reform in this area which is to identify 'ex ante' the CSOs to be met by GBEs and to separately cost these obligations. Indeed, the principle of competitive neutrality obliges governments to explicitly identify and cost CSOs imposed on enterprises. Apart from other changes to implement competitive neutrality, it is only by separate identification and costing of CSOs that it is possible to determine whether a GBE has a competitive advantage or disadvantage by virtue of its ownership by government.

The Commission has not adopted the suggestion to define CSOs ‘ex post’ as it would be tantamount to assuming that there are no efficiency gains to be derived from improvements in productivity and pricing practices in non-CSO rail services. Major studies have identified substantial efficiency improvements are achievable from the reform of general rail services (for example, IC 1991b, 1994b). There are also efficiency gains to be achieved by separate identification, costing and funding of CSOs. Defining any deficit for rail services as a payment for CSOs would maintain incentives for inefficiency in rail service provision.

One situation in which an increase in the cost to government outlays for CSOs may occur is when cross-subsidies for concessional users are removed. Policy action to preserve these CSOs by means of direct budget funding could result in lower cost recovery and increased calls on government revenue.

The Commission has modelled the elimination of cost over-recovery in rail services to mining, thereby including the main source of cross-subsidisation in Queensland, but it has been unable to model the full Australia-wide outcome because of inadequate data on the extent to which rail CSOs are funded by cross-subsidies. It should be noted, however, that the primary source of funding for rail CSOs is deficit funding by governments and that an allowance has been made in the Commission’s assessments for unidentified and uncosted CSOs. Moreover, because rail CSOs funded by cross-subsidies comprise a small proportion of all rail CSOs, it is possible that improvements in productivity will be sufficient to avoid the need for increased government outlays to fund these CSOs.

Calculations were also presented to the Commission which indicated only a small reduction in rail subsidies would occur following rail reform, in part, because CSO payments from government would increase with the increases in prices incorporated in the Commission’s modelling. These calculations appear to estimate the current cost of CSOs on the basis of the current prices charged for rail services instead of the full cost of providing the services. Yet, current prices charged for rail services do not fully recover costs even allowing for CSOs. Consequently, the combination of price increases and productivity increases can be expected to result in a decrease in rail deficit funded by government and, most likely, also in government payments for CSOs.

A2.4.2 Financing structure of GBEs

In commenting on the draft report, several State treasuries noted that since State governments could achieve capital restructuring by borrowing on the open market (and thereby adding to interest payments on the expenditure side

of the budget), in order to increase their equity stake in their GBEs (and thereby adding to their dividend receipts on the revenue side), capital restructuring should be entirely budget neutral and the capital restructuring modelled by the Commission should be ignored. For example, the South Australian Treasury argued that when a government either lends money to a GBE or puts equity into a GBE it borrows money on capital markets to do this. Changes in the financing structure of a GBE should not therefore affect the net wealth of the owner government or the private sector, or the income streams to the owner government or the private sector.

However, this is not the only way for a government to increase its equity stake in a GBE. A GBE undergoing productivity improvements as part of the reform process could equally delay passing the benefits on to consumers for a period in order to retire debt, without needing recourse to other sources of funds. The restructuring would then increase the net worth of the GBE and the dividend stream for government owners, but be paid for by the GBE's customers, rather than other taxpayers or by an increase in government debt. This appears to be what is happening in the Victorian electricity supply industry:

The benefits of reform will be reflected in lower electricity prices in the longer term. In the shorter term, electricity prices are unlikely to fall significantly, as debt in the ESI is reduced. The aim is to move towards a more commercially sustainable financial structure for the reformed ESI. (Office of State Owned Enterprises 1993, p. 8)

Indeed, the principle of competitive neutrality could be interpreted as implying that this is precisely how capital restructuring should be achieved. Government-owned GBEs should not be able to carry unduly high or low levels of debt, beyond what would be deemed prudent by private financiers, and should equally not be able to pass the burden of high borrowing back onto their State government owners in a way unavailable to privately owned businesses. Nevertheless, the Commission has undertaken sensitivity analysis to allow the net impact of its modelling of competitive neutrality on its overall revenue projections to be assessed.

A2.4.3 Dividends

Several governments suggested that the benchmark dividend payout rates for GBEs of 75 per cent used in the Commission's modelling was too high. Some governments have set a payout ratio of 50 per cent. The NSW Government noted that while increasing the dividend payout ratio is likely to increase the cash flows to governments there will be some offsetting effects as lower retained earnings over time reduce equity and so dividends. As a result, the

gains in revenue as a consequence of assuming a 75 per cent dividend payout ratio will be overstated to some extent.

Dividend payment rates from GBEs vary widely between enterprises. Some governments have set benchmarks as a means of increasing dividend payments by GBEs and some have collected payments substantially above these benchmarks in recent years (SCNMGTE 1994). Aggregate dividend payout ratios in recent years for private sector companies, constructed from Australian Stock Exchange data, have been 70 to 80 per cent of earnings. In the case of industrials, the payout ratio has been between 80 and 90 per cent of earnings (BIE 1993c, p.17). In the absence of better information on the appropriate commercial dividend payout ratio for GBEs the Commission has retained the benchmark of 75 per cent.

A3AMODELLING THE GROWTH AND REVENUE IMPLICATIONS

The terms of reference require the Commission to provide an explanation of the methodology and assumptions used to derive its growth and revenue projections. The Commission is also required to provide some guidance as to the sensitivity of the results to the assumptions used.

This Chapter provides an overview of the judgments the Commission has made in selecting a model framework. It also outlines the key assumptions judged to be important for this exercise. More technical model details are provided in Chapter C1 and Appendix D3. Information on the sensitivity of the results to some of the key assumptions made is provided, along with the results themselves, in Chapters A4 and C2.

A3.1 The selection of model

In order to quantify the growth and revenue implications of Hilmer and related reforms, a model is required that

- can allow reforms in particular parts of the economy to be specifically modelled;
- is economy-wide, so that the implications of reforms in particular parts of the economy can be traced through to the rest of the economy, giving the overall impact on economic growth; and
- has a detailed treatment of the various taxes imposed by Commonwealth, State and Local governments, as well as their non-tax forms of revenue, so that the revenue implications of Hilmer and related reforms can also be obtained.

Ideally, the exercise also requires a dynamic model framework. There are two senses in which dynamics matter critically.

The Commission has been asked, to the maximum extent feasible, to provide an indication of the likely time paths by which the benefits of Hilmer and related reforms will accrue. This requires two things. It requires an indication of the time paths by which Hilmer and related reforms will be implemented. It also requires an indication of the likely time lags after implementation before all the economic impacts have flowed through.

In some cases a specific timetable has been proposed for the implementation of reforms. For example, it is proposed that the package of road transport reforms being developed by the National Road Transport Commission be implemented by 1 July 1996. In other cases the timing of implementation is far less clear. Even with a specific date for extension of Part IV of the Trade Practices Act to all currently exempt sectors, it is not known with any certainty how long it would take for actions against particular breaches of the Act to be lodged, for a new set of precedents to be established relevant to those currently exempt sectors, and for the establishment of those precedents to begin to affect behaviour more generally in those sectors. Where available, the timetables for implementation of Hilmer and related reforms are noted individually in Part B of the report.

In order to assess the time lags between implementation of reforms and their final economic impact, a model is required that reflects the time frames over which economic agents respond to reforms. For example, the model would need to capture the speed with which assets in particular industries wear out, since some of the adjustment by government business enterprises towards meeting new rate of return targets may be made only at asset replacement time. The model would also need to capture the speed with which users and consumers respond to changes in price signals, since some reforms involve moves by government business enterprises to more cost-reflective pricing.

Information about the speed with which some adjustments of this type occur is routinely built into dynamic economic model frameworks. Information about the speed with which other kinds of adjustment occur is typically not. For example, the program to review anti-competitive regulation and legislation could be expected to lead to regulatory changes that dramatically altered the structure of incentives facing some individuals within particular enterprises. Several examples are discussed in Chapter B3. While empirically-based dynamic economic models routinely incorporate information about how, and at what speed, economic agents respond to the price information guiding transactions among firms and their customers, they typically do not incorporate information about how or at what speed agents respond to the non-price reward structures within firms.

The second sense in which dynamics matters critically is that for many of the Hilmer and related reforms, the important gains are likely to flow from changes to non-price incentive structures rather than to price changes per se. Somewhat confusingly, this second use of the term 'dynamic' does not relate to time paths at all, but is used to distinguish gains arising from a better non-price incentive structure from the so-called comparative static gains arising when a better pricing structure leads to a more efficient allocation of

resources. If the pricing of water on a usage basis encourages conservation and allows water authorities to postpone building a new dam, this is an example of a comparative static saving of resources. If meat inspectors become employees of a meat processing plant rather than a separate regulatory authority, and are encouraged to see their role as helping to produce safer meat rather than being good by-the-book policemen, the associated productivity gains are an example of dynamic gains from a better non-price incentive structure. As noted, empirically-based economic models, irrespective of whether or not they trace time paths, typically capture some of the former gains but none of the latter.

Of the modelling frameworks available, therefore, none can capture dynamics in all the senses in which it matters for this exercise, since none can produce an answer for the size of the productivity gains to be expected from a better regulatory or legislative governance structure for competition policy, nor for the speed with which those productivity improvements could be expected to occur. These judgments have had to be made outside a model framework. However, most empirically-based economic model frameworks can trace the flow-on economic impacts of such productivity improvements to the rest of the economy, once a judgment has been made about their timing and size.

Of the frameworks available, some can trace the time paths of the flow-on effects and some cannot. Macroeconomic models such as MSG (McKibbin and Sachs 1991), the Murphy model (Murphy 1992) and TRYM (Taplin et al. 1993), while able to trace time paths and government revenue implications, are inappropriate because they lack the sectoral detail required to model sector-specific reforms. Multi-sectoral models with a multi-country dimension such as G-cubed (McKibbin and Wilcoxon 1992) and Salter (Jomini et al. 1994) were ruled out as containing too much unnecessary detail for the job at hand.

Of the remaining model frameworks that are reasonably well-documented and/or for which training in use is available, the two that trace time paths have only recently been developed, so that the Commission has no background of experience in their use to bring to the current exercise. The first of these is a multi-sectoral version of the Murphy model that has been developed since April 1994. While training in use is available, documentation is still scant. The second is a policy-analytic (as opposed to forecasting) version of the Monash model first applied in April 1994 (Malakellis and Dixon 1994), extensive training and documentation for which has only been available since November 1994. After consideration, the Commission decided that to use either of these new models for the current exercise would impose too high a risk, given the tight deadline. It has therefore used a version of the ORANI

model that, while able to give a snapshot of the growth and revenue implications at a single point in the future, is not able to trace time paths.

Some very rough guidance on time paths can nevertheless be obtained from the results of a recent EPAC-sponsored conference, at which (temporally) dynamic models were used to examine the implications of an indicative microeconomic reform scenario (Hargreaves 1994). The results from these models, and the light they shed on the time paths for Hilmer and related reforms, are discussed in Chapter A4.

In common with other models, ORANI cannot produce an answer to the question of the size of the productivity gains or other direct impacts to be expected from individual Hilmer and related reforms. However, it contains a very detailed set of productivity and price change variables that can be used to introduce the direct impacts into the model, once judgments have been made about their nature and size. The model then generates projections for the flow-on effects to other parts of the economy, based on interdependencies between parts of the economy — both direct sales linkages and indirect links through competition for resources.

Because the model contains a representation of all sectors of the economy, it can add up these flow-on effects to give a projection for overall economic growth. The version used by the Commission also contains a detailed treatment of the taxes levied by various levels of government on economic transactions within the economy. The model can therefore generate projections of the revenue implications of Hilmer and related reforms. The Commission's standard version is documented in Dixon et al. (1982), Dee (1989) and McDougall and Skene (1992).

A3.2 HILORANI— a special purpose version of ORANI

Some amendments have been made to the standard version of ORANI to produce a special purpose version, HILORANI, that has been used for this exercise.

The first amendment is to the model's industry breakdown. Hilmer and related reforms have important implications for government business enterprises (GBEs), statutory marketing authorities (SMAs), activities in the unincorporated sector, and activities likely to be affected by reviews of anti-competitive legislation. To model the flow-on effects of reforms in these areas, it would have been ideal to use a model in which each activity subject to reform was represented as a separate industry. This would have required a model in which relatively small activities such as newsagents, pharmacies and

taxis were represented separately. Although the standard version of ORANI contains a representation of 113 separate industries, this breakdown does not give a separate representation of many of the smaller activities affected by Hilmer and related reforms.

Disaggregation of all the activities affected by Hilmer and related reforms would have been time-consuming, and the necessary data to support the disaggregation would not always have been readily available from ABS sources. The Commission's strategy has therefore been to make do with a level of industry disaggregation, the data for which was readily at hand.

The starting point was MR-ORANI (Wear 1993), an already disaggregated version of ORANI with an industry breakdown designed to facilitate the modelling of microeconomic reforms. In this version, many but not all areas in which GBEs operate are represented as separate industries. Using this version, the Commission further disaggregated activities in which SMAs operate, using data and techniques developed for its inquiries into the sugar and dairy industries and into statutory marketing authorities (IC 1991, 1991c, 1992). The resulting industry breakdown of HILORANI is shown in Table A3.1.¹ The adequacy of this industry breakdown for the current exercise is discussed further in Chapter C1.

The second set of amendments is to the model's database. HILORANI uses a disaggregated version of the Commission's standard ORANI database, based in turn on the ABS 1986–87 input-output tables (Kenderes and Strzelecki 1992). The ABS has published a more recent input-output table for 1989–90, and the Commission has recently completed and tested a standard ORANI database derived from that table. However, the Commission decided not to use the more recent input-output database for the current exercise, primarily because of the time it would have taken to reproduce the industry disaggregation already incorporated in MR-ORANI, the starting point for this exercise.

The database used for this exercise is therefore somewhat dated. The database is used primarily to derive costs and sales *shares*, rather than absolute values, in the process of solving the model. In some sectors of the economy, cost and sales shares change little, even over periods as long as a decade, so that for those sectors a 1986–87 database still gives an adequate representation.

¹ As in standard ORANI, some of the agricultural industries are modelled as producing more than one commodity. The commodities produced by industries 1 to 10 are: wool, sheep, wheat, barley, rice, other cereals, meat cattle, milk cattle, pigs, sugar cane, other farming export, potatoes, other farming import-competing.

Table A3.1 HILORANI's industry breakdown

<i>Code</i>	<i>Description</i>	<i>Code</i>	<i>Description</i>
1	Pastoral zone	64	Glass and glass products
2	Wheat sheep zone	65	Clay products and refractories
3	High rainfall zone	66	Cement
4	Northern beef	67	Ready mixed concrete
5	Milk cattle	68	Concrete products
6	Pigs	69	Nonmetallic mineral products nec
7	Sugar cane	70	Basic iron and steel
8	Other farming export	71	Nonferrous metals and products
9	Potatoes	72	Structural metal products
10	Other farming import competing	73	Sheet metal products
11	Poultry	74	Metal products nec
12	Services to agriculture	75	Motor vehicles
13	Forestry and logging	76	Ships and boats
14	Fishing and hunting	77	Locomotive rolling stock
15	Ferrous metal ores	78	Aircraft
16	Nonferrous metal ores	79	Scientific equipment etc
17	Black coal	80	Electronic equipment
18	Oil, gas and brown coal	81	Household appliances
19	Minerals nec	82	Electrical equipment
20	Services to mining nec	83	Agricultural machinery
21	Meat products	84	Construction machinery etc
22	Pasteurised milk	85	Machinery and equipment nec
23	Milk products	86	Leather products
24	Fruit and vegetables products	87	Rubber products
25	Margarine and oils and fats nec	88	Plastic and related products
26	Flour mill and cereal food products	89	Signs, writing equipment
27	Bread, cakes and biscuits	90	Manufacturing nec
28	Confectionery products	91	Electricity
29	Raw sugar	92	Gas
30	Food products nec	93	Water, sewerage and drainage
31	Soft drinks, cordials and syrups	94	Residential building construction
32	Beer and malt	95	Other construction
33	Alcoholic beverages	96	Wholesale trade
34	Tobacco products	97	Retail trade
35	Cotton ginning	98	Mechanical repairs
36	Wool scouring	99	Repairs nec
37	Man made fibres	100	Road freight transport
38	Cotton fabrics	101	Road passenger transport
39	Wool, worsted fabrics	102	Mining rail transport
40	Textile finishing	103	Private iron ore rail transport
41	Floor coverings etc	104	Non bulk rail transport
42	Textile products nec	105	Grain freight rail transport
43	Knitting mills	106	Rail passenger transport
44	Clothing	107	Railway fixed costs
45	Footwear	108	Water transport
46	Woodchips	109	International air transport
47	Sawmill products	110	Domestic air transport
48	Veneers and manufactured wood boards	111	Services to transport
49	Joinery and wood products nec	112	Postal services

Table A3.1 HILORANI's industry breakdown (contd.)

<i>Code</i>	<i>Description</i>	<i>Code</i>	<i>Description</i>
50	Furniture and mattresses	113	Telecommunications
51	Pulp, paper and paperboard	114	Banking
52	Bags and containers	115	Nonbank finance
53	Paper products nec	116	Investment nec
54	Publishing and printing	117	Insurance nec
55	Printing, stationery	118	Business services nec
56	Chemical fertilisers	119	Ownership of dwellings
57	Basic chemicals	120	Public administration
58	Paints	121	Defence
59	Pharmaceuticals	122	Health
60	Soap and detergents	123	Education, libraries
61	Cosmetics	124	Welfare etc services nec
62	Chemical products nec	125	Entertainment and recreational services
63	Petroleum and coal products	126	Restaurants, hotels and clubs
		127	Personal services
		128	Non competing imports

Of more concern is that in some key sectors likely to be affected by Hilmer and related reforms in the future, there has been significant microeconomic reform between 1986–87 and currently, so that their cost and sales structures now, at the beginning of the Hilmer reform process, in some instances differ noticeably from those incorporated in the model. In these cases, even the 1989–90 input-output table is likely to give a dated representation.

However, in those sectors where more up-to-date cost data are available, and where Hilmer and related reforms are anticipated to lead to further cost savings, the Commission has been able to adjust the cost saving information that is fed into the model in order to correct for known changes in the cost base that have occurred between 1986–87 and currently.

Not only has the cost and sales structure of certain industries changed significantly between 1986–87 and now, but so too have certain aspects of the revenue structures of Commonwealth, State and local governments. Because the HILORANI database is used here to generate revenue projections for Hilmer and related reforms, the Commission has endeavoured to ensure that the revenue bases used as a starting point for the revenue projections wherever possible reflect the most recently available data. The details are given in Chapter C1 and Appendix D3.

A final set of amendments is to the model's theoretical structure. The Commission's standard version of ORANI had a cursory treatment of non-tax government revenue. In HILORANI, the theoretical structure has been changed specifically to recognise the dividend and interest income transferred

to the Commonwealth, State and local governments from their public trading and financial enterprises. This new theoretical structure is outlined in Chapter C1.

HILORANI therefore recognises that price and productivity changes within GBEs will have flow-on impacts to the size of dividend and interest flows to governments. In the current exercise it is assumed that over time, government enterprises subject to structural reform and to the principle of competitive neutrality would also be expected to adopt the same debt/equity ratios and dividend payout rates deemed prudent in the private sector. It is also assumed that all State-owned enterprises not paying corporate income tax to the Commonwealth would begin to pay an income tax equivalent to their State government owners (as some have recently begun to do). The new theoretical structure also allows the revenue implications of these latter changes to be captured. The details are given in Chapter C1 and Appendix D3.

The Commission's standard version of ORANI allows projections to be made for general government revenue and expenditure, consolidated across Commonwealth, State and local levels of government. For the current exercise, the Commission is required to provide separate revenue projections for the Commonwealth government on the one hand, and for all State, Territory and local governments on the other. This separation has not required any modification to the theoretical structure of the model. Instead it has been achieved via the way in which the dollar revenue projections are obtained. Nevertheless, the theoretical structure has been amended to include separate price deflators for the current expenditure of the two levels of government. Again, details are given in Chapter C1.

A3.3 The modelling assumptions

Like all models, ORANI contains a large number of assumptions. This section highlights those assumptions judged to be critical for the current exercise.

A3.3.1 Supply and demand

On the supply side, key assumptions are those made about the production technology used to produce output, since these determine the extent to which industries can substitute between the various input categories to minimise the cost of producing output. A detailed description of the substitution prospects assumed in HILORANI is given in Appendix D3.

ORANI's production technology also assumes constant returns to scale and perfect competition.

The assumption of constant returns to scale means that in the absence of any productivity improvements, doubling the output of an industry would require a doubling of all inputs. The model does not allow for the possibility that there might be some categories of input (eg. some kinds of overhead expenses such as R&D expenses) that do not need to be doubled in order to double output.

The constant returns to scale assumption is not an immutable feature of ORANI. Horridge (1987) built a version that incorporated increasing returns to scale in manufacturing. Recently the Commission has built a version that allows for increasing returns to scale because of the overhead nature of R&D expenditure, and also allows external spillover benefits to flow from the R&D expenditure of one industry to other industries (IC 1994).

For the current exercise, HILORANI retains the standard assumption of constant returns to scale in the absence of productivity improvements. However, many of the Hilmer and related reforms are expected to lead to direct cost savings, a component of which is expected to come from being able to take advantage of economies of scale. For example, where structural reform of GBEs requires them to adopt international best practice, or where reforms facilitate interstate trade, some of the projected resource savings would accrue from being better able to take advantage of economies of scale.² Similarly, some of the restrictions affecting the professions prevent the economies of scale that would be achieved in multi-disciplinary businesses. The cost savings that have been modelled in optometry are explicitly due to economies of scale.

Thus economies of scale are explicitly taken into account in many of the reform scenarios. To the extent that economies of scale are a feature of industries other than those subject to reform, however, HILORANI may understate the flow-on benefits of reform to other industries.

Because HILORANI retains the standard ORANI assumption of constant returns to scale, it also retains the assumption of perfect competition. At first sight, this might appear to be an inappropriate assumption to be making in a model designed to assess the growth and revenue implications of a better competition policy, since better competition policy presumes an absence of perfect competition to start with. This makes it vital that the implications of the model's assumption be properly understood.

² However, care needs to be taken in defining international best practice, so as to exclude gains from economies of scale that could never feasibly be achieved in a relatively small country such as Australia. Some of these details are discussed in Part B of this report.

In the current context, the assumption of perfect competition means that prices reflect costs, including a return to capital, *whatever that return might initially be*. It also means that any cost advantages gained by an industry (net of induced increases in the returns to fixed factors) are assumed to be passed on to purchasers, with no provision for them to be retained otherwise as monopoly rents. Neither of these implications should be seen as objectionable in the current context.

Hilmer and related reforms are all about increasing competition in the economy and avoiding abuses of monopoly power. Where monopoly power is currently being exercised, it could manifest itself in a variety of ways (see Section A2.2). The associated monopoly rents could be paid out as dividends to shareholders, in which case they could appear as an excessive return on assets. They could be dissipated within the industry via featherbedding or gold-plating, in which case they would appear as unduly low productivity. Alternatively, they could be capitalised, as in the values currently being attached to taxi licences, in which case the flow of monopoly rents would appear as a normal return on an artificial asset (or alternatively, an excess return on the underlying real asset, the taxi). These issues are also discussed in more detail in the context of the electricity supply industry in Chapter B5.

The Commission has found few instances in which anti-competitive practices are currently leading to excessive returns, and many more instances where monopoly rents, where they occur, are being dissipated. Where monopoly power is manifest in excess returns to capital, the impact of introducing competition can be modelled in HILORANI via a reduction in the rate of return on real assets. Where monopoly power is manifest in low productivity, the impact of introducing competition can be modelled in HILORANI via productivity improvements. In both cases, the model framework will ensure that the cost reductions are passed on to downstream users, as would be expected in a more competitive environment. ORANI's assumption of perfect competition poses no problem in the current context, because perfect competition, or at least more competition, is what Hilmer and related reforms are designed to bring about.

On the demand side, the ORANI framework contains a separate characterisation of several different categories of demand — for intermediate use, for investment purposes, household demand, government demand, and export demand. For each category of demand the model needs to explain two things — the overall size of demand, and the commodity composition of demand. A detailed description of the characterisation of demand in HILORANI is given in Appendix D3.

A3.3.2 Alternative economic environments

The results from the ORANI model are clearly sensitive to the values assumed for the range of behavioural parameters governing the sensitivities of demand and supply to prices and incomes. Values for some of these key parameters are given in Appendix D3.

The results from ORANI are typically at least as sensitive to the assumptions made about the economic environment in which policy changes take place. Indeed, in the time available most of the sensitivity analysis that has been conducted for the current exercise has been with respect to economic environments, not with respect to behavioural parameters. It was felt that this was where some important variation in model outcomes was likely to occur.

Capital mobility and capital returns

The model's results indicate how different the economy would look at some point in time in the future, compared with its alternative position had the policy change in question not taken place. The results reported here are long run because the point in the future is after an adjustment period sufficiently long for each industry to be able to build up or run down its productive capacity so as to have restored rates of return on capital to the relativities they held prior to the policy change. The exceptions are where the Hilmer and related reforms are assumed to lead to long-term changes in the rates of return on capital in particular industries. The exceptions are discussed further in Chapter C1.

The distinguishing feature of the long run results reported here is therefore the mobility of capital. Some guidance as to the length of time required to achieve this extent of mobility can be obtained from dynamic models which explicitly track time paths of adjustment. This is discussed further in Chapter A4.

Labour mobility and labour returns

On the labour side, it has been assumed that there is real wage flexibility but that the number of unemployed remains fixed. Clearly in the current economic environment there is still scope for favourable policy initiatives to put resources back to work that are currently idle. However, the benefits of Hilmer and related reforms will take some time to accrue, firstly because implementation will take time and also because there will be lags after implementation before the flow-on effects are felt. It is difficult to predict what the labour market situation would have been that far in the future in the absence of Hilmer and related reforms, which is the relevant starting point for the current exercise.

And it is difficult to argue that Hilmer and related reforms are of the type that would reduce Australia's so-called natural rate of unemployment. For these reasons, assuming no change in the aggregate number of unemployed was felt to be a relatively neutral assumption.

Under this assumption, the model still allows for some adjustment in the number of employed, primarily because of induced changes in participation rates that Hilmer and related reforms might bring about. In the Commission's version of ORANI, there is a limited response of participation rates to changes in real wages and real non-labour incomes, as well as (where relevant) to the unemployment rate. The model also allows for some adjustment in the occupational mix of unemployment, to the extent that changing industry demands for labour are not spread evenly across all skills. In the one instance where relative occupational wages are assumed to change in response to Hilmer and related reforms, the occupational mix of unemployment is also affected by the limited amount of induced substitution between labour skills on both the demand and supply sides.

The assumption that the number of unemployed stays fixed means that the benefits of Hilmer and related reforms are primarily through real wages being higher than otherwise, rather than unemployment being lower than otherwise. Sensitivity analysis has been undertaken to test the sensitivity of the growth and revenue projections to this assumption.

Fiscal stance

The third critical feature of the economic environment is the assumptions made about the fiscal stance of governments. The results reported here do *not* include the implications were any revenue gains from Hilmer and related reforms used to boost current expenditure, nor to reduce tax rates, since it would be difficult to model which expenditures would increase or which tax rates would fall without prejudging how the revenue gains were redistributed across levels of government.

Instead, it is assumed here that aggregate government expenditure on goods and services is held constant in real terms, and that the commodity composition of the expenditure is also unchanged. This approach is consistent with no change in real expenditures by either the Commonwealth or by State and Local governments.

On the revenue side, it is assumed that all tax rates or tax schedules are unchanged in the face of Hilmer and related reforms. For most types of tax the distinction is irrelevant but since direct taxes on labour income are modelled as being progressive, it is the tax schedule rather than a single tax rate that is assumed to be unchanged.

One key question is whether this progressive tax schedule should be held constant in real or nominal terms, ie. whether the income tax schedule should be treated as being indexed. Formal indexation has not been a feature of Commonwealth government tax policy, but the Commonwealth budget statements show that, whatever the budgetary changes made to income tax rates, PAYE tax revenue has remained a relatively constant proportion of GDP over time. This observation suggests that one approach to modelling the revenue implications of Hilmer and related reforms would be to ignore the progressivity of the income tax regime and to model income taxes as a single-rate flat tax, since this appears to have been consistent with past history.

There are two reasons why the Commission has not adopted this approach. In the first place it would not have done justice to concerns expressed by the States in discussions leading to the Commission receiving its terms of reference, ie. concerns about the impact of income tax progressivity on the tax revenues of the Commonwealth government. Secondly, there is an important sense in which past history can provide a misleading guide to what to expect from an exercise such as this.

At the risk of stating the obvious, the historical shares of tax revenues to GDP reflect the full extent of past history, and the myriad of factors shaping economic fortunes over that time. Some of these factors would have been beneficial to some sectors or occupations, some would have been beneficial to others, but on average the historical record of growth has tended to be relatively balanced across all sectors of the economy.

By contrast, the Commission has been asked to isolate a single element of the future economic landscape, namely Hilmer and related reforms, and to project how government revenues would differ from what they otherwise would have been as a result of those reforms.

At least some of the Hilmer and related reforms, taken in isolation, will have anything but a balanced impact across the whole economy. Even taking account of flow-on effects, the full impacts will in some instances still be highly concentrated. For example, the Commission's modelling work suggests that reforms in the electricity supply industry will have major implications for the electricity supply industry itself and for several of the large electricity users, and much smaller implications for the rest of the economy.

In reality, electricity reform will be accompanied by a range of other developments so that the electricity supply industry and its major users will not grow or shrink relative to the rest of the economy to the extent modelled here. But in order to project the revenue implications of this reform in isolation, it matters critically what rates of PAYE tax, property tax, payroll tax

and other tax apply in those industries, relative to those in the rest of the economy. The relative sizes of sectors also matter, since they affect the dollar value of the different types of tax revenue paid.

While history may be relatively balanced, leading to balanced growth in all types of revenue, Hilmer and related reforms are not balanced, and their compositional effects are critical to their projected revenue implications. This is why it was judged to be important to ensure wherever possible in the time available that the model's database used for this exercise reflected not only the current tax rates, but also the current variation in actual or effective tax rates across occupations and industries. In the case of direct taxes on labour income, the progressivity of the income tax schedule is an important source of variation in effective tax rates across occupations and industries.

The Commission has therefore taken account of the progressivity of income tax rates in constructing the database for HILORANI. But it is not just the database, but also the model's theoretical structure, that recognises income tax rates as being progressive. Accordingly, the Commission also needs to make an explicit assumption about how the income tax schedule might differ in the future, with and without Hilmer and related reforms.

Would both tax thresholds and marginal tax rates be the same in the future, with or without the reforms? This is the zero indexation case, and implies that the average tax rates could vary with and without Hilmer, in a way that depended on both the price movements and real income movements that Hilmer and related reforms generated. If the combination meant that average tax rates were higher, then the ratio of PAYE tax revenues to nominal income would also be higher. If the combination meant that average tax rates were lower, so too would be the ratio of PAYE tax revenues to nominal income.

Hilmer and related reforms could be expected to raise real incomes above what they otherwise would be, but depending on what is assumed about the conduct of monetary policy, could put downward pressure on prices. Under zero indexation, these two factors have offsetting effects on the average PAYE tax rate, so the net effect on the ratio of PAYE tax revenue to income is not clear.

If Hilmer and related reforms only affected tax thresholds, and if these differed in a way that fully reflected the price movements generated by the reforms, average tax rates would differ only if real incomes changed. This is the full price indexation case, and implies that since Hilmer and related reforms could be expected to raise real incomes, they would also raise the ratio of PAYE tax revenue to nominal income.

A third possibility is that both tax thresholds and marginal tax rates could differ if necessary, with and without Hilmer, to ensure that the national average PAYE tax rate remained unchanged, possibly even neutralising the compositional effects mentioned earlier, with the ratio of nominal PAYE tax revenue to nominal income similarly unchanged. This is also a form of full indexation, being indexation for both price and real income changes. On one reading of history, this could be construed to be consistent with current government policy.

In the draft version of this report, the Commission presented revenue results generated under two alternative assumptions — one of zero indexation and one of full price (but not income) indexation. In commenting on the draft, the Commonwealth Treasury noted that since formal indexation was not a feature of Commonwealth government tax policy, only results under zero indexation should be presented. By contrast, most State Treasuries stated that only results under full price indexation should be presented.

In the next chapter, the Commission has chosen to continue to present results under both zero and full price indexation. The full price indexation scenario, while not necessarily representative of current policy, takes on an additional importance when considered in conjunction with assumptions about the conduct of monetary policy.

Conduct of monetary policy

Another key assumption is about the conduct of monetary policy, since this determines whether Hilmer and related reforms would in fact produce a general price level lower than otherwise. As noted above, this in turn has an important influence on what happens to PAYE tax revenue relative to national income in the absence of income tax indexation.

But equally, different assumptions about the conduct of monetary policy only matter for the model's real (though not nominal) projections in conjunction with the assumption of zero income tax indexation. This is because full price indexation of income taxes preserves the ORANI model's property of price homogeneity. The model's projections for output, employment and other real variables always reflect modelled responses to how prices change relative to each other, and relative to some single price anchor. With price homogeneity, the model projections for real variables are unaffected by what the price anchor is, or how it changes in the face of reform.

The property of price homogeneity is one to be expected of an economy in which all prices are sufficiently flexible, with no nominal rigidity that might restrict the extent to which prices can move relative to each other. These are the conditions under which monetary policy is said to have no real long-term

effect. However, zero indexation of the income tax schedule introduces such a nominal rigidity.

Macroeconomic models typically include a treatment of money supply and demand in order to explain movements in the absolute price level. For its draft version of this report, the Commission examined the projected impacts of microeconomic reforms from models that include a treatment of money supply and demand, in order to obtain guidance on the impact of such changes on the absolute price level.

For an EPAC-sponsored model comparison conference in 1994, a range of macroeconomic models was used to examine the impact of labour productivity improvements averaging 5 per cent across the economy. The labour productivity improvements were designed to be indicative of the direct impacts of a wide range of current and prospective microeconomic reforms. The range of the reforms was much broader than those specified here as Hilmer and related reforms. However, many of the Hilmer and related reforms also imply productivity improvements. Corrected for differences in the size of the productivity improvements, the results from the model comparison conference could therefore give a useful indication of the impact on the absolute price level of at least some of the Hilmer and related reforms.

In response to labour productivity improvements averaging 5 per cent, the models included in the comparison exercise projected that after an adjustment period (the length of which varied from model to model), real GDP would be higher than otherwise by between 2.5 and 5.7 per cent. After the same adjustment period, consumer prices would be lower than otherwise by between 1.4 and 5.6 per cent. Among those models with an explicit treatment of money supply and demand, those that projected the smaller real GDP gains also projected the smaller falls in consumer prices. In general, the consumer price falls were slightly smaller in magnitude than the real GDP gains (Hargreaves 1994, p. 23).

The price outcomes projected by the macroeconomic models were in turn conditioned by the assumptions about the conduct of monetary policy that the macroeconomic modellers were asked to take into account. The assumptions were that while the labour productivity improvements might be allowed to change the price level, there would be no long term change in the underlying inflation rate. The money supply was not to accommodate the increase in output but instead to grow at baseline rates. Under these assumptions, the models projected that in the face of productivity improvements, the absolute price level would be lower than otherwise by almost as much as real activity would be higher than otherwise.

Using this as a guide, the assumption embodied in results of the draft report was that prices would be lower than otherwise by roughly as much as real activity would be higher than otherwise, so that GDP would remain constant in nominal terms. Nominal GDP was held constant, in effect defining HILORANI's price anchor. So long as monetary policy were conducted along the lines assumed in the model comparison exercise, the treatment had at least some foundation.

The question arises as to whether the treatment has foundation, in the sense of being consistent with the Reserve Bank's 2 to 3 per cent inflation target. The Commonwealth Treasury drew attention to the draft report projection that the consumer price index would be lower than otherwise by 4.3 per cent, and noted that this amounted to an inflation rate about 0.4 percentage points lower on average over a ten year period. They argued that it would be unrealistic to suggest that the monetary authorities would actively seek to reverse any such gains in relation to inflation, even if the benefits were not distributed evenly over the years but were concentrated in a single year.

By contrast, most of the State treasuries argued that the Commission should assume an accommodating monetary policy, primarily on the grounds that non-accommodation was contrary to the announced policy stance of the Reserve Bank. For example, the South Australian Treasury noted the Reserve Bank policy of maintaining underlying inflation around 2 to 3 per cent over a long period, and argued that the Bank would make its best assessment of inflationary pressures, an assessment that would be influenced by the impact of prospective microeconomic reforms. They argued that in any one year the assessed impact of Hilmer would be small (and not necessarily explicit), reflecting the gradual nature of the reform process, but assessments of inflation trends would incorporate the expected impact of the reforms. Related to this, any rises in GDP which could be anticipated from Hilmer and related reforms would be accommodated by faster money supply growth, leaving the inflation outlook unchanged.

The Commission has had discussions with Reserve Bank officials in order to gain a clearer understanding itself of how the Reserve Bank goes about making its inflation assessments. It has also received a written response from the Assistant Governor (Economic) of the Reserve Bank which is reproduced in Appendix D4.

The letter states that the lower edge of its 2 to 3 per cent band should not be seen as an objective which, if inflation were running below, would necessarily require a policy response.

The letter then goes on to discuss two cases. In the first, it states that large clearly identifiable price reductions would be treated in the same way that

once-off changes in taxes or interest rates are handled: by excluding them from the concept of ‘underlying inflation’, which is the basis of the inflation objective.

The second case discussed is one where price reductions are not readily identifiable. It would then be difficult for monetary policy to take specific account of their effect. Unidentified price reductions would, of course, be helpful in achieving the inflation objective. At the same time, the Reserve Bank would not see the need for a policy response if, fortuitously, the rate of inflation was below the lower end of the band. But if Hilmer and related reforms were of this nature, their main impact (and benefit) should be to increase the growth rate of the economy which is consistent with achieving the 2 to 3 per cent objective.

The letter leaves open the possibility of some downward adjustment in the price level in either case. The one clear situation in which the price level would be allowed to be significantly lower than otherwise is when Hilmer and related reforms led to ‘large clearly identifiable’ price reductions. If its price reductions are not identifiable, the ‘main impact’ should be to increase the growth rate of the economy consistent with a given inflation objective. The letter notes that many factors influence the inflation rate and it is often difficult to differentiate between them. The tools available to the Reserve Bank to help them identify the causes of inflation are likely to be imprecise, just as the tools available to the Commission for its current task are imprecise. The question is whether Hilmer-related price reductions on the supply side would be ‘large’ and clearly differentiable, using imprecise tools.

Few of the reforms examined by the Commission have direct impacts that include explicit price reductions. In those that do, the price reductions are in line with current or proposed CPI-X formulae designed to deliver smooth and gradual relative price reductions over time. Elsewhere, downward price pressure would generally have to await the achievement of productivity-based cost reductions. These typically take a time. In other instances, any downward price pressure would also have to await the implementation of reforms, the timing of which is still uncertain. Under these circumstances, it is difficult to see that Hilmer and related reforms would deliver price reductions sufficiently concentrated in timing or coverage so as to be easily differentiable from the general ‘noise’ in inflation.

On these grounds, the Commission believes that the letter from the Reserve Bank appears closer to the State than to the Commonwealth Treasury view. It is not ‘even if’, but ‘only if’ the price impacts are concentrated that the Reserve Bank would take the step of excluding them from its concept of

underlying inflation. And the specific price reductions generated by Hilmer are unlikely to be concentrated.

For this final report, the Commission has therefore made growth and revenue projections under the assumption of monetary accommodation, in addition to its original projections under non-accommodation. With accommodation, inflation is assumed to be the same with and without Hilmer and related reforms, so after a period of time, the point at which the Commission's snapshot is taken, there would be no difference in the price level with or without reforms. Thus under monetary accommodation, it is the consumer price index rather than nominal GDP that is assumed to be held constant.

The interaction of monetary policy and income tax indexation

Under an assumption of monetary accommodation, with no movement in the absolute price level, there is no difference between zero indexation and full price indexation of the income tax schedule. If full price indexation would put the income tax thresholds in different places if price levels differed, but if price levels do not differ with and without reform, then full indexation would give the same result as no indexation.

And to reiterate, under full indexation, the model's long term real (though not nominal) projections are invariant to assumptions about monetary policy.

Therefore, of the four possible combinations of assumptions about income tax indexation (zero and full) and monetary policy (accommodating or non-accommodating), three should give the same projections for real variables. Only the particular combination of zero income tax indexation and non-accommodating monetary policy would lead to different results.

The results summarised in the next chapter and presented in more detail in Chapter C2 should be examined with this firmly in mind. To conserve space, it is sometimes only the results under zero and full indexation and non-accommodating monetary policy that are presented. However, since the evidence suggests that accommodating monetary policy is a more appropriate assumption, the full indexation/non-accommodating combination need not be taken literally. All of its real results can also be read as giving the model projections under accommodating monetary policy (and either degree of indexation).

A3 RESULTS

As noted in Chapter A1, the Commission has not been able to investigate every possible reform and every possible implication that might flow from Hilmer's principles and recommendations. It has had to make some strategic decisions in order to cover the major reforms and impacts and produce as complete a picture as possible in the time available. The Hilmer and related reforms that have been modelled and the direct impacts that have been identified are discussed in detail in Part B and summarised in Table A2.2 of Chapter A2.

Similarly, there is a need to exercise judgment in using the modelling results to reach conclusions about the gains from the reforms considered. Models are inherently imprecise, and cannot capture all of the factors that would influence the ultimate outcomes. The strictures of time have ruled out some desirable modifications to the model chosen for this exercise, that would have enhanced its ability to analyse particular issues or would have provided additional information. Time strictures have also militated against a degree of thoroughness with which the Commission would ordinarily investigate and set up the model experiments.

Comments on the draft version of this report have allowed the Commission to make some valuable improvements to its model framework, but time strictures have still not allowed all of the improvements or all of the checking that the Commission ordinarily would have preferred. The model framework is discussed in detail in Chapter C1 and Appendix D3. Its key assumptions and key features were summarised in Chapter A3.

This chapter presents the model's results for the main economic aggregates and checks their sensitivity to some of the key assumptions. The more detailed results underpinning those given here are presented in Chapter C2.

A4.1 The implications of reforms for economic growth

The projected long-term impact of the Hilmer and related reforms considered, after flow-on effects have been taken into account, is shown in Tables A4.1 and A4.2. The first of these tables shows the impact of reforms that would need to be undertaken jointly by the State, Territory and local governments, while the second shows the impact of reforms that would need to be undertaken by the Commonwealth. Note that in some cases the attribution is somewhat cosmetic, particularly where States and Territories are required to

make legislative changes but where the real reforms would only occur via the actions of non-government bodies under the new legislative framework.

As noted in Chapter A3, the projections are comparative static. They do not measure changes over time, but rather give a snapshot view of how different the economy would look at a single point in time in the future, as a result of undertaking Hilmer and related reforms. Projections of this sort can be sensitive to the assumptions made about the economic environment in which the reforms take place, and the nature of the adjustment to those reforms. In the time available most of the sensitivity analysis conducted has been with respect to economic environments.

All growth and revenue projections are long-run projections, because they give a snapshot view of how different the economy would look at a point sufficiently far in the future for physical capital in each industry to have adjusted fully, so as to again be earning its target rate of return.

The growth projections in Tables A4.1 and A4.2 are also made under the assumption that while Hilmer and related reforms might encourage job growth by raising participation rates, they would not reduce the number of unemployed in the future below what it might otherwise have been. The future labour market situation in the absence of Hilmer and related reforms would reflect a number of cyclical and other factors that would be difficult to predict. It is therefore extremely difficult to judge whether there would be scope for the number of unemployed to be lower at that time. By assuming no change, these model projections therefore assume that any labour market gains produced by Hilmer and related reforms are taken predominantly in the form of higher real wages. However, the sensitivity of the results to this assumption is tested shortly.

A key feature of all the projections in this report is the assumption made about the fiscal stance of governments. As was noted in Chapter A3, the projections assume no change in real current government spending by either the Commonwealth or by State, Territory and local governments. This assumption is highly artificial because any revenue gains from Hilmer and related reforms will not be valued for their own sake — they will be used to increase government spending, reduce tax rates, retire debt, or some combination of the three. However, it is extremely difficult to decide what areas of government spending might be raised, or which tax rates might be reduced, without prejudging the outcome of any revenue redistribution. In these projections, therefore, revenue gains are assumed to reduce public sector borrowing requirements.

A4.1 landscape (alandtab.doc)

Table A4.2: Commonwealth reforms: projected macroeconomic and sectoral implications (assuming monetary accommodation^a) (per cent)

<i>Results</i>	<i>Reform of:</i>					<i>Total</i>
	<i>Statutory marketing arrangements</i>	<i>Comp. tending</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	
<i>Type of direct impact</i>	<i>price</i>	<i>prod</i>	<i>prod & price</i>	<i>prod & price</i>	<i>prod</i>	
<i>Quality of projection: ^b</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>2</i>	
Real GDP	0.04	0.16	0.65	0.07	0.03	0.93
Real GNP	0.04	0.17	0.73	0.07	0.03	1.04
Real consumption	0.04	0.06	0.61	0.03	0.02	0.76
Real investment	-0.02	0.12	0.21	0.07	0.02	0.40
Real government spending	0.00	0.00	0.00	0.00	0.00	0.00
Export volume	0.01	0.62	1.62	0.22	0.03	2.50
Import volume	-0.08	0.02	0.05	0.02	-0.05	-0.04
CPI	0.00	0.00	0.00	0.00	0.00	0.00
GDP deflator	0.04	-0.09	0.08	0.00	0.01	0.04
Nominal exchange rate	0.41	0.17	0.74	0.07	0.02	1.42
Real pre-tax wage	0.04	-0.02	0.76	0.03	0.03	0.84
Real post-tax wage	0.04	-0.01	0.63	0.03	0.02	0.71
Aggregate employment	0.00	0.01	0.07	0.00	0.00	0.09
Aggregate capital stock	-0.02	0.12	0.21	0.07	0.02	0.40
Sectoral outputs						
Agriculture	-0.79	0.29	0.61	0.09	0.01	0.21
Mining	1.25	0.66	2.02	0.26	0.05	4.24
Manufacturing	-0.13	0.22	0.74	0.10	0.02	0.95
Services	0.02	0.09	0.54	0.05	0.01	0.71

^a Percentage change results are reported to two decimal places to facilitate adding up across rows. This conveys a false air of precision. Individual results should be rounded up when considered individually.

^b Quality rating refers to the assessed quality of the model projection made:

- 1 = fair (because of deficiencies in the measurement of direct impacts, deficiencies in the model's ability to capture the real effects of the reforms, etc)
- 2 = medium
- 3 = good

Similarly, all the projections in this report assume no change in tax rates or tax schedules. Two different assumptions are generally made, however, regarding the degree of indexation of the personal income tax schedule — one is no indexation and one is full price indexation. With no indexation, average income tax rates are higher than otherwise if nominal incomes are higher than otherwise. With full price indexation, average income tax rates are higher than otherwise only if real incomes are higher than otherwise. Formal

indexation, however, has not been a feature of Commonwealth government policy.

Finally, all projections are made under one of two different assumptions about the conduct of monetary policy. Under non-accommodation, the money supply continues to grow at baseline rates. Real output can be higher than otherwise only if the price level is lower than otherwise, so that while real GDP may be higher than otherwise, nominal GDP would be the same as without reforms. Under monetary accommodation, real output can be higher than otherwise without prices needing to be lower than otherwise. Hence the consumer price index is assumed to be the same as without reforms.

The results reported in Tables A4.1 and A4.2 are under the assumption of monetary accommodation. But with this choice of monetary policy, the consumer price index is unchanged by the reforms so there is no difference between zero and full price indexation of the income tax schedule.

A4.1.1 Impact on growth

By adding the effects across Tables A4.1 and A4.2, the results suggest that in the long run, once all adjustments have taken place, there would be an annual gain in real GDP of 5.5 per cent, or \$23 billion a year (in 1993–94 dollars), as a result of undertaking Hilmer and related reforms. This is not strictly a growth projection, because it does not mean that economic *growth* would be 5.5 percentage points higher. Instead it means that in the long term, the *level* of real GDP would be \$23 billion a year higher than otherwise as a result of these reforms. Of this, reforms by the Commonwealth are projected to contribute \$4 billion while reforms at the State, Territory and local government level are projected to contribute \$19 billion.

Of the total GDP gain, and given the assumptions made about the economic environment, almost \$9 billion would accrue in the form of higher household spending. This amounts to an additional \$1,500 a year for each household. Real after-tax wages are projected to be 3.0 per cent higher than otherwise, while employment gains from higher participation rates amount to 0.4 per cent or 30,000 extra jobs. These results are compared with other studies in Chapter C3.

Most of the reforms would lead to improved productivity, achieved through greater domestic competition and the incentive this provides to adopt better work and management practices. The reforms in the unincorporated sector, in building regulations and approvals processes, in removing newsagents' monopoly position, in moving to a self-regulatory approach to quality assurance, in moving to uniformity of road transport regulation, in greater

competitive tendering by State and Commonwealth governments, and the reforms of port authorities, the FAC and the CAA clearly fall into this category.

Such productivity improvements essentially expand Australia's 'effective' resource base. With more resources, Australia would tend to be better off. The model projections abstract from the costs incurred in making the necessary adjustments to achieve the productivity gains. In the areas directly affected by reforms, these adjustment costs could be substantial. Nevertheless, in scenarios where the gains have been judged to accrue through productivity improvements, Australia is projected to achieve greater income and more consumption, while still maintaining its international competitiveness (as demonstrated through export expansion).

Other reforms involve changes in domestic pricing. The reforms of statutory marketing arrangements by State and Commonwealth governments, the move to uniform registration charges for heavy vehicles and the elimination of the monopoly position created by taxi licensing clearly fall into this category. There is also a pricing element to the reforms in rail, electricity and gas, water, post and telecommunications.

Here the pattern of macroeconomic effects tends to be more case-specific, although consumption gains still result. Where individual prices are required to fall, but where reforms also deliver sufficient productivity improvements to generate a matching reduction in costs, the overall impact is equivalent to a productivity improvement alone — the prices can fall without wages or incomes being squeezed or productive capacity needing to contract. The reforms in electricity and gas, water, post and telecommunications are assumed to be of this type.

In rail, however, costs need to fall (via productivity improvements) and prices to rise on average across all rail services, in order to move to an acceptable level of cost recovery. In this scenario (and in contrast to IC 1991b), the improvement in the budgetary position of State governments is not assumed to flow on in the form of a reduction in tax rates, nor to generate an increase in government spending. Under these conditions the resource savings in rail do not generate lower prices to boost demand, so that overall real wages would need to be lower than otherwise to maintain employment.

Road pricing reform and the removal of taxi licensing generate price reductions on average that boost demand, allowing real wages to rise and productive capacity to expand.

Finally, the primary impact of reforms of statutory marketing arrangements at the State level is to eliminate quantitative restrictions. The main effect of this

is to expand production and reduce prices to downstream processors, while eliminating the quota rents accruing to existing primary producers. These price and cost reductions would boost demand and output, so that consumption, wages and productive activity are projected to expand. While the impact of Commonwealth reform of tobacco arrangements is similar, the Commonwealth is also assumed to eliminate the subsidy on cheese exports, with adverse consequences for dairy production and overall productive capacity.

A final feature of the results is the marked expansion in exports relative to imports in these scenarios, suggesting a significant improvement in Australia's balance of trade. This is largely a function of the artificial assumption that government expenditure is held constant in real terms. This significant restraint in domestic spending allows the marked expansion in net exports, but it is not a result that would necessarily persist once the revenue gains from Hilmer and related reforms were spent.

A4.1.2 Sectoral impact

Where gains accrue primarily through productivity improvements, they tend to be spread fairly evenly through the economy. Two kinds of exceptions can occur.

The first is in areas modelled as undergoing productivity improvements in output rather than inputs. Any industry undergoing productivity improvement can deliver more with less. When modelled as an improvement in the productivity of inputs, the result is an industry that can deliver more physical output with fewer physical inputs. When modelled as an improvement in the productivity of output, the result is an industry that can deliver more 'effective' units of output, or a more 'effective' service, with less physical output (hence requiring fewer physical inputs). Increased competition among newsagents has been modelled as an output productivity improvement, and the decline in the physical output of the retail trade industry explains the projected slight decline in the output of the service sector as a whole under this scenario.¹

¹ The associated savings in resources also explain the very slight projected declines in real wages under this scenario. This is one of only two purely productivity based scenarios in which real wages are projected to decline (the other being competitive tendering of Commonwealth government services). The wage declines reflect that the productivity improvements have occurred in relatively labour intensive sectors and that the induced increase in demand has been relatively small.

The other exception is in areas where expansion of sectors benefiting directly from reforms can be at the indirect expense of other sectors. Productivity improvements in electricity flow on to significant cost reductions for industrial users, including aluminium smelting. The model suggests that the direct benefit to the aluminium industry and indirect benefits to other mining industries would adversely affect the agricultural sector, primarily through higher wage costs.

Where reforms have been judged to lead to changes in domestic pricing, the sectoral impacts can be more uneven, reflecting which sectors are projected to suffer cost increases or which to benefit from cost declines. The agricultural and manufacturing sectors are projected to be adversely affected on average by moves to full cost recovery in rail. While grain-producing industries benefit from reductions in grain freight costs, areas producing wool and sheep are adversely affected by the increase in price of non-bulk freight. The capital and materials productivity improvements in rail also reduce demand for railway rolling stock, explaining the projected decline of the manufacturing sector.² The agricultural sector is also projected to be slightly adversely affected by increases on average in the registration charges for vehicles carrying wheat and sheep. The mining sector benefits unambiguously from the reduction in the price of bulk rail freight.

Where the sectoral results are mixed, it is still the case that gains from one type of reform are projected to offset losses from others, so that all broad sectors are projected to gain from the full package of Hilmer and related reforms.

What is not apparent from the sectoral results in Tables A4.1 and A4.2, but can be seen from the more detailed industry results in Chapter C2, is that very few individual industries are projected to expand or contract dramatically as a result of any individual Hilmer or related reform. As noted, the dairy industry is adversely affected by reform of Commonwealth statutory marketing arrangements while non-bulk and (to a lesser extent) passenger rail are adversely affected by moves to full cost recovery.

But elsewhere the ‘swings and roundabouts’ are anything but dramatic. Instead, the impression is one of modest gains from individual reforms gradually accumulating to a significant gain for most individual industries. The gains are projected to be more noticeable in those sectors exposed to international competition, for which competitiveness is modelled as being a key factor in performance. This applies not just in the export-oriented sectors,

² The materials productivity improvements intended for the rail industry were in fact excluded from the results presented in the draft version of this report.

but also the key import-competing industries, including textiles, clothing and motor vehicles. Elsewhere, industries in the non-traded sector are projected to achieve overall output gains, but generally less than the projected gain in real GDP.

A4.1.3 Sensitivity analysis

Two types of sensitivity analysis have been conducted. The flow-on impacts of Hilmer and related reforms have been examined under an alternative assumption of monetary non-accommodation. Under this alternative assumption about monetary policy, the results have also been examined under both zero and full indexation of the income tax schedule, since with monetary non-accommodation the two indexing assumptions lead to different results.

Secondly, the results have been examined under the assumption that some of the gains from Hilmer and related reforms are taken in the form of reductions in unemployment rather than increases in real wages.

So long as there was sufficient flexibility for prices to adjust relative to each other, the real impact of Hilmer and related reforms should be completely independent of monetary policy. If prices could adjust as freely as assumed in the long run, and if the income tax schedule were also fully indexed, there would be sufficient flexibility for monetary policy not to matter. The growth projections under monetary accommodation (Tables A4.1 and A4.2) are therefore expected to be exactly the same as under monetary non-accommodation but including full income tax indexation (Tables A4.5 and A4.6). The fact that they are not is due to an additional slight price inflexibility introduced into the model for technical convenience.³

Under monetary non-accommodation (or indeed any assumption about the overall price level, other than constancy of the consumer price index), the alternative assumptions of zero and full income tax indexation make a significant difference to the projected revenue implications of Hilmer and related reforms. These are discussed in the next section.

But in order to measure them, the revenue implications have not been allowed to flow back in the form of changes in tax rates or changes in government spending. The feedback effects to the rest of the economy are therefore minimal, explaining the almost total lack of sensitivity of the growth projections to variations on this score (comparing Tables A4.1 and A4.2 with

³ For reasons explained in Chapter C1, government dividend and interest income from public enterprises has been held fixed in nominal terms in two industries. This introduces a nominal rigidity that leads to a small violation of the model's property of price homogeneity, even under full income tax indexation.

Tables A4.3 and A4.4). The variation that does occur is due primarily to the variation that different income tax indexation assumptions produce in household disposable income, and hence in real household consumption spending.

A4.3 landscape (Alandtab.doc)

Table A4.4: Commonwealth reforms: projected macroeconomic and sectoral implications (assuming monetary non-accommodation and zero income tax indexation (per cent))

<i>Results</i>	<i>Reform of:</i>					<i>Total</i>
	<i>Statutory marketing arrangements</i>	<i>Comp. tending</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	
<i>Type of direct impact</i>	<i>price</i>	<i>prod</i>	<i>prod & price</i>	<i>prod & price</i>	<i>prod</i>	
<i>Quality of projection: ^b</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>2</i>	
Real GDP	0.04	0.16	0.62	0.07	0.03	0.91
Real GNP	0.04	0.17	0.68	0.07	0.03	0.99
Real consumption	0.05	0.07	0.63	0.04	0.02	0.80
Real investment	-0.02	0.13	0.21	0.07	0.02	0.40
Real government spending	0.00	0.00	0.00	0.00	0.00	0.00
Export volume	0.00	0.60	1.43	0.21	0.03	2.26
Import volume	-0.08	0.02	0.13	0.03	-0.05	0.06
CPI	-0.07	-0.06	-0.73	-0.07	-0.03	-0.97
GDP deflator	-0.04	-0.16	-0.62	-0.07	-0.03	-0.90
Nominal exchange rate	0.33	0.10	-0.05	0.00	-0.02	0.37
Real pre-tax wage	0.04	-0.02	0.75	0.04	0.03	0.83
Real post-tax wage	0.05	0.00	0.77	0.04	0.03	0.89
Aggregate employment	0.00	0.01	0.07	0.00	0.00	0.08
Aggregate capital stock	-0.02	0.13	0.21	0.07	0.02	0.40
Sectoral outputs						
Agriculture	-0.80	0.29	0.54	0.09	0.00	0.12
Mining	1.23	0.65	1.83	0.25	0.04	4.00
Manufacturing	-0.13	0.22	0.72	0.10	0.02	0.93
Services	0.02	0.09	0.56	0.05	0.01	0.73

^a Percentage change results are reported to two decimal places to facilitate adding up across rows. This conveys a false air of precision. Individual results should be rounded up when considered individually.

^b Quality rating refers to the assessed quality of the model projection made:

- 1 = fair (because of deficiencies in the measurement of direct impacts, deficiencies in the model's ability to capture the real effects of the reforms, etc)
- 2 = medium
- 3 = good

A4.5 landscape (Alandtab.doc)

Table A4.6: Commonwealth reforms: projected macroeconomic and sectoral implications (assuming monetary non-accommodation and full income tax indexing) (per cent)

<i>Results</i>	<i>Reform of:</i>					<i>Total</i>
	<i>Statutory marketing arrangements</i>	<i>Comp. tending</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	
<i>Type of direct impact</i>	<i>price</i>	<i>prod</i>	<i>prod & price</i>	<i>prod & price</i>	<i>prod</i>	
<i>Quality of projection: ^b</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>2</i>	
Real GDP	0.04	0.16	0.61	0.07	0.03	0.90
Real GNP	0.04	0.17	0.69	0.07	0.03	1.00
Real consumption	0.04	0.06	0.58	0.03	0.02	0.74
Real investment	-0.02	0.12	0.18	0.07	0.02	0.37
Real government spending	0.00	0.00	0.00	0.00	0.00	0.00
Export volume	0.01	0.62	1.59	0.22	0.03	2.48
Import volume	-0.08	0.02	0.10	0.02	-0.05	0.01
CPI	-0.07	-0.06	-0.72	-0.07	-0.03	-0.96
GDP deflator	-0.04	-0.16	-0.61	-0.07	-0.03	-0.90
Nominal exchange rate	0.34	0.11	0.00	0.01	-0.01	0.43
Real pre-tax wage	0.04	-0.02	0.73	0.03	0.03	0.81
Real post-tax wage	0.04	-0.01	0.61	0.03	0.02	0.68
Aggregate employment	0.00	0.01	0.07	0.00	0.00	0.08
Aggregate capital stock	-0.02	0.12	0.18	0.07	0.02	0.37
Sectoral outputs						
Agriculture	-0.79	0.29	0.60	0.09	0.01	0.20
Mining	1.25	0.66	1.99	0.26	0.05	4.21
Manufacturing	-0.13	0.22	0.75	0.10	0.02	0.96
Services	0.01	0.09	0.54	0.05	0.01	0.70

^a Percentage change results are reported to two decimal places to facilitate adding up across rows. This conveys a false air of precision. Individual results should be rounded up when considered individually.

^b Quality rating refers to the assessed quality of the model projection made:

- 1 = fair (because of deficiencies in the measurement of direct impacts, deficiencies in the model's ability to capture the real effects of the reforms, etc)
- 2 = medium
- 3 = good

The second form of sensitivity analysis has been with respect to unemployment. As noted earlier, it is difficult to predict what unemployment would be at some point in the future in the absence of Hilmer and related reforms. This is the starting point from which the model's snapshot results are taken. Not only is there uncertainty attached to forecasts of unemployment, there is also uncertainty about the point in time at which they would need to be made. The relevant point in time is after the whole range of Hilmer and related

reforms would have been implemented and their flow-on effects felt. As noted in Chapter A3, the timing of implementation is (of necessity) in some cases extremely uncertain.

It is therefore uncertain whether there would be scope at that point for Hilmer and related reforms, if implemented, to have reduced unemployment to a level below what it would otherwise have been. This would depend on how far above the so-called natural rate unemployment would have been without reform. It would also depend on whether Hilmer and related reforms would lead to a lower natural rate.

As modelled, Hilmer and related reforms are not about extending Part IV of the Trade Practices Act to labour markets. The reforms that have been modelled could nevertheless have an indirect impact on labour markets, particularly insofar as they reduce featherbedding and align the interests of employees more clearly with the competitive position of the firms in which they work. The impact of this on the natural rate of unemployment is uncertain, but likely to be minor.

Unemployment is currently at 9 per cent and is projected fall to 8.5 per cent by the end of the year. The natural rate of unemployment is estimated in recent versions of the Murphy model to be 7.25 per cent. Were this to continue to be the situation for some time on the absence of Hilmer, there might be scope for Hilmer to reduce the unemployment rate by 1.25 percentage points. Were Hilmer also to reduce the natural rate itself by one percentage point, the unemployment rate could fall by 2.25 percentage points.

Table A4.7 compares the total growth impact of Hilmer and related reforms, both Commonwealth and State, Territory and local, under the assumptions of no change, a 1.25 percentage point reduction, and a 2.25 percentage point reduction in the unemployment rate. The latter two options have been modelled as being roughly equivalent to a 15 per cent and 25 per cent reduction in the number of persons unemployed. The results are generated under the assumption of monetary accommodation.

Table A4.7: State and Commonwealth reforms: projected macroeconomic and sectoral implications under alternative assumptions about unemployment (all assume monetary accommodation)
(per cent)

<i>Results</i>	<i>No change in unemployment rate</i>	<i>1.25% reduction in unemployment rate</i>	<i>2.25% reduction in unemployment rate</i>
Real GDP	5.65	7.25	8.33
Real GNP	6.01	7.64	8.74
Real consumption	3.49	4.46	5.11
Real investment	5.99	7.53	8.58
Real government spending	0.00	0.00	0.00
Export volume	15.82	20.91	24.33
Import volume	1.27	1.97	2.46
CPI	0.00	0.00	0.00
GDP deflator	-0.96	-1.07	-1.14
Nominal exchange rate	4.24	5.37	6.11
Real pre-tax wage	3.76	3.19	2.81
Real post-tax wage	3.17	2.71	2.42
Aggregate employment	0.39	1.92	2.96
Aggregate capital stock	5.99	7.53	8.58
Sectoral outputs			
Agriculture	3.96	6.07	7.51
Mining	18.80	24.36	28.04
Manufacturing	5.68	8.03	9.63
Services	3.50	4.72	5.54

^a Percentage change results are reported to two decimal places to facilitate comparison across rows. This conveys a false air of precision. Individual results should be rounded up when considered individually.

Since each percentage point reduction in the unemployment rate would add 1.11 per cent to the labour resource base in use, and since additional capital can also be accumulated in the long term, each additional percentage point reduction in the unemployment rate could be expected to add roughly 1.11 per cent to the real GDP gain. The additional employment growth would slow the rate of real wages growth, and in the model this would also have feedback effects on participation rates and the size of the labour force. The results in Table A4.7 incorporate these feedback effects, but broadly support the basic intuition.⁴

⁴ The results in the first column of Table A4.7, associated with no change in unemployment, differ slightly from those obtained by adding across Tables A4.1 and Table A4.2 for two reasons. First, the results in Table A4.7 were obtained by running all Hilmer reforms in a single simulation. This assumed no change in exports of raw sugar under any of the Hilmer reforms, while Tables A4.1 and A4.2 assumed no change only under reform of State statutory marketing arrangements. Second, the

Additional sensitivity analysis has also been undertaken for several of the individual reform scenarios. The rail scenario was reexamined under a different assumption about the size of CSOs, while all scenarios involving GBEs were examined excluding the impact of competitive neutrality in financing structure, so as to assess the separate influence of this component of the overall reform story. This sensitivity analysis is primarily of interest in the context of the revenue projections, and is discussed in the next section. However, the implications for growth have been reported in Chapter C2.

A4.2 The revenue implications of reforms

The first set of revenue projections are shown in Tables A4.8 and A4.9. As before, the first of these tables shows the impact of reforms that would need to be undertaken jointly by the State, Territory and local governments, while the second shows the impact of reforms that would need to be undertaken by the Commonwealth.

Both sets of projections are made under the assumption of monetary accommodation — the monetary authority is assumed to adjust the rate of money supply growth to keep inflation at the same rate with as without the reforms. The reforms may therefore lead to higher real GDP, but would have no impact on the consumer price index.

The results reported in these tables are given first in real terms. This is equivalent to comparing the projected annual revenue streams for the two levels of government at some point in the future with and without the reforms, but then correcting the comparison for differences in prices with and without the reforms. This means that it is the relative purchasing power of the revenue streams that is being compared.

This raises the question of what deflator should be used to compare the revenue streams. If purchasing power is what matters, the deflators should reflect changes in the prices of the things on which governments spend money. The Commission has calculated separate current expenditure deflators for the Commonwealth and for State, Territory and local governments. These are reported in the more detailed results in Chapter C2. They have the advantage of reflecting differences in the composition of Commonwealth and State and local current expenditure, but are based on current rather than expected future spending patterns. Similarly, governments also undertake capital expenditure, while the Commonwealth also makes substantial outlays in the form of personal benefits payments. So the current expenditure

extent of correction for linearisation error was the same for the results in Table A4.7 as in Tables A4.1 and A4.2, but the extent of the error itself may differ.

deflators do not reflect all of the things on which governments spend money. But the appropriate weights to be given to the current, capital and transfer expenditure components are equally not likely to be current weights, at least not once governments start to 'spend' the revenue gains.

Because of its desire not to prejudge how the revenue gains will be used, or by which level of government, the Commission has instead taken a relatively broad-brush approach to the issue of expenditure deflators. The detailed results in Chapter C2 show that under monetary non-accommodation, when there would indeed be a significant difference in the price level with and without reforms, there is relatively little difference in the projected changes in current expenditure deflators for the Commonwealth and for State, Territory and local governments. Both tend to move broadly in line with the consumer price index.

Where the composition of government spending matters more is in the breakdown between current spending and transfers on the one hand, and capital spending on the other. This is because the biggest relative price change projected to occur in the face of Hilmer and related reforms is that between current consumption and investment. This is because some of the Hilmer and related reforms are modelled as leading to significant reductions in the replacement cost of capital. The Commission has therefore used the GDP deflator to derive its real revenue projections, since the GDP deflator broadly reflects changes in the prices of all goods produced, both consumption and investment goods. However, those who wish to do so may use the alternative deflators provided in Chapter C2 to derive their own real revenue estimates.

As noted, the revenue projections in Tables A4.8 and A4.9 are given first in real and then in nominal terms. It might be thought that under monetary accommodation, with no change in the consumer price index, there would be no difference between the two. The difference occurs because, as just noted, the GDP deflator used to deflate revenues moves relative to the consumer price index by about 1 per cent. The comparison of real and nominal projections is instructive because it helps to establish the sensitivity of the revenue projections to relatively small changes in price deflator. This should then be kept in mind in later scenarios when the gap between the real and nominal projections widens.

A4.8 landscape (Alandtab.doc)

Table A4.9: Commonwealth reforms: projected revenue implications (assuming monetary accommodation)

<i>Results</i>	<i>Reform of:</i>					<i>Total</i>
	<i>Statutory marketing arrangs</i>	<i>Comp. tending</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	
<i>Type of direct impact</i>	<i>price</i>	<i>prod</i>	<i>prod & price</i>	<i>prod & price</i>	<i>prod</i>	
<i>Quality of projection: ^b</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>2</i>	
Real revenue (%)						
Commonwealth	0.02	0.15	0.89	0.07	0.04	1.18
States	-0.09	0.12	0.54	0.04	0.01	0.64
Nominal revenue (%)						
Commonwealth	0.06	0.06	0.97	0.08	0.05	1.22
States	-0.05	0.03	0.63	0.05	0.02	0.67
Real revenue (\$m)						
Commonwealth						
direct taxes	72	83	544	54	15	769
indirect taxes, fees, fines	-46	65	232	20	7	279
income from public enterprises	0	6	118	-1	22	144
other income	1	3	13	1	1	19
subsidies	6	6	34	2	1	50
total	21	151	873	72	44	1161
States						
direct taxes	0	0	0	0	0	0
indirect taxes, fees, fines	-60	72	330	25	9	376
income from public enterprises	6	12	47	4	1	69
other income	2	9	39	4	2	56
subsidies	8	9	48	3	1	69
total	-60	84	369	29	10	432
Nominal revenue (\$m)						
Commonwealth						
direct taxes	97	22	600	56	19	794
indirect taxes, fees, fines	-35	39	256	21	8	289
income from public enterprises	2	2	122	-1	22	146
other income	1	1	15	1	1	20
subsidies	7	4	36	2	1	51
total	58	60	955	75	49	1198
States						
direct taxes	0	0	0	0	0	0
indirect taxes, fees, fines	-47	42	357	26	10	388
income from public enterprises	8	7	52	4	1	71
other income	15	-23	68	5	4	69

subsidies	10	5	51	3	1	70
total	-34	21	426	32	14	458

^a Percentage change results are reported to two decimal places to facilitate adding up across rows. This conveys a false air of precision. Individual results should be rounded up when considered individually.

^b Quality rating refers to the assessed quality of the model projection made:

1 = fair (because of deficiencies in the measurement of direct impacts, deficiencies in the model's ability to capture the real effects of the reforms, etc)

2 = medium

3 = good

A4.2.1 The results overall

Under the assumption of monetary accommodation, reforms at the State, Territory and local government level are projected to generate around \$2,600 million more revenue (net of subsidies) annually than otherwise for State, Territory and local governments, when measured in real dollar or 'purchasing power' terms. In nominal terms the gain is smaller, at \$1,900 million. The gain in terms of purchasing power is larger than the nominal dollar gain because the GDP deflator is also projected to be 1 per cent lower than otherwise.

The same reforms at the State, Territory and local government level are projected to increase Commonwealth revenues (net of subsidies) by almost \$4,700 million in real terms, or \$3,700 million in nominal terms.

If both levels of government had gained equiproportionately from the State reforms, the dollar gain to the States would have been smaller than the dollar gain to the Commonwealth, simply because the State revenue base is smaller to start with. If State revenues had grown at the same rate as the Commonwealth's, they would still have been only \$3,300 million higher in real terms, or \$2,600 million higher in nominal terms.

But revenue growth is not projected to be equiproportional. Commonwealth revenues are projected to be 4.8 per cent higher in real terms (3.8 per cent in nominal terms), while State revenues are projected to be 3.8 per cent higher in real terms (2.8 per cent higher in nominal terms).

Under the same assumption of monetary accommodation, reforms at the Commonwealth level are projected to generate \$430 million more real revenue annually than otherwise for State, Territory and local governments (\$460 million in nominal terms). The gain in terms of purchasing power is smaller than the nominal dollar gain because the GDP deflator is also projected to be 0.04 per cent higher than otherwise.

The same reforms are projected to generate \$1,160 million more real revenue annually than otherwise for the Commonwealth (\$1,200 million in nominal terms).

Had State revenues grown at the same rate as the Commonwealth's, the State gain would have been \$800 million in real terms (\$830 million in nominal terms).

In total, the full package of reforms by both levels of government is projected to increase revenue for State, Territory and local governments by \$3,000 million annually in real terms (\$2,400 million in nominal terms). The same package is projected to increase Commonwealth revenues by around \$5,900 million in real terms (\$4,900 million in nominal terms).

Further examination of the results indicates one of the reasons why State revenues appear to grow more slowly than those of the Commonwealth. A more detailed breakdown of the percentage growth in different types of revenue shows that one item of significance in State budgets, namely, the 'other income' item which includes intergovernment grants, shows essentially no real growth, even though real GDP is projected to be higher than otherwise by over 5 per cent.

This is largely due to the formula for determining Commonwealth grants to the States. The modelling assumes that this component of other revenue is held constant in real terms, consistent with the real terms guarantee that applied prior to the 1994 Premiers' Conference. Had these grants instead grown in line with real GDP, they would have added almost an additional \$1,300 million to State budgets under State reforms alone.

As it is, the 1994 Premier's Conference agreed to maintain financial assistance grants to the States and Territories (initially \$14 billion) in real per capita terms for three years, a guarantee reflecting the expectation that the States and Territories would make credible progress in microeconomic reform, including the implementation of the Hilmer Report. If the per capita component of this guarantee were counted as being contingent on achieving Hilmer and related reforms, and not available otherwise, then roughly 3 per cent growth (in line with population growth over three years) would add a further \$420 million to the State revenue gains from Hilmer and related reforms, in addition to those projected by the model.

On the other hand, revenue projections given here are long-term projections, and abstract from transition costs. In particular, they abstract from the revenue costs the States and Territories might incur in compensating particular losers in the reform process. In the case of reform of taxi licensing, they also abstract from the revenue lost from the sale of taxi licences.

A4.2.2 Sensitivity of the overall results

The model results presented so far can be put in further perspective by comparing them with those obtained under alternative assumptions about monetary policy and income tax indexation.

Tables A4.10 and A4.11 shown the real revenue projections for State, Territory and local reforms and for Commonwealth reforms, respectively, under an assumption of monetary non-accommodation, whereby the price level falls, and under two alternative assumptions about income tax indexation. Tables A4.12 and A4.13 show the revenue projections for the same scenarios, but in nominal rather than real terms.⁵

As expected, the State revenue projections are, at least in real terms, relatively insensitive to assumptions made about monetary policy or income tax indexation. The States are projected to gain \$2,600–2,700 million annually in real terms from reforms initiated within their own jurisdiction, and \$420–430 million from Commonwealth reforms, irrespective of the particular set of assumptions adopted.

Of course, the State projections vary much more dramatically between scenarios in nominal terms. Nominal gains totalling \$2,400 million under monetary accommodation become nominal losses of more than \$500 million under non-accommodation. But this nominal variation is entirely due to the different assumption made about how the monetary authority might allow the overall price level to differ with and without the reforms.

By contrast, one particular monetary policy/indexation assumption makes a noticeable difference to the revenue projections for the Commonwealth, even in real terms.

Under zero income tax indexation, which might be seen as consistent with current policy, but under monetary non-accommodation, which arguably is not, the Commonwealth is projected to gain only \$3,800 million in real terms from State reforms and \$900 million from its own reforms, rather than the \$4,700 million and roughly \$1,200 million under other combinations of assumption. With this particular combination, real Commonwealth revenue is even projected to grow at a slower rate than the States', at least in the face of State reforms.

The reason the Commonwealth is projected to do less well under zero than under full income tax indexation has to do with the fact that under monetary

⁵ The revenue results reported in the draft version of this report were comparable to those in Tables A4.12 and A4.13, except that other income was also reported to show no change in nominal terms.

non-accommodation, prices would be lower than otherwise in the face of Hilmer and related reforms. This in turn has implications for personal income tax collections.

A4.10 landscape (Alandtab.doc)

Table A4.11: Commonwealth reforms: projected real revenue implications (assuming monetary non-accommodation^a)

<i>Results</i>	<i>Reform of:</i>					<i>Total</i>
	<i>Statutory marketing arrangts</i>	<i>Comp. tending</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	
<i>Type of direct impact</i>	<i>price</i>	<i>prod</i>	<i>prod & price</i>	<i>prod & price</i>	<i>prod</i>	
<i>Quality of projection: ^b</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>2</i>	
Real revenue (zero indexation)						
%						
Commonwealth	0.00	0.14	0.68	0.06	0.04	0.91
States	-0.09	0.13	0.53	0.04	0.02	0.63
Real revenue (full indexation) %						
Commonwealth	0.02	0.16	0.89	0.08	0.05	1.19
States	-0.09	0.12	0.52	0.04	0.01	0.62
Real revenue (zero indexation)						
\$m						
Commonwealth						
direct taxes	51	65	304	34	5	458
indirect taxes, fees, fines	-45	66	224	20	7	272
income from public enterprises	2	8	160	1	23	195
other income	1	3	13	1	1	18
subsidies	6	6	34	2	1	49
total	3	135	667	54	35	894
States						
direct taxes	0	0	0	0	0	0
indirect taxes, fees, fines	-59	72	322	26	9	370
income from public enterprises	6	12	50	4	1	74
other income	2	9	37	4	2	54
subsidies	8	9	47	3	1	69
total	-58	85	362	31	10	430
Real revenue (full indexation)						
\$m						
Commonwealth						
direct taxes	72	83	513	54	15	737
indirect taxes, fees, fines	-46	65	220	20	7	267
income from public enterprises	2	8	160	1	23	194
other income	1	3	12	1	1	18
subsidies	6	6	33	2	1	48
total	23	153	873	74	45	1169
States						
direct taxes	0	0	0	0	0	0
indirect taxes, fees, fines	-60	72	313	25	9	358
income from public enterprises	6	12	50	4	1	74
other income	2	9	37	4	2	54

subsidies	8	9	45	3	1	67
total	-59	85	354	30	10	419

^a Percentage change results are reported to two decimal places to facilitate adding up across rows. This conveys a false air of precision. Individual results should be rounded up when considered individually.

^b Quality rating refers to the assessed quality of the model projection made:

1 = fair (because of deficiencies in the measurement of direct impacts, deficiencies in the model's ability to capture the real effects of the reforms, etc)

2 = medium

3 = good

A4.12 landscape (ALandtab.doc)

Table A4.13 Commonwealth reforms: projected nominal revenue implications (assuming monetary non-accommodation)

<i>Results</i>	<i>Reform of:</i>					<i>Total</i>
	<i>Statutory marketing arrangts</i>	<i>Comp. tending</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	
<i>Type of direct impact</i>	<i>price</i>	<i>prod</i>	<i>prod & price</i>	<i>prod & price</i>	<i>prod</i>	
<i>Quality of projection: ^b</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>2</i>	
Nominal revenue (zero indexation) %						
Commonwealth	-0.03	-0.02	0.06	-0.01	0.01	0.01
States	-0.12	-0.03	-0.08	-0.02	-0.01	-0.27
Nominal revenue (full indexation) %						
Commonwealth	-0.01	0.00	0.28	0.01	0.02	0.30
States	-0.12	-0.03	-0.09	-0.02	-0.01	-0.28
Nominal revenue (zero indexation) \$m						
Commonwealth						
direct taxes	27	-38	-103	-10	-14	-137
indirect taxes, fees, fines	-55	22	51	2	-1	19
income from public enterprises	1	1	131	-2	22	153
other income	0	0	0	0	0	0
subsidies	5	2	17	1	0	24
total	-32	-17	63	-11	7	9
States						
direct taxes	0	0	0	0	0	0
indirect taxes, fees, fines	-70	23	125	4	0	81
income from public enterprises	5	4	18	1	-1	27
other income	-10	-44	-175	-19	-8	-256
subsidies	7	3	24	1	0	35
total	-83	-21	-56	-14	-9	-183
Nominal revenue (full indexation) \$m						
Commonwealth						
direct taxes	49	-19	110	10	-4	146
indirect taxes, fees, fines	-56	22	49	2	-1	15
income from public enterprises	1	1	131	-2	22	152
other income	0	0	0	0	0	0
subsidies	5	2	16	1	0	23
total	-11	1	274	10	17	290
States						
direct taxes	0	0	0	0	0	0

indirect taxes, fees, fines	-71	22	118	4	-1	72
income from public enterprises	5	4	18	1	-1	27
other income	-10	-44	-174	-19	-8	-255
subsidies	7	3	22	1	0	33
total	-83	-21	-61	-15	-9	-189

^a Percentage change results are reported to two decimal places to facilitate adding up across rows. This conveys a false air of precision. Individual results should be rounded up when considered individually.

^b Quality rating refers to the assessed quality of the model projection made:

1 = fair (because of deficiencies in the measurement of direct impacts, deficiencies in the model's ability to capture the real effects of the reforms, etc)

2 = medium

3 = good

If no adjustments were ever made to nominal income tax thresholds, then inflation progressing at a steady positive pace would eventually ensure that every taxpayer was in the top income tax bracket. If Hilmer and related reforms slowed the pace of inflation temporarily, then after the same period of time, perhaps only a fraction of taxpayers would be in the top tax bracket. Average tax rates across all taxpayers would then be lower than otherwise, as would real income tax collections. This phenomenon explains why the model projects lower real revenue growth for the Commonwealth under the particular combination of monetary non-accommodation and zero indexation.

Commonwealth personal income tax collections, as well as State payroll tax collections, are also potentially somewhat sensitive to whether the gains from Hilmer and related reforms are taken in the form of higher real wages or lower unemployment. If unemployment is lower than otherwise, so too is real wage growth. The impact on the labour tax base is uncertain (since higher employment may offset lower real wage growth), but under a progressive income tax schedule, lower real wages will also mean that average rates of personal income tax are lower than otherwise.

For technical reasons, the projections for some components of revenue are less reliable when all Hilmer and related reforms are modelled together (as was done to produce the growth projections in Table A4.7), than when Hilmer and related reforms are modelled separately.⁶ For this reason, a full set of revenue projections is not recorded for the cases in which some of gains from Hilmer and related reforms are taken in the form of lower unemployment.

However, the results for PAYE and for payroll tax collections are not subject to this unreliability. They confirm when some of the gains are taken in the form of lower unemployment, the relative growth in real PAYE tax revenue is more subdued. The ratio of real PAYE tax revenue growth to real GDP growth

⁶ When reforms are modelled separately, the revenue implications of certain 'shadow' tax rate changes can be neutralised just for the reforms that use them. The same techniques, when used on all reforms together, neutralise not just the revenue implications of 'shadow' tax rate changes in those reforms, but also the legitimate revenue implications of the same taxes (at unchanged rates) in other reforms.

is projected to fall from 0.92 with no change in unemployment, to 0.78 with a 1.25 percentage point unemployment reduction, to 0.71 with a 2.25 percentage point unemployment reduction. By contrast, the ratio of real payroll tax revenue growth to real GDP growth stays at 0.80 in all three cases.⁷

This analysis suggests that if some of the gains from Hilmer and related reforms are taken in the form of lower unemployment, the overall revenue growth for the Commonwealth will tend to be more subdued than that projected here.

In interpreting the revenue results, it finally needs to be remembered what revenue concept is being measured. The revenue reported is that accruing to the general government sector. This sector excludes GBEs, so that the revenue does not include all receipts by GBEs in exchange for their sale of goods and services. It does include the net dividend and other income payments made by GBEs to their central governments.

As already noted, however, the revenue bottom line is not drawn in exactly the same place as it is in government budget statements. The revenue results include all tax and non-tax revenue, but are also net of subsidies, an item normally included on the expenditure side. As explained further in Chapter C1, this is for the technical reason that the indirect tax information embedded in the model's database is net of subsidies, but there is insufficient information in most cases to accurately net out the subsidy component. Under most reforms, therefore, the separate subsidy figure provided in the revenue projections is only an approximation, but is shown in order to give some guide as to the implications of Hilmer and related reforms for revenue alone, as required by the terms of reference.

In most cases, however, this subsidy indicator suggests that the subsidy component has only minimal impact on the reported revenue result. In the case of rail, however, the impact is critical. For this reason, effort has been taken to more accurately net out the subsidy component for rail reform, particularly in this final version of the report (see Chapter C1).

A4.2.4 State revenue implications of State reforms

Indeed, the single largest item contributing to the revenue gains to State governments from reforms at the State level is the reduction in subsidies to

⁷ The ratios reported here are calculated from scenarios that assume monetary non-accommodation and full indexation, rather than monetary accommodation. However, as already noted, the real results in the two scenarios differ only slightly.

rail authorities. In Table A4.8, this accounts for almost \$900 million of the \$2,600 million net revenue gain.

Table A4.14 gives an alternative real revenue projection for rail reform, one which makes a more generous allowance for CSOs than in the base case. In this alternative rail scenario, a 75 rather than a 50 per cent loading has been added to currently quantified CSOs, as an estimate of their likely long-term value. This higher loading gives target cost recovery ratios of 77 per cent in non-bulk rail and 54 per cent in passenger rail, rather than the 81 per cent and 61 per cent targets assumed originally. It also implies that price increases of only 9 and 6 per cent, respectively, would be required to achieve the new lower targets. The revenue projections in Table A4.14 suggest that real net revenue gains of around \$600 million would still be available.⁸

Table A4.14: State rail reform: projected revenue implications with lower cost recovery target

	<i>Rail</i>
Real revenue (%)	
Commonwealth	0.06
States	0.88
Real revenue (\$m)	
Commonwealth	
direct taxes	37
indirect taxes, fees, fines	8
income from public enterprises	10
other income	6
subsidies	4
total	57
States	
direct taxes	0
indirect taxes, fees, fines	-27
income from public enterprises	-20
other income	17
subsidies	-626
total	596

If the effect of lower rail subsidies were netted out of the overall State revenue projections in Table A4.8, the States would be projected to gain around \$1,700 million annually in real terms from State reforms, rather than the \$2,600 million shown in that table.

⁸ The projections in Table A4.14 were made under an assumption of monetary non-accommodation and full income tax indexation, rather than monetary accommodation as in Table A4.8. However, as already noted, the real results in the two scenarios differ only slightly.

This smaller figure is projected in turn to be the net result of losses in some types of revenue from some types of reform, and gains in other types of revenue from other reforms.

For example, rail reform is projected to result in a loss of indirect tax revenue for both State and Commonwealth governments. As shown in more detail in Chapter C2, the States are projected to lose payroll, property tax and franchise fee revenue as a result of the squeeze on wages and productive capacity. The Commonwealth loses excise revenue, primarily through losses on diesel because of fewer locomotives and their greater fuel efficiency.

However, the State governments gain significant indirect tax revenue as a result of electricity and gas reforms, as well as from a more efficient interstate road transport system. Electricity and gas reforms are strongly beneficial to large electricity users such as aluminium smelting, but are also more mildly beneficial to sectors of the economy that generate significant amounts in non-commodity indirect taxes (such as motor vehicle taxes and stamp duties), particularly wholesale and retail trade, and banking, finance and insurance. Note, however, that the projections for the non-commodity component of State indirect taxes may be generous, for reasons spelt out in Chapter C1.

Electricity and gas reform is also projected to mildly encourage home ownership, generating additional property tax revenue. A more efficient road transport system is projected to generate more non-commodity indirect tax revenue, partly by encouraging vehicle use. This latter effect is projected to more than offset the net loss in non-commodity indirect tax revenue generated on a given vehicle fleet, the result of the reductions in vehicle registration charges.

The State reforms also generate offsetting changes in dividend and income tax equivalent payments received by State governments from their GBEs. These changes are partly the result of pricing and productivity improvements in those GBEs, but more directly the result of adopting more normal financing structures, as outlined in Table A2.2, Chapter C1 and Appendix D3.

To ascertain the strength of this effect, Table A4.15 gives alternative revenue projections for all the GBE reforms modelled, in which the impact of competitive neutrality in financing structure (including the payment of income tax equivalents) has been omitted. The results show that overall, however, the net real revenue loss of some \$30 million from public trading enterprises under rail, electricity and gas, water and port reform would be converted to a

small real gain of roughly \$70 million were the competitive neutrality reforms not undertaken.⁹

In general, therefore, once the impact of rail reforms on State subsidies is netted out, the overall outcome for State, Territory and local budgets is dominated by the outcome for indirect tax revenue.

Table A4.15: State and Commonwealth GBE reforms: projected revenue implications without competitive neutrality in financing structure

<i>Results</i>	<i>Rail</i>	<i>Electricity & gas</i>	<i>Water</i>	<i>Ports</i>	<i>Telecom</i>	<i>Post</i>	<i>CAA & FAC</i>
Real revenue (%)							
Commonwealth	-0.05	1.69	0.07	0.02	0.62	0.08	0.03
States	1.23	0.16	0.10	0.02	0.53	0.04	0.01
Real revenue (\$m)							
Commonwealth							
direct taxes	-55	1248	40	16	543	54	18
indirect taxes, fees, fines	-5	367	29	2	224	20	7
income from public enterprises	10	58	6	1	-134	2	1
other income	5	28	2	0	13	1	1
subsidies	4	46	5	2	33	2	1
total	-49	1655	72	17	612	75	26
States							
direct taxes	0	0	0	0	0	0	0
indirect taxes, fees, fines	-44	509	28	13	321	25	9
income from public enterprises	-43	-418	40	1	50	4	1
other income	16	82	7	1	37	4	2
subsidies	-903	64	7	2	47	3	1
total	832	109	68	13	362	30	10

A4.2.5 Commonwealth revenue implications of State reforms

As expected, the projected impacts of State reforms on the Commonwealth budget is dominated by their impact on direct tax revenue. The overall size of this impact is sensitive to one particular combination of assumptions about monetary policy and the degree of indexation of the income tax schedule.

⁹ Once again, the projections shown in Table A4.15 are under monetary non-accommodation and full indexation, rather than monetary accommodation. However, the real results in these two scenarios differ only slightly.

In real terms, the distribution of the direct tax revenue gains across types of reform tends to vary with the size of the projected changes in real pre-tax wages. This is because PAYE tax revenue exceeds other sources of direct tax revenue initially, so that the projected changes in direct tax revenue are dominated by the changes to PAYE tax revenue in the face of Hilmer and related reforms.

The Commonwealth is also projected to receive about \$1,400 million more in real revenue from indirect taxation, irrespective of the degree of indexation in income taxes. Contributions come from the elimination of taxi licensing, for example, with the Commonwealth gaining from additional sales tax revenue on motor vehicles.

A4.2.6 State revenue implications of Commonwealth reforms

According to Table A4.9, the States are projected to gain around \$430 million in real terms from the Commonwealth reforms considered. Most of this is projected to come from increases in indirect tax revenue, and much of this as a result of increased competition in the telecommunications industry. This reform, like State reform of electricity and gas, is projected to benefit those industries in the services sector, particularly wholesale and retail trade, banking, finance and insurance, that generate significant non-commodity indirect tax revenue (eg. stamp duties, motor vehicle taxes).

A4.2.7 Commonwealth revenue implications of Commonwealth reforms

The Commonwealth is projected to gain just on \$1,200 million in real terms from the Commonwealth reforms considered. Much of it comes from increases in direct taxes, excise and sales tax under telecommunications reform. This reform is also projected to generate around \$100 million in additional Commonwealth income from public trading enterprises, the result of moves to competitive neutrality in financing structure. This latter increase is in contrast to a decline projected in the draft version of this report. The rationale for the revision is given in Appendix D3.

A4.3 The timing of impacts

As noted in Chapter A3, the length of time it would take for these growth and revenue implications to accrue is subject to considerable uncertainty.

This is partly because of considerable uncertainty about the time paths by which Hilmer and related reforms would be implemented. Not only is there variation in the proposed timetable for particular reforms where a timetable indeed exists (part B), but there are also reforms for which an implementation timetable would be impossible to establish.

As noted earlier, for example, even if the coverage of Part IV of the Trade Practices Act were extended tomorrow, it cannot be known with any certainty how long it would take for actions against particular breaches of the Act to be lodged, for a new set of precedents to be established relevant to currently exempt sectors, and for the establishment of those precedents to begin to affect behaviour more generally in those sectors. Given the current costs of legal action, the process could easily take more than a decade.

The second area of uncertainty is in regard to the length of the time lags after implementation before all the economic impacts have flowed through. The model results presented are snapshot results for a single point in time in the future, but there is little guidance in the model results themselves about how far in the future that point might be.

The main guidance is given indirectly, via the assumption about the extent of adjustment in physical capital stocks. It is normally thought that the long-run time frame adopted here, where physical capital adjusts fully, is about ten years after a policy change has been implemented. This interpretation may give reasonable guidance for policy changes that are implemented fully at a single point in time. It is more problematic for productivity improvements that occur only gradually over time. For this reason, it is sometimes said that in the case of productivity improvements, the long run could be substantially longer than ten years.

However, some additional guidance is available from the model comparison exercise documented in Hargreaves (1994). In that exercise, several economic models that explicitly trace time paths were used to trace the impact over time of productivity improvements that were assumed to be introduced gradually over a five year time frame. Annual results were reported for each model for the first ten years, then a final long-run 'steady state' result also given. The long-run steady-state in those models corresponds reasonably closely to long run adopted here. The length of the long run for each of the other models can therefore be judged by how long it took them to get 'close to' their long-run steady-state result.

The results vary across models, but seem to suggest that, across the range of models considered, a great deal of the eventual adjustment in real GDP could be achieved after a period of about four to eight years. In other words, with gradual productivity improvements, the bulk of the flow-on effects need not

take a great deal longer than the productivity improvements themselves. This conclusion is of course dependent on what those models assumed about the ease and nature of the adjustment process, assumptions that are spelt out in Hargreaves (1994) or in the documentation cited there. This conclusion suggests that the key to the timing of impacts lies in the timing of the implementation.

Results at a glance

Growth

Real GDP	5.5 per cent p.a.	\$23 billion p.a.
Real consumption	\$9 billion p.a.	\$1500 per household
Real wages	3.0 per cent increase	
Employment	30 000 more jobs	

Revenue

Commonwealth	\$5.9 billion (6 per cent)
States, Territories and Local government	\$3.0 billion (4.5 per cent)

Contributions

	<i>Commonwealth reforms Total</i>	<i>States, Territories & Local govern ment reforms</i>	
Real GDP	1.0%	4.5%	5.5%
Commonwealth revenue	\$1.2b (1.2%)	\$4.7 b (4.8%)	\$5.9b
States, Territories & Local government revenue	\$0.4b (0.6%)	\$2.6b (3.8%)	\$3.0b

Total revenue	\$1.6b	\$7.3b	\$8.9b
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A5 CONCLUSION

The Commission emphasised at the outset of this report that it is impossible to capture the full implications of Hilmer and related reforms in a modelling exercise. Moreover, time constraints ruled out a complete and thorough assessment of reforms.

Nevertheless, a few general points emerge quite clearly.

First, Hilmer and related reforms are overwhelming good for the Australian economy. The reforms assessed — and quite a number have not been assessed — are projected to increase Australia's GDP by 5.5 per cent or \$23 billion a year. The benefit to consumers works out at about an additional \$1500 spending per year for each household. These gains are projected to be compatible with a 3 per cent increase in real wages and 30 000 extra jobs (or, to the extent that benefits are not taken as real wage increases, employment would grow faster).

Second, the benefit of reforms are widely distributed. Very few industries are projected to lose from reforms. The majority of industries are quite clear winners. With a broad base of reforms, the losses from one reform tend to be offset by the gains from other reforms and the small impacts of individual reforms add up to widespread, substantial gains.

Third, there are large revenue gains for both levels of government from the reforms considered in this exercise. Precision in estimating the revenue implications is more problematic. (The Commission has included the results of quite a number of sensitivity experiments to cater for different judgments). On the base case, the reforms assessed suggest gains to Commonwealth revenue of the order of \$5.9 billion and to the States, Territories and local government of the order of \$3.0 billion in real terms. In proportional terms, the reforms suggest a 6.0 per cent revenue gain to the Commonwealth and a 4.5 per cent revenue gains to the States, Territories and local governments.

The revenue implications remain open to some debate, with alternative projections being put forward. But in none of the alternatives does either level of government lose from implementation of reforms.

Two kinds of 'swings and roundabouts' effects operate on the revenue side. What governments lose in one revenue instrument (eg GBE dividends), they more than pick up in another (payroll taxes). Furthermore, reforms that bring only small gains or even a loss for governments are overwhelmed by reforms that bring substantial gain.

Fourth, there are differences in the contributions of the two levels of government to overall gains. Commonwealth reforms contribute about 1 per cent to the GDP gain and State, Territory and local government reforms contribute about 4.5 per cent. State, Territory and local government reforms contribute about \$2.6 billion to own revenue and about \$4.7 billion to Commonwealth revenue. Commonwealth reforms contribute about \$1.2 billion to own revenue and about \$0.4 billion to State, Territory and local government revenue.

While the revenue implications are obviously important to the governments concerned, there is something even larger at stake for the Australian community. This assessment does not take account of any transitional costs that might arise from implementation of reforms in the short term. But it does point to very substantial gains in terms of economic growth that are waiting to be reaped.

B1 STATUTORY MARKETING ARRANGEMENTS

This chapter explores the implications of Hilmer and related reforms for statutory marketing arrangements. It does so in the context of recent developments across statutory marketing authorities. It suggests possible outcomes of implementing reforms in terms of removing price fixing, compulsory acquisition of produce, production controls and monopoly marketing arrangements. The impact of reforms to statutory marketing arrangements discussed in this chapter form the basis for model experiments designed to evaluate the economy-wide and fiscal consequences of reforms. The direct impacts of reforms are summarised in Chapter A2.

B1.1 Hilmer reforms

Hilmer reforms as agreed to by COAG have implications for statutory marketing authorities and arrangements. Under the agreement, Part IV of the Trade Practices Act will be applied to currently exempt sectors, including statutory marketing authorities. In addition, State and Commonwealth governments agree to review anti-competitive legislation with a view to considering non-legislative approaches to meeting policy objectives which do not unnecessarily restrict competition. Both aspects of the agreement could limit anti-competitive practices undertaken by statutory marketing authorities.

Anti-competitive practices used by statutory marketing authorities include:

- production controls;
- compulsory acquisition;
- price fixing; and
- monopoly marketing arrangements.

Statutory marketing arrangements were designed to: increase returns to producers; stabilise prices, production and incomes; reduce marketing costs and stimulate demand; and provide or deliver assistance. The activities undertaken by statutory marketing authorities have been permitted by:

- special provisions of the Trade Practices Act which exempt them from the Act (although the Hilmer report indicates that use of such provisions has declined in recent years);
- the fact that they do not engage in interstate or overseas trade, which shelters them from Commonwealth powers;

- the fact that they do not operate as incorporated businesses, which also shelters them from Commonwealth powers;
- specific authorisation through Commonwealth, State or Territory legislation; or
- their operation under the shield of the Crown doctrine.

Table B1.1: State statutory marketing authorities

<i>New South Wales</i>	<i>Victoria</i>	<i>Queensland</i>
<ul style="list-style-type: none"> •Banana Industry Committee •Central Coast Citrus Marketing Board •Dried Fruits Board •Meat Industry Authority •Murray Valley Citrus Marketing Board •NSW Dairy Corporation •NSW Grains Board •Poultry Meat Industry Committee •Rice Marketing Board •Sydney Market Authority •Tobacco Leaf Marketing Board •Wine Grapes Marketing Board •Wine Grape Processing Industry Negotiating Committee 	<ul style="list-style-type: none"> •Australian Barley Board •Grain Elevators Board •Melbourne Market Authority •Murray Valley Citrus Marketing Board •Northern Victorian Fresh Tomato Industry Development Committee •Tomato Industry Negotiating Committee •Victorian Broiler Industry Negotiation Committee •Victorian Dairy Industry Authority •Victorian Dried Fruits Board •Victorian Meat Authority •Victorian Strawberry Industry Development Committee •Wine Grape Industry Negotiating Committee 	<ul style="list-style-type: none"> •Committee of Direction of Fruit Marketing •Tobacco Leaf Marketing Board •Queensland Dairy Industry Authority •Queensland Sugar Corporation
<i>South Australia</i>	<i>Western Australia</i>	<i>Tasmania</i>
<ul style="list-style-type: none"> •Australian Barley Board •Poultry Meat Industry Committee •Metropolitan Milk Board •South Australian Dried Fruits Board •Citrus Board of SA 	<ul style="list-style-type: none"> •Chicken Meat Industry Committee •Co-operative Bulk Handling Limited •Dairy Industry Authority of WA •Dried Fruits Board of WA •Grain Pool of WA •Honey Pool of WA •WA Egg Marketing Board •WA Meat Industry Authority •WA Meat Marketing Corporation •WA Potato Marketing Authority 	<ul style="list-style-type: none"> •Egg Marketing Board of Tasmania •Tasmanian Dairy Industry Authority

a list not exhaustive

Statutory marketing arrangements exist under both State and Commonwealth legislation. A selection of State arrangements currently in place is detailed in Table B1.1. Statutory marketing authorities at the Commonwealth level include the Australian Dairy Corporation, the Australian Tobacco Marketing Advisory Committee, the Australian Horticultural Corporation, the Australian Meat and Livestock Corporation, the Australian Pork Corporation, the Australian Wine and Brandy Corporation, the Australian Wheat Board and Wool International.

Marketing arrangements which compel producers to participate, and exclude entry to markets, tend to impose higher prices than otherwise on Australian consumers and user industries. Costs to the wider economy appear in the form of resource costs that result from the misallocation of resources to sectors that are relatively inefficient. Removing such practices will free up resources to be used in more efficient uses and result in increased output and income.

B1.2 Recent developments

In recent years progress has been made in the reform of marketing arrangements for many agricultural commodities. In July 1989, for example, the New South Wales egg industry was fully deregulated. This was followed by deregulation of the South Australian egg industry in May 1992 and the egg industry in Victoria in June 1993. Queensland dissolved its statutory Egg Boards in August 1993, while hen quotas and compulsory acquisition are to be phased out over 5 years. The Trade Practices exemption given to the Australian Dried Fruits Association, which allowed for the recommendation of dried fruit prices, was removed from October 1992. Statutory marketing arrangements for tobacco were terminated on 1 January 1995.

Restrictions on post farm gate marketing in the dairy industry are currently being phased out and grain marketing is opening up in all States. Other reforms have included the movement towards self regulation and introducing competition in the meat industry. Despite these changes, arrangements still exist in the marketing of many agricultural commodities. In addition, the effect of voluntary arrangements remain difficult to ascertain in many cases. In spite of this, the Commission has attempted to quantify the effects of a number of arrangements in a variety of industries. These arrangements are reviewed in the following sections before assessing the likely impact of Hilmer reforms.

B1.2.1 Dairy

The Australian dairy industry is characterised by a fresh milk (also known as market milk) sector and a manufacturing milk sector. From the farm gate, whole milk is processed into liquid fresh milk for consumption or delivered to the manufacturing sector. The manufacturing sector produces short-life products such as yogurt or custard and long-life products such as cheese, butter and milk powders.

Marketing arrangements for fresh milk are administered by State statutory marketing authorities. In general, statutory marketing authorities have the power to control the supply of fresh milk through either supply quotas, compulsory acquisition, price incentives or a combination of these; establish stable prices; and control quality standards, sales and distribution of fresh milk. The arrangements maintain the price of fresh milk above the price of manufacturing milk.

The current marketing arrangements for manufactured milk were established under the *Dairy Produce Act 1986* and are administered by the Australian Dairy Corporation. Market support payments, funded through a levy on total milk production, are made to all exporters of dairy products and have the effect of raising export returns.¹ This mechanism also increases domestic prices above export prices in order to maintain supply to the domestic market. As a result of the Uruguay Round of the GATT, the market support payments will be removed from 1 July 1995 and a new domestic market support arrangement, providing the same level of support, will be introduced.

B1.2.2 Sugar

Most of Australia's sugar is produced in Queensland. The Queensland Sugar Corporation, established under the *Sugar Industry Act 1991*, has the power to compulsorily acquire and market all raw sugar produced in Queensland. Production is regulated through restrictions on the area of land under cane, and cane from a particular field can only be delivered to a specific mill. The distribution of revenue between millers and growers is determined by a cane price formula in which returns from domestic and international sales of raw sugar are pooled. Each mill has a right, the 'mill peak', specified in tonnes of raw sugar, to receive the higher Pool 1 sugar price. The mill peak is the aggregate of individual farm peaks held by canegrowers in the mill area. Raw sugar in excess of the peak attracts the lower Pool 2 sugar price. The

¹ Prior to 30 June 1989 the arrangements included payment of supplementary support payments.

differential is currently being phased down and the land assignment has been increasing slowly.

Prior to 1989 an administered price for raw sugar was set on the domestic market; this was supported by an embargo on imports. Since then, with the introduction of a tariff, the Queensland Sugar Corporation has adopted a landed duty paid import parity pricing policy for sugar sold on the domestic market.

B1.2.3 Rice

Statutory marketing arrangements have been the major form of assistance to rice production. New South Wales is effectively the only rice-producing State. The New South Wales Rice Marketing Board (RMB) was established in 1928 under the provisions of the *Marketing of Primary Products Act (NSW) 1927* and has vesting powers under the *Marketing of Primary Products Act (NSW) 1983*. As a result of a 'merger agreement' approved in 1985, the Rice Growers' Co-operative Limited (RCL) now acts as an agent for the Rice Marketing Board. It undertakes all the marketing functions which were previously carried out by the Rice Marketing Board, including vesting the crop, milling, storage, distribution and marketing of all rice grown. Payments are made to rice growers through a pool payment system whereby the revenue from the sale of rice grown in each season is pooled across markets and the grower receives an average price adjusted for quality and costs.

The RCL's vesting powers limits the supply of Australian rice on the domestic market. This enables higher returns for rice to be captured in this market.

B1.2.4 Tobacco

Marketing arrangements for the tobacco industry include the Tobacco Industry Stabilisation Plan (TISP) and the Leaf Local Content Scheme. The Australian Tobacco Marketing Advisory Committee (ATMAC) was established as a statutory authority under Commonwealth legislation (the *Tobacco Marketing Act 1965*) to administer the TISP. Under the TISP an aggregate marketing quota was determined for each selling season. The aggregate was divided between the three leaf growing States and, in turn, through State Tobacco Leaf Marketing Boards, between individual growers according to their base quota holdings. The State Boards set up under complementary State legislation acquired all leaf and market it on behalf of growers. Minimum prices were set for each grade of leaf through ATMAC. The Leaf Local Content Scheme by which manufacturers agreed to source 50 per cent of their tobacco requirements locally also supported tobacco prices.

Reform of the arrangements enable tobacco processors to increase their imports of tobacco leaf. The tobacco marketing arrangements were recently removed (1 January 1995). Manufacturers and State governments are providing funds for growers to adjust.

B1.2.5 Potatoes

The Western Australian Potato Marketing Authority (WAPMA) exists under the *Marketing of Potatoes Act 1946 (as amended)*. Under the Act the WAPMA has the power to restrict the area of land planted to 'ware' (fresh) potatoes through input controls in the form of area licensing and compulsorily acquires all potatoes that meet a minimum standard for the ware market. Grower returns are based on one of three graded pools, reflecting returns from both the domestic and export market. There is no information on how these prices are set. The authority sells the potatoes to a small number of retailers and some processors.

Processors and growers are free to enter into contracts for the production and sale of potatoes for processing. As with processing, individual growers and exporters are free to enter into contracts for the production and sale of export potatoes.

B1.2.6 Eggs

Prior to July 1989, the Australian egg industry was highly regulated. Regulations established under State legislation generally took the form of: production controls through a system of hen quotas; price regulation; and marketing controls which restrict the ability of producers to supply eggs to domestic and overseas markets. All eggs were vested in the statutory authorities in each State.

As mentioned above the egg industries in New South Wales, South Australia and Victoria are fully deregulated. Queensland commenced phased deregulation in August 1993; the new arrangements in this state are to be reviewed after three years. Statutory marketing arrangements are still in place in Western Australia and Tasmania.

B1.2.7 Sultanas

Equalisation of domestic and export returns for dried vine fruit was permitted under the *Dried Vine Fruits Equalisation Act 1978*. The Act was amended at the end of the 1990 season to facilitate the equalisation of sales returns across export markets only. These arrangements are operated by the Australian Dried

Fruits Board (ADFB). The ADFB exercises export licences which allows it to set minimum prices, terms and conditions of sale, and the maximum quantity to be sold by each exporter to each country. It also specifies which overseas agents are to be used. In many cases the overseas agents are subsidiaries of Australian agents.

On the domestic market, the Australian Dried Fruits Association, a voluntary industry body, had a Trade Practices exemption until October 1992. This allowed it to recommend prices, set the terms and conditions at which dried vine fruit was to be supplied, and conduct a scheme of voluntary equalisation amongst its packer members. The industry continues to conduct voluntary equalisation in the absence of the exemption.

State government involvement in the dried vine fruits industry is by way of statutory boards established in New South Wales, Victoria, South Australia and Western Australia. Under the provisions of their respective Acts, the State Boards have full control over the quality of fruit packed and sold within the State. Their functions also include the registration of packing and repacking establishments.

B1.2.8 Other arrangements

Statutory authorities are involved in marketing grain products, but the effects on prices are estimated to be small. Although most State marketing boards maintain export monopolies and have the power to vest or compulsorily acquire most grains, including malting and feed barley, oats, sorghum and oilseeds, domestic sales are largely free from marketing controls. Malting barley, although subject to domestic marketing controls in New South Wales and Western Australia, is increasingly being sold through permits and licences. These enable growers and maltsters to freely negotiate price contracts. Thus, the extent of any anti-competitive pricing on the domestic market as a result of existing State arrangements is likely to be minimal. Moreover, imports of grains and processed products, such as malt, are duty free and interstate sales of grains and their products are generally unrestricted. Wheat is freely traded following domestic market deregulation in 1989-90. However, Grain Elevator Boards operate in Victoria and Western Australia and control the storage and handling of grain. Although it is possible that reform would lower costs in this area, estimating the impact of Grain Elevator Boards on grain prices in these States was not possible. This impact is however expected to be small. Therefore, for the purpose of this analysis it is assumed that grain prices approximate that of competitive market prices, and that they would not be affected by Hilmer reforms.

All states, except Tasmania, operate a legislatively-established Chicken Meat Industry Committee comprising growers, processors and government-appointed representatives. These committees negotiate the contractual fee chicken processors pay to chicken growers for raising birds. The fee, currently set at 40 to 50 cents per bird, is paid into a pool, and the funds distributed to chicken growers according to their performance. The fee covers all raising costs, excluding the cost of the day-old chicks and the feed which processors supply. As the precise impact of the arrangements on growing fees is unclear, the effects have been excluded from this analysis. In any event, the impact of such arrangements on poultry prices is likely to be small.

State marketing authorities (or equivalent bodies) regulate, to varying degrees, the wholesaling of fruit and vegetables within city boundaries. Regulation confines markets to designated locations, and wholesalers pay rent to the statutory marketing bodies in return for the facilities provided. The effect of such arrangements on wholesale fruit and vegetable prices is difficult to estimate, but in most cases is likely to be minor.

B1.2.9 Estimated impact of marketing arrangements

In each market reviewed in the preceding sections, the Commission has estimated differences between observed prices and prices that could be assumed to prevail if practices that restrain competition did not occur.² These distortions are assumed to result from marketing arrangements.

In order to measure the price distortion it is necessary to identify the price at which the product would be traded in a competitive market — the benchmark price. Generally, it is assumed that for internationally traded products the benchmark price is either import parity or export parity, depending on the likely trading orientation of the product if the market interventions were removed. For non-traded products, like potatoes and eggs,³ benchmark prices are based on those prevailing in similar deregulated markets.

Statutory marketing arrangements may allow for the collection of industry levies. These monies are often administered through government bodies. Government funding of statutory marketing arrangements, however, is insignificant and is not included in the estimates reported here. Further, underwriting payments and funding for industry adjustment, which do not

² Estimation methods are detailed in Plunkett et al (1992).

³ Potatoes and eggs are treated as non-traded. Potatoes are generally low priced per unit weight so that freight represents a relatively high cost. This acts as a disincentive to interstate and overseas trade. Similarly, eggs are a highly perishable product hence trade between the Eastern states and Western Australia and Tasmania is limited.

have an impact on the price to consumers and user industries are excluded. However, where statutory marketing arrangements enable an industry to take advantage of tariff assistance, for example in the sugar industry, the resulting domestic price effects are included in these estimates. Where arrangements operate under complementary State and Commonwealth legislation, it is often not possible to disaggregate price effects.⁴

Tables B1.2 and B1.3 show that the impact of statutory marketing arrangements is significant for some commodities and quite small for others. The arrangements for fresh and manufacturing milk have the largest effect. In 1992–93, these arrangements resulted in producer transfers of \$230 million. Prices for fresh milk are increased by 44 per cent as a result of the arrangements. Tobacco leaf prices were inflated by 62 per cent in 1992–93. Rice, sugar and fresh potato prices increased by 13, 15 and 29 per cent respectively. The transfer to rice producers is relatively low at \$4 million and has remained relatively constant. While the arrangements increased the income of sugar producers by \$24 million in 1992–93, the assistance has declined in line with a falling tariff. For potatoes, where the arrangements are state-based, the producer transfer is smaller.

Table B1.2: Price distortions from statutory marketing arrangements with respect to ex-farm value of production (per cent)

<i>Commodity</i>	<i>1987–88</i>	<i>1988–89</i>	<i>1989–90</i>	<i>1990–91</i>	<i>1991–92</i>	<i>1992–93</i>
Eggs	25	na	9	6	2	1
Manufacturing milk ^a						
Cheese	33	24	13	15	15	12
Butter	67	40	17	23	21	16
Skim and butter milk powder	38	19	19	24	22	14
Whole milk powder	25	17	16	21	22	15
Casein	33	19	19	29	26	15
Fresh milk	48	24	36	28	53	44
Rice	49	14	11	14	14	13
Sugar	57	38	23	54	31	15
Sultanas	na	37	26	31	28	26
Tobacco	34	43	41	35	36	62
Fresh potatoes	na	na	6	6	31	29

a value for manufacturing milk products is measured at the processor's gate.

na not available.

Source: Commission estimates.

⁴ In the case of tobacco, for example, the intervention was allocated to the Commonwealth.

Table B1.3: Producer transfers from statutory marketing arrangements(\$m)

<i>Commodity</i>	<i>1987-88</i>	<i>1988-89</i>	<i>1989-90</i>	<i>1990-91</i>	<i>1991-92</i>	<i>1992-93</i>
Eggs	23	na	21	17	5	2
Manufacturing milk						
Cheese	79	67	57	62	62	53
Butter	28	18	23	23	22	18
Skim and butter milk powder	25	19	19	16	15	10
Whole milk powder	8	6	7	6	5	4
Casein	1	1	1	1
Fresh milk	192	121	176	198	253	230
Rice	14	4	4	4	4	4
Sugar	72	62	50	69	40	24
Sultanas	na	12	10	15	10	11
Tobacco	19	23	23	21	22	30
Fresh potatoes	na	na	1	1	3	3

na not available.

.. less than \$0.5m.

Source: Commission estimates.

The significance of the statutory marketing arrangements for eggs has declined since deregulation in New South Wales in 1989–90, with the price distortion falling to 1 per cent in 1992–93. Given the nature of the product and the extent of deregulation in Eastern Australia, it is unlikely that the costs imposed on consumers and user industries in future years will be significant.

B1.3 The likely impacts of reform

The Hilmer reforms as considered by COAG recommend reviewing most legislation that enables the activities of statutory marketing arrangements. Large benefits are also expected to stem from imposing competitive conduct rules on voluntary arrangements. As legislation is reviewed, the number of voluntary arrangements is anticipated to increase. Anti-competitive conduct by a statutory marketing arrangement could be maintained if a net public benefit could be demonstrated. Some arrangements would be gradually phased out in a transitional phase to facilitate an orderly move to a deregulated market. In general, however, and in the long term, price fixing arrangements, whether mandated or voluntary would disappear.

The Hilmer report suggests that, in addition to the strict application of competitive conduct rules, significant benefits may also be reaped from reforming regulations that restrict agricultural marketing. This refers to

instances in which competition is allowed within rigidly controlled industry structures or quota limitations. This approach would affect some of the statutory marketing arrangements that would not otherwise be affected by the proposed application of competitive conduct rules. The combined effect of both approaches would probably affect most agricultural statutory marketing arrangements.

Anti-competitive aspects of statutory marketing arrangements and restrictive regulations may increase the price of agricultural commodities to consumers and processors. Subjecting statutory marketing arrangements to the Trade Practices Act and related reforms will, in some cases, reduce the price of some commodities. For other agricultural commodities, however, the application of the above reforms may have no impact on prices. Statutory arrangements which permit the collection and distribution of information, market development, and promotion and research activities would have no anti-competitive implications.

It is very difficult to measure the effect of marketing arrangements that involve negotiations between growers and processors. This occurs for example in the wine grape and the chicken meat industries. It is uncertain what would happen to prices in the absence of such marketing arrangements.

Broadly, reforms are expected to lower prices of agricultural products to users and consumers. Returns to producers are therefore expected to fall. Hilmer reforms would, however, not eliminate statutory marketing authorities, but rather constrain their ability to enforce quantitative and price controls.

B1.4 Reforms considered by the Commission

In order to estimate the effect of Hilmer reforms on statutory marketing arrangements, the Commission has had to separate Commonwealth and State arrangements. While this distinction may appear artificial, especially where arrangements exist as a result of a combination of laws and regulations from different jurisdictions, it is warranted in order to present the differential effects of State and Commonwealth reforms. Table B1.4 indicates the type of intervention and whether the arrangement exists under, or was attributed to, State or Commonwealth legislation.

Table B1.5 summarises the reforms included by the Commission. Reforms in the egg industry were not included because support has been disappearing rapidly and is not expected to have a measurable impact. Reform in the market for sultanas was not considered because changes in the difference in price in Table B1.3 could not be attributed to Hilmer reforms. The

Commission assumed that for other industries, the price distortions existing in 1992–93 were representative of those prevailing on 1 July 1994, the date from which the effect of reform is being measured.

Table B1.4: Commonwealth and State Statutory marketing authority interventions in agricultural markets

	<i>Production quotas</i>		<i>Price interventions</i>	<i>Trade interventions</i>	
	<i>Input</i>	<i>Output</i>	<i>Pooled pricing</i>	<i>Export subsidy</i>	<i>Import quota</i>
Potatoes (WA)	s		s		
Eggs	s				
Manufacturing milk			s ^b	c	
Fresh milk		s ^b	s ^b		
Rice	s		s		
Sugar	s		s		
Sultanas			s		
Tobacco					c ^c

a s: State intervention; c: Commonwealth intervention.

b arrangements vary across States

c processors must use 50 per cent local leaf.

Table B1.5: Reforms considered

<i>Commodity</i>	<i>Policy change</i>
Manufacturing milk	remove export subsidies on manufacturing milk remove the all milk levy
Tobacco	remove local leaf content
Market milk	remove state quota and price pooling arrangements
Rice	remove state arrangements
Sugar	remove land assignment
Fresh potatoes	remove input quotas in West Australia

The price distortions described in Table B1.2 are assumed to reflect the application of some market power through marketing arrangements. Reform of these arrangements would reduce prices received by growers and paid by users.

The price distortion on manufacturing milk due to the export subsidy is estimated at 13 per cent. Removing the export subsidy would reduce unit returns to exporters by 11.5 per cent.⁵ Since the export subsidy is financed

⁵ A price distortion of x in Table B1.2 translates into a price reduction of $[1/(1+x)]-1$.

through a levy paid on all milk produced, the corresponding value would be returned to farmers.⁶

The effect of the 50 per cent local content requirement were estimated to increase the price of tobacco leaf by 62 per cent. This means the price would fall by 38.3 per cent when the arrangement terminated.

The elimination of milk and tobacco leaf arrangements reduces the demand for Australian milk and tobacco. Thus prices are expected to fall and quantity produced will be reduced. However, returning the all milk levy (which had the effect of a tax) to farmers will reduce the cost of producing milk, and make Australian producers more competitive; the initial effects of removing the export subsidy on manufacturing milk are therefore expected to be diminished.

In the State arrangements considered, higher returns in agricultural industries have resulted in increased returns to land or other primary factors through higher purchase prices or rental rates. Removing the arrangements is assumed to reduce the producer price of the corresponding commodities and reduce returns to factors involved in their production.

As a result of the reforms the price of sugarcane is expected to fall by 13 per cent (Table B1.2). Demand for sugar is relatively responsive to changes in prices. Thus, while returns per unit may decrease, the industry as a whole is expected to grow. The reduced prices for sugar are expected to come from two sources. The first is the increase in output due to the removal of restrictions on the supply of land. The Industry Commission (1992) estimated that removing land assignment in sugarcane growing would result in a 35 per cent increase in land under sugarcane. This is a lower bound estimate of the potential available for sugarcane growing. Increased land use for sugarcane is assumed to occur at the expense of land used in beef production. Table B1.6 shows that the 35 per cent increased use of land for cane growing requires a 0.11 per cent reduction in land available for beef production.

Table B1.6: Estimated changes in land usage from beef to sugarcane

	<i>Total area (million ha)</i>	<i>New area (million ha)</i>	<i>Area change (per cent)</i>
Sugarcane	0.36	0.49	35.00
Beef	112.76	112.89	-0.11

Source: IC (1992) and Commission estimates based on ABARE data.

⁶ While both State and Commonwealth arrangements for the dairy industry exist separately, it is likely that in practice reforms to both arrangements would be concurrent, as discussed in IC (1991).

The second source of price reductions is economies of scale. The Industry Commission (1992) argued that there was potential for significant cost savings due to larger scale operations if land assignments were liberalised. Thus the reforms considered for the sugarcane growing industry are modelled by imposing sugarcane price reductions and greater land usage of sugarcane, with accompanying decreases in the usage of land for beef farming.

State arrangements for market milk are estimated to increase domestic farm prices for market milk above benchmark prices by 44 per cent. Removing the arrangements would reduce existing market milk prices by an estimated 30.6 per cent. This in turn implies a reduction in the average price of milk at the farm level of 10.6 per cent and a reduction in the cost of pasteurised milk at the plant by 5.0 per cent. Lower prices are not expected to increase the consumption of market milk, but are expected to result in lower returns to factor inputs specific to the industry, such as dairy land. This will reduce the costs of producing all milk and some limited expansion in manufacturing milk production can be expected as a result.

Any expansion in land used in milk production will be at the cost of other activities. However, since dairy activities are conducted on relatively little area, the expansion would have only a marginal impact on any other activity competing for the same resource. This marginal impact is expected to occur in two zones: the high rainfall zone and the wheat-sheep zone as defined by ABARE (Table B1.7).

The wheat sheep zone and the high rainfall zone are respectively 15 and 40 times the size of the land currently used for dairy farms. This high ratio explains the small percentage changes estimated in land usage reported in the second column of B1.7. Where appropriate, these percentage changes were used as elasticities for probable decreases in land used by industries competing for land. Thus it is expected that reforms to market milk arrangements will cause a reduction in the price of market milk and an expansion in the land used by dairy farm industries, with small decreases in land in the high rainfall zone and the wheat sheep zone.

Table B1.7: Estimated land usage changes resulting from a 10 per cent increase in Dairy farm activity

<i>Zones</i>	<i>Area (million ha)</i>	<i>Change required (per cent)</i>
Pastoral	231.34	0.00
Northern Beef	112.76	0.00
Wheat-sheep	82.25	-0.16
High Rainfall	31.07	-0.31
Dairy	2.37	10.00

Source: IC (1991) and Commission estimates based on ABARE data.

The Commission has estimated that the price distortion associated with the RCL acquisition program is in the order of 13 per cent (Table B1.2). Reform of the rice marketing arrangements would therefore reduce rice prices by 11.5 per cent. This reform is expected to result in an expansion of land under rice cultivation.

Input controls restrict the amount of potatoes that can be grown in West Australia. Reform of this aspect of the WAPMA's activities would result in lower prices for ware potatoes and lower returns to growers, as well as an expansion in the area under potato cultivation. Table B1.2 indicates that domestic prices for potatoes are 29 per cent higher than the international benchmark price. The WAPMA however only controls 10.5 per cent of the total production of potatoes in Australia (WA Department of Agriculture). This implies that the WAPMA marketing arrangements cause an average 3 per cent price distortion on all Australian potatoes and that removing the arrangements would result in an average 2.9 per cent fall in domestic potato prices.

The impacts on prices, quantities and other sectoral variables of reform of statutory marketing arrangements are summarised in Box B1.1. These expected impacts form the basis for evaluating the economy-wide and fiscal implications of reforms. The direct impacts of reforms are summarised in Chapter A2.

Box B1.1: Summary of scenarios

Reforms to Commonwealth marketing arrangements: tobacco local leaf content scheme and manufactured milk support.

Change in the price of tobacco leaf (per cent) -38.3

Change in unit returns to exporters of manufactured milk(per cent) -11.5

Change in indirect taxes to dairy farmers (per cent) -21.2

Reforms to State marketing authorities: sugarcane, market milk, rice and WA potatoes.

Change in the producer price of rice (per cent) -11.5

Change in the producer price of potatoes (per cent) -2.9

Change in the cost of pasteurised milk (per cent) -5.0

Change in the producer price of sugarcane (per cent) -13.0

Expansion of land used for cane growing (per cent) 35.0

Reduction in land used for beef production (per cent) -0.1

Impact of a 10 per cent increase in dairy land usage on the high rainfall zone (per cent) -0.3

B2 OCCUPATIONAL REGULATION AND THE PROFESSIONS

This chapter explores the implications of Hilmer reforms for the unincorporated sector in general and a selection of professions in particular. It suggests possible outcomes of implementation of reforms in terms of costs (labour and non-labour), productivity (labour and non-labour) and prices within specific professions. Scenarios presented in this chapter for these key factors of interest form the basis for developing ‘shocks’ for the model experiments summarised in Chapter A2.

B2.1 Hilmer reforms

As presented in Attachment A of the Terms of Reference (Appendix D1), the main elements of the Hilmer reforms of relevance to unincorporated enterprises and to occupational regulation are:

- the extension of the application of Part IV of the *Trade Practices Act 1974* (TPA), which contains the ‘competitive conduct rules’, to all the sectors which are currently exempt, including unincorporated enterprises;
- the agreement by all governments to review anti-competitive legislation, with the objective of considering non-legislative approaches which do not unnecessarily restrict competition; and
- reviews of anti-competitive legislation which may have implications for licensing arrangements for certain occupations and the professions.

Reforms of relevance to occupational regulation include mutual recognition and a review of partially registered occupations, both of which are discussed in Chapter B9.

Application of existing competition law to the unincorporated business sector and the professions is currently limited in a number of ways, including:

- many professional groups have been granted ‘exemption’ by the Trade Practices Commission (TPC) from Part IV of the TPA for their codes of practice on public benefit grounds;
- the constitutional reach of the TPA to the unincorporated sector is restricted to enterprises operating in the Territories or engaging in interstate trade;

- certain conduct by some professions and business structures are exempted by being specifically approved or authorised by government legislation.

B2.2 Recent developments

The TPC has highlighted the inconsistencies between the way different professional groups are organised and the basic principles of the TPA (TPC 1990). The publication of guidelines to assist professional groups in meeting the objectives of the Act and subsequent reviews by the TPC of different occupations have increased the awareness of the potential benefits of competition in this sector of the economy.

The TPCs review of different professions highlight the fact that the gains from competition reform vary across the professions. In particular, the legal profession was identified as having significant potential for reform. On the other hand, professions such as accountancy and architecture were seen as generally competitive (TPC 1992a and TPC 1992b).

While the TPC did not examine the medical profession, the recent Baume Report (1994) into the supply of medical specialists highlights the desirability of changes in the conditions of entry to this section of the profession.

It is difficult to gauge to what extent the TPC's recommendations have been adopted by different jurisdictions. Consequently, Section B2.3, *The likely effects of reform*, addresses the potential for reform within different occupational groups based on information concerning current restrictions in these occupations. It does not consider reforms which may already be in train or proposed by different jurisdictions, but not yet made public.

B2.3 The likely impacts of reform

Information that would permit the measurement of all the gains from bringing the unincorporated sector as a whole under the competition law does not exist. Detailed information about the competitive environment for each industry within each of the jurisdictions would be required.

The unincorporated sector is estimated to account for approximately 30 per cent of total employment within the private sector. Of those, approximately half are employed by sole proprietors and family companies.¹ Many of these

¹ ABS Business Register unpublished data. The ABS warns that because of the nature of the register and the timeliness problems that may occur, Business Register statistics should be seen as broad indicative data at a point in time rather than precise measures.

enterprises may already operate in a competitive ‘small business’ environment. In industrial sectors such as retail trade, where sole traders and family partnerships are very prevalent, they are likely to face strong market pressures, making the exercise of market power and persistence in price maintenance and other anti-competitive practices unlikely.

There are, of course, exceptions and these are significant. As the Hilmer Report argued, many unincorporated enterprises cannot necessarily be classified as small businesses. Professions such as law and accountancy can have very large partnerships (amounting to hundreds of partners in some cases) without being required to incorporate under the Commonwealth’s Corporations Law. Where such partnerships operate within the boundaries of a single state, the practitioners are exempt from the provisions of the TPA and can engage in anti-competitive practices, some of which may be imposed by professional associations or by ‘custom and practice’.

However, it is not necessary to remain unincorporated to avoid current competition law. Occupations and businesses, regardless of legal form, are sheltered from the application of the TPA with respect to anti-competitive arrangements, where these are sanctioned by government regulation. The Hilmer reforms involve reviews of all such regulatory arrangements.

B2.3.1 Types of anti-competitive restrictions

At present, anti-competitive behaviour may arise from a range of government restrictions on professional standards and conduct and from rules of conduct enforced by professional bodies. The main types of restrictions are licensing, functional splitting, restrictions on ownership, fee regulation and restrictions on advertising.

Licensing

Licensing is the term given to regulation which restricts entry into a profession or occupation to those who meet standards stipulated by a licensing authority. Where the licensing scheme does not restrict entry numbers but merely imposes entry standards, the economic effects depend on whether or not these standards artificially inflate the costs of entry. This judgement is necessarily subjective, particularly where public health and safety is an issue.

Some licensing schemes involve a permanent restriction in numbers. A characteristic of such licensing schemes is that the number of services is lower and their average cost higher than in the competitive situation. Examples of this are some areas of the medical specialties, where the supply is determined by practitioners themselves (or boards representing individual specialties). It

is claimed that persistent high earnings by specialists and waiting lists for treatment within the public sector are to a high degree attributable to this restriction in the number of entrants. The benefits of reform of these arrangements are likely to be a greater availability of specialist services within the public sector (which the Commission is not able to measure) and downward pressure on fees, the effect of which has been modelled.

Functional splitting

Functional splitting refers to arrangements under which occupations and professions are not permitted to compete with each other. For example, in some jurisdictions, solicitors cannot act as barristers and barristers cannot act as solicitors. Also in some jurisdictions, conveyancing is reserved for qualified lawyers. This form of demarcation may reduce competition between people with comparable skills and consequently increase the costs to consumers.

Restrictions on ownership

In a number of professions there are restrictions on unqualified people employing qualified staff. For example, unlicensed persons (ie. those without formal qualifications in pharmacy) cannot legally own or operate pharmacies. Restrictions like these may limit opportunities for those with managerial skills, but lacking formal professional qualifications, to have a substantial involvement in the operation of certain businesses. The existence of ownership restrictions often limit the opportunity for the development of practices involving a number of professional services under the same business umbrella (multi-disciplinary). By limiting opportunities for economies of scale and scope and mandating artificial business boundaries, restrictions on ownership increase the cost of running practices.

Fee regulation

Many professions establish scales of fees. Some of these are maximum scales, which become the de facto minimum. Others purport to be related to costs or to give practitioners a 'fair' return. The publication of fee scales which provide guidance about the fees actually charged by practitioners is compatible with competition but not scales of fees which purport to be based on costs or necessary to ensure a reasonable return for practitioners. If this reasoning is followed under the new law, the effect will be lower charges and lower earnings within occupations whose published fees scale are incompatible with competition.

Restrictions on advertising

Restrictions on advertising (which does not mislead or deceive) restrain price competition and limit the flow of information on the range and diversity of services available to consumers. Furthermore, prevent new entrants from attracting clients in the most effective way and benefit existing members of the profession who have an established client base.

B2.3.2 Occupations examined

The following sub-section reviews types of anti-competitive restrictions that exist in a range of occupations and considers the likely effect of removing them. It shows that the likely effect of reform varies considerably, both in magnitude and measurability, amongst these occupations, and indicates which reforms are likely to present the most significant gains.

Accountants

As mentioned earlier the TPC review of Accountants (1992a) found the profession to be generally competitive. Potentially anti-competitive restrictions exist in relation to Tax Agents and Insolvency Practitioners. Accordingly, the likely impact of removing these restrictions was considered. The Commission considered it unlikely that streamlining the registration requirements (of the Tax Act) would lead to a significant benefit. The large numbers of registered tax agents and the diverse range of services available indicate that the industry is already competitive, making significant gains as a result of Hilmer and other reforms unlikely.

Similarly, in the area of insolvency there are a number of potentially anti-competitive restrictions. The existing registration requirements and the system of rotation in compulsory liquidations² were considered by the TPC to be unnecessarily restrictive. Although their removal may lead to certain benefits they are difficult to quantify. The Commission was unable to find any evidence of high returns to insolvency practitioners or of high costs of insolvency services.

Architects

The TPC study of Architects concluded that, despite existing licensing requirements and restrictions on conduct, the architecture profession is

² In New South Wales, Victoria and Western Australia, the Supreme Courts appoint official liquidators on a rotation basis. In other States, appointments are made by the Supreme Court by nomination of the petitioning creditor which is then approved by the Court

generally competitive. This conclusion is based on the fact that architects face a reasonable degree of competition from other building service providers. The low levels of employment currently faced by the profession supports this conclusion. Consequently, architects were not included in this analysis.

Dentists

There are number of restrictions within various State Dentists' Acts that are potentially anti-competitive.

There are restrictions on dentists' employment of dental auxiliaries (hygienists and assistants). These restrictions may include:

- limiting the number of hygienists that a dentist may employ;
- limiting the duties that auxiliaries are qualified to perform; and
- restricting practice by auxiliaries to operating under the supervision of dentists.

There are also regulations that restrict dentists from advertising fees and other associated dental services and there are ownership restrictions which prevent non-dentists from owning or having a controlling interest in dental practices.

Restrictions on the employment of dental auxiliaries

Dental auxiliaries include dental hygienists and dental assistants. Dental assistants are employed by dentists within the practice to assist with a number of simple dental procedures. Dental hygienists are para-professionals who are also employed by dentists to mainly undertake preventative dental procedures.

In many jurisdictions qualified people such as dental hygienists must be directly or generally supervised by a licensed dentist while they carry out their work. There may also be regulations that a licensed dentist must be on the premises at all times when the hygienist (or equivalent) is working. In Queensland, dentists are restricted to only employing one dental hygienist per practice, while in Victoria there can only be one hygienist per licensed dentist. In Tasmania, dental hygienists are not defined within the context of the Act. The duties of a dental hygienist are, as a result, performed by a dentist.

These restrictions on dental hygienists potentially limit their use in dental practices. If there were no restrictions of this nature, dentists might employ more dental hygienists or dental hygienists themselves might practice on their own behalf. The impact of these regulations is likely to be a reduction in the efficiency of production of dental services and an increase in charges.

A US study (Liang and Ogur 1987) examined the effect on the price and quality of dental services of restrictions on the number of hygienists a dentist

may employ and the restrictions on the functions that an auxiliary may perform. The study concluded:

Our findings provide evidence that, in 1970 and 1982, restrictions on the use of dental auxiliaries raised the prices of several dental procedures and the average price of a dental visit. According to our estimates, the individual dental-procedure price increases ranged from 6 to 30 percent in 1970, and from nine to ten percent in 1982. Our estimated increase in the average price of a dental visit is 11 percent for 1970, and 7 percent for 1982. (Liang and Ogur 1987, p.2.)

Other overseas evidence indicates that a good proportion of the procedures performed by dentists could be performed, without a reduction in quality, by persons with less training than a formally qualified dentist. Indeed Moran and Barns (1992) cite a Canadian Government survey which asserted that 80 to 90 percent of general dentist work could be performed by a high school graduate with 20 months post secondary training.

Ownership restrictions

Restricting ownership of practices to licensed dentists potentially increases the costs of dentists' services in two ways. Non-dentists with managerial skills may be better able to manage and run practices than some qualified dentists, thus leading to decreased costs. Increased productivity would thus be generated through a removal of ownership restrictions.

The ownership restriction also limits the ability of the dental industry to take advantage of economies of scope. Multi-disciplinary practices involving a number of professional services under the same business umbrella could conceivably decrease unit costs for all the businesses involved. This implies that the ownership restriction increases the costs of running practices by mandating artificial business boundaries that would not exist if these limitations did not apply.

Advertising restrictions

Restrictions on advertising by dentists reduce the information flows to consumers of dental services and increase search costs by making it harder to compare different practices. Advertising restrictions therefore enable dentists to charge higher fees for the same service or offer lower standards of service for the same fee when compared to an environment where advertising is allowed.

Lawyers

There are potential economic gains due to reductions in the cost of legal services if competition were to be promoted in the legal profession. The gains are likely to come from:

- removing solicitors' current monopoly on conveyancing services;
- altering the relationship of barristers and solicitors; and
- removing a range of restrictions on Barristers.

Conveyancing

Conveyancing services form a large proportion, approximately 32 per cent, of the total expenditure on legal services and are the legal profession's largest revenue earner (in 1987–88 solicitors' firms earned \$810 million). Consequently, the economic impact of increasing competition in the provision of conveyancing services would be substantial. Competition could be enhanced in a number of ways, including:

- the removal of fee scales;
- removal of fee advertising restrictions; and
- removing the barriers to entry caused by licensing.

Fee scales are regulated in all Australian jurisdictions. Some of these are set depending on the jurisdiction, some are maximum fees while others are recommended fees. The fact that the scales increase according to the value of the property suggests that fees are based according to ability to pay rather than cost. The abolition of fees scales could promote the use of more competitive prices.

Regulations prohibiting fee advertising have been relaxed substantially over recent years in all jurisdictions. Queensland is the last remaining jurisdiction with restrictions on fee advertising. However, it has been suggested that these restrictions are not enforced. To the extent that these restrictions are enforced they would effectively reduce the amount of information on relative prices and increase the difficulty of searching for a suitable provider, restricting price competition. A UK study (Love *et.al.* 1991) found that a small increase in advertising resulted in a 21 per cent (£53.44) reduction in the mean quoted fee (£248) for a property valued at £50,000.

In every State, 'legal work' is reserved for licensed legal practitioners. Conveyancing is considered to constitute legal work. Consequently, except in those jurisdictions where there is specific legislation providing 'non-lawyers' with access to the conveyancing market, solicitors have a monopoly over conveyancing services. Currently, conveyancing work is reserved for

solicitors in Queensland, the ACT and Tasmania. In Western Australia, South Australia, the Northern Territory and recently, New South Wales, non-lawyers can provide conveyancing services, subject to licensing conditions.

In Victoria, the absence of legislation enshrining the right of non-lawyers to undertake conveyancing services opens non-lawyers, in the conveyancing market, to legal challenge. The small proportion of the conveyancing market controlled by non-lawyers in this State possibly reflects the uncertain environment in which non-lawyers practise.

There are two areas of potential improvements with respect to licensing:

- removing of the legal monopoly in the remaining jurisdictions; and
- increasing the range of providers beyond licensed conveyancing practitioners and legal practitioners.

The TPC questioned the appropriateness of the duopoly created by a separate licensing regime for non-lawyers in its review of the legal profession.

There appears to be no reason why entry should be limited to two groups of licensed providers and competition could be increased by further expanding the range of providers of conveyancing services. In the United Kingdom, for example, licensed entry is on the basis of demonstrated capacity to deliver services and may be extended to banks, building societies and real estate agents. (TPC 1992c, p.vi.)

The introduction of competition into conveyancing is likely to have significant implications for the cost of conveyancing services. The TPC observed that in jurisdictions where there was competition from non-lawyers fee scales were 50 per cent less than in ones where non-lawyers were able to compete. Such a result is borne out in overseas evidence. A study of conveyancing fees in England between 1984 and 1986 concluded that:

...the threat of competition [from non-lawyer conveyancers] has yielded significant welfare benefits. Price discrimination has been reduced, conveyancing costs have fallen in real terms, and there has been a measurable improvement in consumer satisfaction. (Domberger and Sherr 1989, p.41)

The same study estimated that the threat to remove legal profession monopoly of conveyancing actually led to a reduction in conveyancing fees from £6 to £4 per £1000 of property value over the period under study.

It could be expected that introduction of competition into conveyancing is likely to have significant implications for the income of legal professionals. Incomes could fall. Legal practise cost structures could be improved (reduction in overhead, rationalisation of staff). Fees could be reduced.

Evidence³ suggesting that the overall earnings of solicitors do not reflect substantial monopoly power (ie their rates of return are low in comparison to other professional groups) indicates that the restrictions on entry (supply) are not overly prohibitive. However, the competitive pressures on this occupation could be increased even more if the restrictions on conveyancing were removed.

The relationship between barristers and solicitors

The enforced divisions between barristers and solicitors can be a source of inefficiency. The TPC reported that “the strict division of the legal profession into barristers and solicitors is a phenomenon principally of the eastern States of Victoria, New South Wales and Queensland” (TPC 1994, p.82). Functional separation is maintained as a result of long standing practice and the effect of certain Bar rules. The functional division is supported by the following rules of the Bar:

- barristers are not permitted to interview clients without a solicitor being present;
- a barrister can only be engaged by a solicitor and must not perform the work of a solicitor;
- a barrister cannot conduct business directly with clients (Vic, NSW, Qld); and
- in some jurisdictions (Qld, WA, NT) barristers are prohibited from visiting solicitors’ offices.

The TPC found that:

Functional separation of the market into the activities of barristers and solicitors restricts competition between legal practitioners and can contribute to unnecessary duplication and inefficiency. For example, the requirement for clients to brief a solicitor first to obtain the services of a barrister may mean that two lawyers (or possibly more if a Queens Counsel is required) have to be consulted and paid when the services of one might be adequate . (TPC 1994, p.86)

Available evidence suggests that such duplication could impose additional costs for certain legal services of up to 50 per cent.⁴

The TPC concluded that there is considerable scope to promote increased competition and efficiency in those jurisdictions with the more restrictive regulatory regimes.

³ Blandy R. et al, (1991).

⁴ Moran and Barns (1992).

It is suggested the current functional division enhances solicitors' earning capacity at the expense of efficiency. Ultimately, it is the consumer who bears the expense of this inefficiency. Consequently, the removal of these arrangements would reduce the income of solicitors as well as the fee for this type of legal service.

Regulation of the conduct of barristers

There are a number of regulations and rules of conduct that limit competition amongst barristers. While the types of restrictions vary across Australia, their removal would improve efficiency and consequently reduce the cost of legal advice and representation by barristers. These regulations and rules of conduct include the following:

- partnership arrangements (all jurisdictions);
- exclusive dealing (Vic, NSW and Qld);
- location of chambers (Vic, NSW and WA);
- advertising of services (all jurisdictions); and
- employment arrangements (Victoria).

Although the restrictions on business structure vary according to each State, in general, a barrister must practice as a sole practitioner. Allowing barristers to enter into business arrangements like partnerships or company structures would enable greater use of common facilities, reducing the cost of overhead and allowing for a more efficient delivery of services.

There are also restrictions in most jurisdictions that prevent barristers from practising in the same firms as solicitors. The exceptions are Western Australia, South Australia and Tasmania. Restrictions which prohibit barristers from entering into practice with solicitors, para-professionals or accountants prevent barristers (and solicitors) from taking advantage of economies of scale and scope by tailoring the organisation of their practice to the needs of clients.

The above impediments to versatility are compounded, in that, in a number of jurisdictions barristers are not permitted to appear in court with a person who is not a member of the Bar. This restriction deprives clients of the opportunity for representation by relevant experts and compounds the potential cost associated with case preparation.

There is a requirement in some jurisdictions that members of the Bar conduct their practice from chambers approved by the Bar. To the extent that the rent for barristers' chambers is above usual commercial rates for suitable

accommodation outside chambers these arrangements impose additional costs. These are likely to be passed on to clients wherever possible.

Advertising by barristers is banned in all jurisdictions restricting the flow of information and impeding price competition.

Every barrister must engage the services of a clerk, who has been approved by the Bar Council. The clerk's role is to allocate cases amongst the barristers on his list, to set fee scales and to collect fees. Barristers in turn pay the clerk five per cent of their fees or contribute to his salary. The inability of barristers to select clerks suited to their particular needs and the control that these clerks have over the fees charged by barristers are impediments to competition. The compulsory nature of 'clerking' adds an unnecessary cost to overheads.

Medical professionals

To examine the potential gains from competition in the medical profession it is necessary to examine the effect of the existing regulatory regime. The profession is regulated in a number of ways including licensing, advertising, ownership, fees and the functional split between general practitioners and specialists.

Licensing

To practice medicine it is necessary to be licensed through State Medical Boards. Qualifications are a five or six year full-time course followed by a one year hospital internship. Entry to the medical course is controlled by the universities in collaboration with the Commonwealth Government. Furthermore, there are separate entry requirements to undertake specialist medical practices.

Advertising and ownership

In general the focus of the advertising restrictions appear to be on preventing misinformation rather than impeding the flow of information on price and quality of service. There also appear to be minimal restrictions on who can own a medical practice in Australia.⁵ Consequently there appear to be few gains from relaxing either ownership or advertising restrictions.

⁵ Apart from South Australia where incorporated practices must have a registered practitioner as the majority shareholder, there are no restrictions on who can own a medical practice.

Fees

The Commonwealth government publishes the Medical Benefits Schedule that lists fees on which Medicare benefits are based. Medical Practitioners are not obliged to charge these fees. The Australian Medical Association (AMA) also publishes a guide to fees entitled the “AMA List of Medical Services and Fees”. It is generally a higher overall set of fees. Again, medical practitioners are not obliged to charge these fees.

Price competition is itself constrained by the existence of the Medicare fee schedule which removes any incentive to reduce fees below the level of the rebate. It is beyond the ambit of this study to question the appropriateness of the Medicare schedule.

Functional split

Functional splitting within the medical profession permits medical practitioners to be licensed as specialists in a number of areas. There are separate restrictions on entry for each of the specialists areas of medicine. Entry is controlled by the various specialists colleges; ie. by the profession itself. Higher rebates under the Medicare Benefits Schedule are applicable only for services provided by accredited specialists.

To determine whether the functional split impedes competition it is necessary to consider whether the earnings of medical practitioners are artificially inflated beyond what may be considered as ‘normal returns’ or whether rents are absorbed by inefficient practices.

Remuneration for medical professionals takes a number of forms. They are eligible to receive payments directly from the Commonwealth (Medicare) for services provided. They are allowed to charge a fee (co-payment) in excess of this rebate and in excess of the schedule fee. Further sources of income may include income from services rendered to public patients in hospital, to Veterans’ Affairs patients and compensation cases.

Table B2.1, based on data from the 1986 Census, indicates the net present value of the before-tax life time earnings of ten occupations, using real discount rates of 10 and 15 percent. These values have been calculated by allowing for the age at which employment is assumed to begin in each occupation. They therefore account for forgone earnings which are assumed to be the major component of the cost of acquiring the requisite professional qualifications. As the table indicates, earnings are sensitive to the discount rate, which reflects assessments of the degree of risk involved in occupational choice.

Table B2.1: Net present value of before-tax life-time incomes (at age 15) of ten occupations at real discount rates of 10% and 15% (Census data)

Occupation	10% real discount rate \$'000	15% real discount rate \$'000	Age at which employment is assumed to begin (years)
Doctors	152	66	24
Lawyers	144	66	22
Engineers	136	62	23
Academics	107	44	24
Armed services	193	115	17
Fitters	137	79	17
Builders labourers	127	75	16
Truck/train drivers	121	70	17
Whole workforce (Ave)	130	79	15
Stenographers/Typists	115	67	17

Source: Blandy et. al. (1991).

The evidence indicates that the returns to the medical profession as a whole do not appear to be in excess of the returns to other occupational groups where account is taken of the cost of acquiring the requisite education. This suggests that if there is to be an overall reduction in the cost charged by general practitioners it is likely to come from streamlining existing accreditation requirements. To the extent that this is possible, without compromising health and safety, is a matter of judgment and beyond the ambit of competition policy.

There are potentially significant gains if the principles of competition were to be applied to the provision of *specialist medical services*. The existing control over supply of specialists and the consequences for remuneration of these professionals were the subject of the recent Baume Report (1994).

The report concluded that there is excessively tight control of the supply of trained surgeons and of the number of surgeons in various specialities by the Royal Australasian College of Surgeons (RACS) and by surgical specialists' societies. This control of supply, the report suggested, is reflected in the levels of remuneration enjoyed by most surgeons.

It appears that within certain fields specialist practitioners are well remunerated. For instance, evidence presented to the above mentioned inquiry revealed that most surgical specialists (excepting paediatric surgeons

⁶ The data on incomes was derived from ABS census survey of 1986. Incomes are inflated to June 1989 values by movements in GDP Expenditure deflator. This study is consistent with the findings of an earlier study by Hancock & Richardson (1988) found in Blandy et. al. (1991).

and neurosurgeons) received gross fees (excluding VMO payments) of about \$200,000 or more per annum and that otolaryngologists received, on average, gross fees of just under a \$500,000 during the same period. Although these fees must presumably cover practice costs, such levels of remuneration indicate the possibility that some specialist groups possess a significant degree of market power.

The level of co-payments (ie fees charged in excess of the Medicare rebate) is often considered as an indication of the absence of competition. Table B2.2 shows that for selected classifications of medical provisions the level of co-payments can be significant.

A more conservative estimate of monopoly rents accruing to medical practitioners, and the one used in this study, is the level of 'over-billing' by medical practitioners. Over-billing can be defined as those fees charged in excess of the Medicare fee schedule (see section B2.4 for methodology).

Table B2.2: The level of co-payments for selected medical practitioners by sub speciality of practitioner in 1993

<i>Speciality</i>	<i>Average earnings from fee charged</i>	<i>Average benefit paid</i>	<i>Average earnings through co-payments</i>
Gen. Practitioner (recognised)	133,247	123,430	9,817
Anaesthetist	1,138,778	71,991	41,887
Obstet & Gynaecologists	234,189	151,318	82,871
Cardiologist	318,993	267,050	51,943
General surgeon	194,444	143,428	51,016
Orthopaedic surgeon	191,693	126,424	65,269
Paediatric surgeon	139,517	104,103	35,414
Neurosurgeon	156,370	98,909	57,461
Plastic surgeon	275,996	178,197	97,799
Urologist	274,573	188,020	86,553

Source: Based on data provided by Department of Human Services and Health, Medicare Estimates and Statistics section. Data is based on income from claims processed in 1993–94.

Optometrists

There are a number of regulations within State Acts that are potentially anti-competitive.

Occupational regulations for consulting practice prohibit optical dispensers (who are permitted to advertise) from consulting. Non-optometrists cannot own a consulting practice. There are also generally consistent national restrictions on advertising, especially fee advertising.

Restriction on consulting services for optical dispensers

This restriction prevents non-professional firms from selling eye examinations and eyeglass or contact lens prescriptions (ie. offering the one-stop shop for the services of dispensing optometrists). To the extent that there are economies of scope in the joint production of eye examinations and eyeglasses or contact lenses, the restriction forces non-professional optical firms to incur the higher cost of producing eyeglasses and contact lenses alone. The American Association of Optometrists and Opticians estimated that state laws which force optometrists and vision care specialists to practice in a side-by-side configuration rather than in a single practice increase the construction costs of practitioners' offices as much as US\$20,000 per office and their operating costs at least another US\$10,000 per office per year (Haas-Wilson 1989).⁷

Ownership restrictions

Restricting ownership of practices to licensed optometrists potentially increases the costs of optometrical services in two ways. To the extent that there are non-optometrists who are better able to manage and run practices than some licensed optometrists the opportunities for cost reductions are lost, thus leading to increased costs. Also corporations would conceivably be able to take advantage of potential economies of scale in the optometrical industry. This implies that increased productivity and thus lower costs or better service levels would be generated through a removal of ownership restrictions.⁸

Advertising restrictions

The effects on price competition of advertising restrictions in consulting optometry parallel the dentistry profession. Therefore the analysis used to describe the effects for dentists is applicable for optometrists.

Pharmacists

Occupational regulations for pharmacists in all jurisdictions of Australia place restrictions on the number of pharmacies a pharmacist can own (or have an interest in) and restrict non-pharmacists from pharmacy ownership. There are also restrictions on the ability to open new pharmacies that wish to dispense PBS prescriptions.

⁷ The figures quoted applied to the United States in 1985.

⁸ One of the arguments for the restriction is that non-optometrists would provide lower standards of service compared to optometrists. However, with increased productivity, firms will either be able to provide the same level of service at reduced cost to the customer or would be able to provide increased levels of service for the same cost.

All these restrictions have potentially anti-competitive effects.

Industry sources⁹ advise that pharmacists have control over the prices of an estimated 50 per cent of the prescriptions they dispense.¹⁰ The effects of removing the anti-competitive arrangements outlined below will thus affect this section of the pharmacy business.

Restrictions on new pharmacies

There are restrictions on pharmacists seeking to establish new practices intending to dispense PBS prescriptions. The pharmacists must prove to the Health Insurance Commission that there is a perceived need for a new pharmacy in the proposed area. The effect of this restriction is to create a geographical monopoly that restricts consumer choice and enables existing pharmacies to charge higher prices than would prevail in a more competitive market. The competitive effects of these restrictions can be estimated by reference to similar arrangements in other sectors of the economy. An analogous monopoly is that possessed by newsagents over the distribution of newspapers. It has been estimated that this monopoly increases the costs of providing newspapers by 30 per cent (see section B3.7).

Ownership restrictions

Restrictions on the number of practices a pharmacist can own (or have an interest in) limit potential economies of scale and may result in higher unit costs of operating individual pharmacies. The abolition of the restriction would increase the productivity of the industry and reduce the costs to the economy in general.

The prohibition on ownership by non-pharmacists potentially increases the costs of running a pharmacy. It is possible that some non-pharmacists could have particular skills in business management and retailing that would exert downward pressure through competition on the running costs of pharmacies. Productivity within the retail pharmacy industry may improve under the influence of these entrepreneurial skills.

Allowing non-pharmacists to own pharmacies would also enable the industry to take advantage of economies of scope. For example, pharmacies owned by supermarkets could place both services under the same roof and thus decrease

⁹ per.comm. with Health Insurance Commission and various State Pharmacy Boards.

¹⁰ Approximately 90 per cent of drugs sold by pharmacies are included in the PBS scheme. The pricing arrangements for PBS prescriptions are that pharmacists are permitted to set their own prices for prescriptions that are under \$16.20 on the PBS schedule. A large proportion of prescriptions sold by pharmacies are for drugs under this PBS price.

the costs of selling pharmaceutical products. This implies that the costs of running a pharmacy are artificially high due to the ownership restriction.

Real estate agents

It is clear that there are a series of potentially anti-competitive elements within the real estate industry, notably maximum commission fees and licensing arrangements. The PSA (1992) considered that the licensing requirements for real estate agents were too onerous and recommended that the requirements in each jurisdiction be reduced to the minimum consistent with the necessary consumer protection. Furthermore, most jurisdictions have moved or are moving to de-regulate commission fees.

Based on current information, the Commission was unable to identify the potential gains of reform to the industry. The Commission believes that it is necessary to gain more information about the potential effects of changes to these restrictions.

Veterinary surgeons

There are licensing and advertising regulations that apply to Veterinary Surgeons in Australia. In addition only licensed veterinary surgeons are allowed to own veterinary surgeries. There are no controls on fee setting; however, some regional divisions of the Australia Veterinary Association (AVA) provide fee guidelines for members. Other jurisdictions conduct irregular fee surveys.

Although these regulations are anti-competitive, the impact of removing them is not likely to be substantial.

Other occupations

A number of other occupations were reviewed including:

- Land surveyors;
- Consulting engineers; and
- Quantity surveyors.

It was considered that the anti-competitive arrangements (if any) within each of these occupations were not significant enough for inclusion in this study.

B2.4 Reforms considered by the Commission

This section focuses on those occupations where there may be significant benefits from the removal of anti-competitive regulatory arrangements. It

examines the impact of removing specific restrictions for the following occupations:

- Dentists
- Lawyers
- Medical professionals
- Optometrists
- Pharmacists.

To model the effects of introducing competition into these professions, a range of specific changes were discussed in Section B2.3. These changes are discussed below along with evidence as to the likely tangible benefits of introducing competition in each of the professions. Table B2.3 summarises the restrictions in each of the occupations that would have to be removed to enable these benefits to be achieved.

Implementation of the reforms considered would primarily be the responsibility of the States. An extension of the Trade Practices Act would have implications for the employment supply restrictions that exist in the medical profession and the rules of legal profession prohibiting barristers from direct access to clients. However, State regulation underpins each of the other restrictions that have been identified. As such reform of these occupations could only occur if individual State governments undertook to review the range of restrictions that have been identified.

B2.4.1 Dentists

Given the absence of information on the likely effects of ownership and advertising restrictions, this study has concentrated on modelling the benefits of removing restrictions on the employment of dental auxiliaries, using available evidence.

As noted, Moran and Barnes (1992) cite evidence that 80 to 90 per cent of general dentist work could be performed by a high school graduate with 20 months post-secondary training. This would lead to a labour cost saving in the dentistry industry. The size of the direct cost saving can be quantified by imagining that 80 per cent of dentists are replaced by dental technicians.

The Commission has obtained unpublished data from the 1990–91 Population Census giving a very detailed breakdown of employment by occupation, industry and State. The data can provide a breakdown of national employment in ASIC 8152, the dentistry industry, by broad ASCO occupation. An initial notional wage bill can be constructed for the dentistry industry by multiplying occupational employment by occupational wages per employee, in this case

obtained from the wage and employment data for the health industry in the HILORANI database. A new notional wage bill can be similarly constructed after assuming that 80 per cent of those in the professional occupation (primarily dentists) are replaced by an equal number of people in the paraprofessional occupation (a category that includes dental technicians).

This results in an estimated direct labour cost saving of 4.35 per cent in the dentistry industry. Since employment in dentistry is 4.4 per cent of total employment in health, the corresponding direct labour cost saving is 0.19 per cent for the health industry as a whole. This has been modelled as a 0.19 per cent improvement in labour productivity in the health industry, given that the current employment restrictions appear to reduce efficiency rather than inflate the returns to dentists.

B2.4.2 Lawyers

While there may be significant benefits from removing the range of restrictions on the conduct of barristers, these are difficult to quantify. Consequently, this study has concentrated on modelling the potential improvements in allowing non-lawyers access to the market for conveyancing services and in altering the functional split between barristers and solicitors allowing barristers to deal directly with clients.

The available evidence suggests potential cost savings of up to 50 per cent from allowing non-lawyers access to the conveyancing market. As before, data from the 1990–91 Population Census can be used to calculate the corresponding cost saving for the legal services industry as a whole. Restrictions effectively apply in Victoria as well as in Queensland, Tasmania and the ACT. Employment in the legal services industry in those jurisdictions accounts for 48 per cent of total legal service employment. Conveyancing accounts for 32 per cent of the business of solicitors, or 26 per cent of total legal business. A 50 per cent cost saving on conveyancing in those jurisdictions therefore translates into a 6.2 per cent cost saving for the legal services industry as a whole.

The available evidence also suggests cost savings of up to 50 per cent by allowing barristers direct access to clients. Such access is currently denied in Victoria, New South Wales and Queensland, States which account for 83 per cent of total employment in the legal services industry. Barristers throughout Australia are also prevented from advertising, but overseas evidence suggests that removing advertising restrictions in the legal area can reduce costs by between 5 and 21 per cent, with a mid-range estimate of 13 per cent. Advice from the Law Institute of Victoria is that there are 3,065 barristers in Australia,

compared with around 26,000 solicitors. Allowing barristers access to clients in Victoria, New South Wales and Queensland would therefore translate into a 4.4 per cent cost saving for the legal services industry as a whole. Allowing barristers throughout Australia to advertise could reduce the overall cost of legal services by a further 1.4 per cent.

Taken together, these reforms could therefore lower the overall cost of legal services by 12 per cent. This would be equivalent to a 1.53 per cent cost reduction for the broader model industry Business services nec. The direct impact has been modelled as a 1.53 per cent improvement in the productivity of all inputs into Business services nec, given that at least some of the restrictions applying to legal services appear to reduce efficiency.

B2.4.3 Medical professionals

With respect to the medical profession the major focus of this study is that some specialist groups possess market power as a result of controls placed on entry into those groups. The level of ‘over-billing’ has been used as an indicator of the market power of medical specialists.

Using data provided by the Department of Human Services and Health (selections of which are shown in Table B2.2), average co-payments can be expressed as a proportion of the fee charged for all medical specialties. Some of this co-payment covers the gap between rebates (benefits paid) and the Medicare schedule fee. This latter gap is known to be 15 per cent in the case of non-hospital procedures and 25 per cent in the case of hospital procedures. Therefore, ‘overbilling’ was deemed to exist only when the ratio of co-payment to fee charged was greater than 15 per cent for specialties thought to practise solely or mainly outside hospitals, and greater than 25 for specialties that practice mainly in hospitals.

According to this criterion, most non-specialists and some types of specialist were judged not to charge excessive fees. A total dollar figure for the excess co-payments could be calculated by multiplying the average excess co-payment for each affected specialty by the number of doctors practising that specialty, also provided by the Department of Human Services and Health. The sum total of excess co-payments amounted to 1.25 per cent of the total dollar fees charged by all specialists.

This result could be combined with 1990–91 Population Census data on the number of medical specialists employed in each input-output industry to calculate the implied percentage reduction in wage costs of the broad professional occupation in each industry, in the event that the wages of medical specialists were reduced by 1.25 per cent. Elimination of excessive

co-payments by medical specialists was then modelled via these corresponding reductions in the wages of the professional occupation in each industry. The reductions amounted to 0.17 per cent in the health industry, and much smaller reductions in the other industries employing some medical specialists (primarily in business services nec, public administration, education and welfare). The removal of restrictions on entry to medical specialist professions has been modelled as a reduction in the earnings of those specialists rather than as a productivity improvement, based on the judgment that any monopoly rent element in current charging is retained by the specialists rather than dissipated in higher business costs.

B2.4.4 Optometrists

Although there are potential gains if existing controls on ownership and advertising were removed, there is little information upon which to base an assessment. Consequently, with respect to optometrists, this inquiry has focused on modelling the potential savings in fixed and operating costs if the restrictions on optical dispensers offering consulting services were removed.

The potential cost savings in 1985 US dollars have been converted to Australian dollars and inflated to current prices, in order to compare them with information on the current construction and operating costs of optometry in Australia today, provided by the Australian Optometrical Association. Although the comparison is very rough, it suggests potential savings in construction costs of about 20 per cent and in operating costs of around 10 per cent from being able to operate consulting and optical dispensing operations from one premises. Using 1990–91 Population Census data, these translate into a 0.29 per cent saving in construction costs and a 0.14 per cent saving in operating costs for the health industry as a whole. These cost savings have been modelled as productivity improvements reducing the replacement cost of capital and the total current operating costs in the health industry, respectively.

B2.4.5 Pharmacists

The Commission has been unable to ascertain the extent of the benefits of providing non-pharmacists (with managerial skills) the opportunity to own and manage pharmacies. Instead this study has focussed on modelling the potential gains of removing the geographic monopoly currently enjoyed by existing pharmacies and the removal of the restriction limiting the number of pharmacies a pharmacist can own.

The potential scope for reductions in drug prices as a result has been gauged from evidence, presented in Chapter B3, on the impact of a similar easing of the monopoly position of newsagents. There the potential savings in distribution costs were of the order of 30 per cent. Since pharmacists have a degree of control over price on 50 per cent of the prescriptions they dispense, a 30 per cent cost reduction on this 50 per cent of dispensing business could reduce the overall retail margin on pharmaceuticals by 15 per cent. The impact has been modelled as a 15 per cent productivity improvement on the retail margin on pharmaceuticals sold to households, on the grounds that increased competition in the pharmacy business is likely to encourage economies of scale in pharmacy operations.

Box B2.1: Summary of scenario

<i>Occupation</i>	<i>Anti-competitive restriction to be removed</i>	<i>Estimated benefits of reform</i>
Dentists	Employment restrictions on the work of dental hygienists (or equivalent).	Labour cost saving of 4.35% in the dentistry industry translating to a 0.19% improvement of labour productivity in the health industry.
Lawyers	Employment restriction on non-lawyers from providing conveyancing services. Barristers restricted from direct access to clients and from advertising.	12 % reduction in legal services costs causing an increase in the productivity of all inputs into Business services nec of 1.53%.
Medical specialists	Employment supply restriction	1.25% decrease in medical specialists wages causing a 0.17% reduction in wages for the health industry. Smaller reductions in the other industries employing some medical specialists.
Optometrists	Optical dispensaries are restricted from selling consulting services.	Savings in construction costs of about 20% and in operating costs of around 10% translating to a 0.29% saving in construction costs and a 0.14% saving in operating costs for the health industry.
Pharmacists	Restrictions on new pharmacies. Restrictions on the number of pharmacies a pharmacist can own.	15% reduction in the retail margin on pharmaceuticals.

ANNEX: Summary of selected occupational regulations and conduct rules

Dentists

<i>Regulation</i>	<i>NSW</i>	<i>VIC</i>	<i>QLD</i>	<i>SA</i>	<i>WA</i>	<i>TAS</i>	<i>ACT</i>	<i>NT</i>
Separate licensing of specialists	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regulation of entry to specialist profession	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fee advertising prohibited	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ownership or majority ownership of practices restricted to profession	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employment restrictions on dental hygienists	No	Yes	Yes	No	No	No ¹¹	No	No
Dentists to generally or directly supervise work of dental hygienists	Yes	Yes	Yes	Yes	Yes	No ¹	Yes	Yes

Lawyers¹²

<i>Regulation</i>	<i>NSW</i>	<i>VIC</i>	<i>QLD</i>	<i>SA</i>	<i>WA</i>	<i>TAS</i>	<i>ACT</i>	<i>NT</i>
Fee advertising for solicitors prohibited	No	No	No ¹³	No	No	No	No	No
Barristers prohibited from advertising	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Court set fee scales ¹⁴	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Statutory body set fee scales ³	No	No	No	No	Yes	No	No	No

¹¹ In Tasmania there is no equivalent occupation of Hygienist identified within the legislation.

¹² There is a range of other regulations relating to lawyers that are not considered in this table or for this study. See TPC (1994) for a full list of other regulations, pp.257–268.

¹³ In Queensland legislation prohibiting advertising is to be amended. The Queensland Law Society has in the meantime issued advice to solicitors in Queensland the fee advertising is permitted.

¹⁴ From TPC (1994).

Conveyancing work restricted to lawyers	No	Yes	No	No	No	Yes	Yes	No
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Lawyers continued

<i>Regulation</i>	<i>NSW</i>	<i>VIC</i>	<i>QLD</i>	<i>SA</i>	<i>WA</i>	<i>TAS</i>	<i>ACT</i>	<i>NT</i>
Professional body recommended fee scales ³	No	Yes	Yes	No	Yes	No	No	No
Barristers only to act on Solicitor's instructions ¹⁵	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Barrister's attendance at a solicitor or client's office prohibited unless exceptional case	No	No	Yes	No	Yes	No	Yes	Yes
Queens Council may appear without a junior ¹⁶	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Bar members not to appear with non-counsel	No	Yes	Yes	No	No	No	No	No
General prohibition on Barristers appearing without an instructing solicitor	No	Yes	Yes	No	Yes	No	Yes	No
Solicitor corporations prohibited	No	No	Yes	No	Yes	No	No	Yes
Solicitor profit sharing with non-practitioners ¹⁷	Yes	No	No	No	No	No	No	No
Barrister partnerships prohibited	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Professional body's consent needed for employment in a solicitors office	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Co-operative arrangements with other barristers allowed	Yes	No	Yes	Yes	No	No	Yes	Yes

¹⁵ In some States this is permitted for some patent cases and non-contentious matters.

¹⁶ May assume juniors presence and decline to appear without one in some States.

¹⁷ There are some limited exceptions to this. See TPC (1994), p.266.

Lawyers continued

<i>Regulation</i>	<i>NSW</i>	<i>VIC</i>	<i>QLD</i>	<i>SA</i>	<i>WA</i>	<i>TAS</i>	<i>ACT</i>	<i>NT</i>
Use of chambers provided by or approved by the professional body	No	Yes	Yes	No	Yes	No	No	No
Clerks approved by the professional body	No	Yes	No	No	No	No	No	No
Prohibition of office sharing with non-practitioners	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Medical Practitioners

<i>Regulation</i>	<i>NSW</i>	<i>VIC</i>	<i>QLD</i>	<i>SA</i>	<i>WA</i>	<i>TAS</i>	<i>ACT</i>	<i>NT</i>
Regulation of entry to specialties	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fee advertising prohibited	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Optometrists

<i>Regulation</i>	<i>NSW</i>	<i>VIC</i>	<i>QLD</i>	<i>SA</i>	<i>WA</i>	<i>TAS</i>	<i>ACT</i>	<i>NT</i>
Fee advertising prohibited for consulting practices	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sole ownership or majority share holding of consulting practice restricted to profession	Yes	Yes	Yes	No	No	Yes	Yes	No
Optical dispensers prohibited from selling consulting services	Yes	Yes	Yes	Yes	Yes	No ¹⁸	Yes	Yes
Incorporation of practice prohibited	Yes	No	No	No	No	Yes	No	No

¹⁸ There is not a separate optical dispensing industry in Tasmania.

Pharmacists

<i>Regulation</i>	<i>NSW</i>	<i>VIC</i>	<i>QLD</i>	<i>SA</i>	<i>WA</i>	<i>TAS</i>	<i>ACT</i>	<i>NT</i>
Sole ownership or majority share holding of pharmacy practice restricted to profession	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Incorporation of practice prohibited	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Restrictions on the establishment of new pharmacies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Restrictions on the number of pharmacies a pharmacist can own	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

B38. REGULATORY RESTRICTIONS ON COMPETITION

This chapter explores the implications of the proposal, as part of the Hilmer reforms, to review legislation and regulation to remove any unnecessary restrictions on competition. Key examples of what could be a very wide reform agenda are selected. Scenarios developed, particularly on cost savings, form the basis for the ‘shocks’ used in model experiments outlined in Chapter A4.

B3.1 Hilmer reforms

Regulation by all levels of government was regarded by Hilmer as the greatest impediment to enhanced competition in many key sectors of the economy. Accordingly, the Hilmer Review said that regulatory reform should be progressed more broadly, and that should be done by reversing the onus of proof (Hilmer p. 190). Thus, the overriding principle to apply is that there should be no regulatory restriction on competition unless it is clearly demonstrated to be in the public interest.

Governments have accepted this general principle, but have not endorsed some of the related mechanics suggested by Hilmer (see Appendix D2). The principal means by which governments are expected to implement the general principle is by adopting systematic reviews of their legislation.

The purpose of these reviews is to eliminate anti-competitive effects of all regulation (including legislation). The programs of reviews would commence in 1996 and be completed by the year 2000.

B3.2 Likely impacts of reform

While such reforms can be expected to generate substantial gains, their very nature is such that it would be foolish to attempt comprehensive quantitative estimates of their impact. Changes would range over matters of vast scope (as wide as that covered by government legislation and regulation), and there is great uncertainty as to the timing of measures because priorities will be in the hands of individual jurisdictions.

Some feel for the measurement difficulties has been obtained by examining what was achieved already by the programs of phased repeal of regulation conducted in NSW, Victoria and Queensland in recent years.

For example, in Victoria by 1992 all regulations made in the ten years 1972-1982 were subjected to sunset provisions. The allied reviewing process resulted in many being revoked or modified. Remaining regulation was examined by the Victorian Regulation Review Unit and subsequent negotiations with regulatory agencies led to *additional* changes resulting in estimated savings of \$70 million a year. Examples of savings were the elimination of some unnecessary reporting requirements in cases of work-related accidents, and rescinding of some unnecessarily onerous regulations imposed on operators of caravan parks. While the total savings from all changes to this set of regulations (1972-1982) were not measured, they are judged to have been two or three times the measured additional savings of \$70 million a year.

In Queensland, methodical attempts have been made to measure the impact of some specific significant reforms: examples are regulations on the production and distribution of bread and the abolition of hen/egg quotas. In the case of bread deregulation, government was estimated to save \$3 million over 10 years, business to gain \$9 million, and consumers to lose \$15 million. The last of these is quite misleading because it reflects only price rises for some bread, whereas consumers clearly have benefited by a much wider range of bread types available at all times, and by substantial price discounting of bread; these benefits were not reflected in the measure chosen. In the case of deregulation of the hen/egg industry, consumers were estimated to be \$120 million better off, although government and producers had incomes reduced to a similar extent as licence fees and monopoly profits were lost.

Both of these Queensland examples illustrate key difficulties in measuring the economic impact of reduced regulation:

- savings tend to be measured in a mechanistic way, and benefits are difficult to gauge, so that the true economic impact tends not to be assessed; and
- often very large redistributive effects can occur as some groups lose privileges that regulations had previously bestowed, but the size of these transfers may not provide a reliable indicator of the size of the true economic gains (many of which do not emerge until the longer term anyhow).

Although substantial legislative reform has been achieved in NSW, the Commission was not able to obtain any quantitative indication of what has been achieved. A very crude indicator is that over the past five years some

550 instruments (covering 7000 pages) were repealed in NSW, but this gives no clue as to the economic impact of the program.

In brief, measuring economic gains from individual cases of legislative review and associated reform is fraught with difficulty. Those difficulties are even more insurmountable if comprehensive measures are attempted.

B3.3 Reforms considered by the Commission

For the reasons set out above, in attempting to gauge the extent of possible gains from Hilmer reforms in the regulatory arena, it is not fruitful to focus on formal programs of regulatory review. Rather, the Commission has focussed on the relevant broad principle set down in the National Competition Policy document which is that legislation (including regulation) ‘should not restrict competition unless it can be demonstrated that the benefits ... to the community as a whole outweigh the costs’ (Competitive Principles Agreement 1994, p.4.7).

What might result if this principle were to be applied? Regulations which are unnecessarily restrictive and therefore stifle competition would have to be modified or rescinded. But the fundamental intent of the principle goes beyond regulation. As Hilmer points out, the policies and practices of government agencies may prevent many of their services from being subjected to competitive tendering, thereby creating barriers to entry which are just as anti-competitive as might have resulted from restrictive regulations (Hilmer 1993, p.193). Application of the broad principle thus will require all levels of government to allow other government agencies (including government business enterprises) and private sector firms to compete openly for contracts to provide services.

In the remainder of this chapter, the Commission has chosen five examples to illustrate where significant gains might be achieved if this principle were to be applied:

- standards set by building regulations;
- delays in processing of development approvals and in building times attributable to unnecessary regulatory delay;
- contracting out by governments and GBEs;
- removal of monopoly provision of services (taxis, newsagents); and
- self-regulation.

These illustrative examples span a wide range of regulatory issues. The **first** demonstrates scope for gains in the application of prescriptive regulation, the

second concerns the quality of service provided by government to the private sector, the **third** entails a more open attitude by government and its business enterprises, the **fourth** is a case of loss of monopoly services in the private sector, and the **fifth** demonstrates the gains in government reducing its direct role in regulation but achieving desired ends by getting industries to regulate themselves.

These examples also have been chosen as they are some of the very few cases of regulatory change where some quantitative clues are available.

B3.3.1 Building regulations

The basic principle put forward by Hilmer, and accepted by Australian governments, is that regulations with anti-competitive effects should continue in force only if they are demonstrated to be in the public interest. While most aspects of building regulations clearly pass the public interest test, some regulations and the way they are applied are unnecessarily stringent, reduce the competitiveness of the industry, and serve no safety or other public interest objective. There is a great deal of anecdotal evidence that some of the standards set by building regulations result in unnecessary costs.

Analysis undertaken by the Regulation Review Unit in Victoria led to the conclusion that substantially higher building costs in Victoria compared with New South Wales were attributable partly to relatively stringent regulations in Victoria. The additional annual cost, which is judged to apply mainly to non-residential buildings, was estimated in the range of \$150-360 million (Regulation Review Unit 1990, p. 69). It is emphasised that NSW standards are far from ideal and that this estimate is likely to be well below potential gains nationally.

For residential developments, a study by the University of Tasmania notes that planning and engineering standards can be significantly reduced without loss of either safety or amenity (DILGEA 1989, p. 23). Examples given include reductions in pavement widths, smaller nature strips, and reductions in pipe lengths for water and sewerage. It was estimated that, on a national basis, savings of the order of \$100-150 million a year could be achieved.

Despite the approximate and incomplete nature of these estimates, the Commission judges that they can be taken together as a conservative indication of the potential gains from more cost-effective building regulations. Such savings would be around \$350 million, equivalent to some 1.5 per cent of building activity (residential and non-residential) valued at around \$25 billion each year. In making this judgment, the Commission recognises that some beneficial reform has been achieved in recent years.

B3.3.2 Delays in approvals and building

Before site preparation or building commences, substantial unwarranted delays can be encountered in obtaining approvals to proceed from all the necessary government agencies. Such unwarranted delays clearly fail the 'public benefit' test proposed by Hilmer.

In NSW, mean processing times for development approvals range from 20 to 90 days, with a median time of 49 days. One local government council with a large number of applications has achieved a median processing time of 28 days (Sturges p. 33), indicating that substantial gains could be achieved if more timely practices were adopted.

Estimates made by the University of Tasmania indicate that delays of all types may add 5-10 per cent to the cost of development projects, and that around one third of these delays may be attributable to regulatory delays — their elimination was estimated to save \$350-450 million annually (DILGEA 1989, p. 22).

After building and construction commences, various stages and particular items can require specific approval before work can proceed.

An approach now being adopted in Victoria to reduce such delays is that inspection of the work can be undertaken by any suitably qualified person who has been certified as an inspector, rather than by a government-employed inspector.

Again, analysis by the University of Tasmania suggests such savings nationally could be in the order of \$300-400 million (DILGEA 1989, p. 21-22).

Taken together, these estimates suggest that around \$750 million or 3 per cent of the cost of building activity (\$25 billion a year) might be saved if unnecessary delays due to regulation could be eliminated.

B3.3.3 Contracting out by governments and GBEs

Application of the principle that monopoly provision of services should be allowed to continue only if a clear public benefit is demonstrated will require a more flexible approach to many budget-funded government services which are not presently subject to a competitive tendering process.

While considerable progress has been achieved in the use of competitive tendering by GBEs, there has been relatively little progress by government departments. A clear exception is the Department of Defence which has implemented a systematic review of support functions ranging from catering

to aircraft maintenance, and has contracted work valued at more than \$700 million with savings averaging some 30 per cent (IC 1994d).

Rimmer (1991) has reviewed a range of Australian and overseas studies that have evaluated the potential cost savings from competitive tendering and contracting out. In the United Kingdom cost savings from competitive tendering averaged 20 to 25 per cent for a wide range of services. Throughout the 1970s and 1980s cost savings in the United States averaged between 30 and 40 per cent. Rimmer concludes that 20 per cent cost savings are a reasonable estimate of the likely gains in areas where contracting out is possible.

Rimmer also provides estimates for Australia of the scope for contracting out across a range of general government services, along with estimates of the extent of existing use of competitive tendering in these areas. By applying 20 per cent cost savings to the gap between the scope for use and the extent of use, he quantifies the total dollar cost savings available from further contracting out.

With the considerable progress made in recent years, Rimmer's estimates are by now somewhat dated. Table B3.1 reproduces his estimates of the cost savings available in the general government area (excluding contracting out by GBEs), but with several adjustments to the scope for use and the extent of use in areas such as defence where progress is known to have been made.

It needs to be acknowledged that in the time available the Commission has not been able to fully update Rimmer's analysis. In recognition of this, the Commission has modelled the flow-on impact of cost savings equivalent to *half* those shown in Table B3.1, or just over \$2 billion.

The cost savings from competitive tendering of services provided out of current expenditure have been modelled as equivalent labour and capital productivity improvements in the supplying industries. On the assumption that, over time, the industry breakdown of government investment spending is the same as government current spending, the cost savings from competitive tendering of investment expenditure have been modelled as productivity improvements that reduce the replacement cost of capital in those industries. Cost savings from competitive tendering by GBEs have not been modelled here because they are included elsewhere.

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B3.3.4 Gains from eliminating private sector monopolies

Hilmer draws particular attention to the anti-competitive damage done by barriers to entry (Hilmer p. 191-2). Useful illustrations of how barriers to entry can keep prices at higher levels than if a competitive market were allowed to operate are the arrangements which have rationed taxi licences and those which have reserved newspaper delivery rights in geographic areas to newsagents.

- In the case of taxi licences, a limited number are sold by governments and prices paid can be as high as \$0.25 million, reflecting in part their monopoly value. The Commission has estimated that \$2 of the cost of every taxi ride can be attributed to this form of regulation, amounting to an overall annual impost on users of \$320 million (IC 1994b, p. 395).
- In the Canberra region, the Canberra Times newspaper has offered a 'direct delivery' service which bypasses the newsagent monopolies. This service is priced around 30 per cent below the comparable services from newsagents, saving households having a newspaper delivered about \$100 annually. If savings of that magnitude were to apply nationwide, they could amount to some \$250 million.

B3.3.5 Self-regulation

An important aspect of the regulatory reforms proposed for agreement by all governments is that consideration be given to achieving objectives by alternative means, including non-legislative approaches (Competitive Principles Agreement, p. 4.8). In some cases, self-regulation will prove the appropriate alternative.

Major disadvantages of government regulation are that agencies often have insufficient information to design effective regulation, or to ensure compliance, or to adapt regulations to changing conditions. In contrast, self-regulation which is often embodied in industry 'codes of practice', can be developed and monitored through existing industry channels and is relatively easily tailored to suit different conditions (such as geographical) or changing conditions.

Governments can and do often safeguard community interests by enforcing self-regulation. This is done by giving a relevant authority limited powers to step in and impose regulations if self-regulation fails to protect community interests.

The Commission has examined two examples of self-regulation in order to gauge the magnitude of possible gains from this approach:

- replacement of a prescriptive system of meat processing inspection with a quality assurance scheme;
- the move by the Defence Quality Assurance Organisation away from what had been a very interventionist inspection-based approach to one where suppliers must prove that they have satisfactory quality assurance systems in place, and these are occasionally audited by Defence.

Increased use of quality assurance schemes in meat processing has made possible reductions in inspection staff employed by the Australian Quarantine and Inspection Service (AQIS) from 1900 to 1300 since 1989 (IC 1994c, p. 89). But there has been a corresponding increase in staff employed by meat processing firms to undertake the inspection role. Previously the firms paid the salaries of AQIS inspectors via full cost recovery arrangements; now they pay their own inspectors as employees. Direct savings by the industry are thus limited to reductions in fees paid to AQIS (mainly because of reduced overheads). These savings have averaged \$4 million a year, or 5 per cent of annual inspection costs of \$80 million which, in turn, account for some 3 per cent of all processing costs (IC 1994, p. 88). These relatively small savings (0.15 per cent) provide a good example of where reform involves little by way of immediate direct gains but longer-term benefits are likely to be substantial. They include better integration of quality control with production, higher productivity from employee inspectors, and reduced overheads compared with having AQIS inspectors permanently on site. The Commission gauges these potential dynamic gains to be in the range 25-50 per cent of costs currently incurred in meat inspection ie. savings of around 1 per cent of total production costs.

The Defence Quality Assurance Organisation provides policy guidance and expertise within the Department of Defence regarding logistics and the acquisition of equipment. It focuses on major purchases of high value or involving high risks, and on specialised items where safety is of major concern. Prior to 1989 when a single Defence quality assurance body was formed, the role was quite fragmented (each of the armed services had quality assurance staff) and was based on wide-ranging inspections of production lines and testing of equipment. Such an interventionist approach has been replaced progressively by one of placing the onus on suppliers to demonstrate that they have quality control systems in place.

This change was driven primarily by an objective of obtaining improved quality outcomes, and industry has benefited in having to examine and improve its quality management systems. But the savings to Defence have been substantial.

During 1993 and 1994 alone, staff employed by the Defence Quality Assurance Organisation have been reduced from 560 to 360. Although directly comparable figures for earlier periods are not readily available, the Commission understands that more than 1000 staff were engaged in the inspection-based approach used prior to 1989. Savings of around 1 per cent of defence procurement expenditure (which amounts to some \$5 billion annually) are likely to have been achieved in such a move away from a prescriptive regulatory approach to one of greater reliance on self-regulation by the supplying industries.

Additional savings of at least 1 per cent of production costs might be expected from the improved management systems put in place by supplier firms.

Despite the significance of these two examples, they do not really convey the very large potential benefits from increased use of self-regulatory codes of practice. This approach is particularly suited to service industries experiencing rapid change because in those circumstances the inflexible prescriptive government regulatory approach is unlikely to work well, and could well stifle market developments. This is reflected in the fact that the Commonwealth Government has encouraged the television and banking industries to adopt self-regulatory codes of practice. Clearly, the Commission has not attempted to quantify highly uncertain, but no doubt substantial, gains from such self-regulation.

Given the pervasive nature of regulation imposed by all levels of government, there is considerable scope in all sectors of the economy — agriculture, manufacturing, mining and service provision — for substantial reform of this nature. It is not possible to gauge its likely magnitude but, for illustrative purposes, it is not unreasonable to assume that one tenth of all economic activity could benefit. If the examples given above can be taken as a crude guide, cost savings of 1 per cent might be achievable, and that probably is conservative given the potential dynamic gains. Thus, economy-wide gains of the order of one-tenth of one per cent could result from placing less reliance on prescriptive regulation.

B4 HILMER-SPECIFIC GBE REFORMS

This chapter examines the likely effects of the Hilmer reforms on Commonwealth GBEs and Commonwealth and State rail authorities. The Commonwealth GBEs considered include Telecom Australia, Australia Post, the Federal Airports Corporation, and the Civil Aviation Authority. The Hilmer reforms to be considered are as set out in Attachment A to the terms of reference (Appendix D1).

Imposing competitive neutrality arrangements and reviewing anti-competitive legislation are two reforms of particular relevance to this chapter. Also of relevance are, extending application of Part IV of the Trade Practices Act to all currently exempt sectors and applying the Prices Surveillance Act to those State and Territory GBEs not subject to effective State of Territory price oversight arrangements. The impact of these reforms, in particular, is considered below for each Commonwealth GBE individually, and for the rail industry as a whole.

The intention is only to investigate the effects of the Hilmer reforms. Although consideration is given below to recent developments concerning rail authorities and (selected) Commonwealth GBEs, this is meant only to provide the context within which reforms are analysed. The reforms actually included by the Commission are considered, in the sections entitled ‘The likely impacts of reform’ and ‘Reforms considered by the Commission’, arranged under the relevant GBE or rail sub-headings. The impacts of the Hilmer reforms on competition will manifest themselves as changes in productivity, pricing and rates of return, as well as through competitive neutrality arrangements for GBEs. In the likely impacts sections, general trends in productivity, pricing and other key areas are analysed to provide an indication of the probable effects of the Hilmer reforms in those same areas. However, in the sections following, only those reforms that are capable of being modelled are discussed. In both sections, it is not always possible to distinguish between the Hilmer reforms and other government reforms, because the outcomes are often inseparable.

Many of these Commonwealth GBEs are monopoly providers of their services. When considering competitive neutrality arrangements for these GBEs, it is therefore difficult to be definitive about optimal capital structures and dividend payout ratios. However, generalisations are possible in industries, such as rail, that have a relatively large number of participants. Accordingly, where assumptions are made for individual GBEs, it is recognised that there are a range of values that may be appropriate from a commercial point of view.

B4.1 Telstra

B4.1.1 Hilmer reform

Telstra currently faces direct competition in many spheres of its operations, such as the mobile phone market, the subscriber trunk dial (STD) market, and the international direct dial (IDD) market. Telstra holds a statutory monopoly in the local call market under the *Telecommunications Act 1991* at least until the Act comes under review in 1997. The Hilmer reforms will have the greatest impact on the competition in the local call market.

Telstra already is subject to the Prices Surveillance Authority's (PSA) supervision, and to the principles of competitive neutrality (including the payment of dividends and corporate taxes to the Commonwealth Government at commercial rates). Hence, Telstra has already come some way towards facing open competition.

The reforms to the telecommunications industry were set in train well before the publication of the Hilmer Report (Box B4.1). However, the current reform program has been included in the analysis for the following reasons. First, the Commonwealth's commitment to competition in telecommunications is in the spirit of Hilmer and cannot be separated from Hilmer's principle of promoting competition. Second, the terms of reference of the Telecommunications Policy Review explicitly stated that the findings should be consistent with the principles of national competition policy. Finally, the reforms recommended by Hilmer will have an impact after the post-1997 review, in the areas of price regulation, anti-competitive behaviour legislation, and the approach to interconnection access.

B4.1.2 Recent developments

Telstra's principal activity is the provision of telecommunication services in Australia. The telecommunications industry has been undergoing substantial reform for several years. Of most importance to Telstra is the *Telecommunications Act 1991*, which resulted in a more competitive environment through a series of reforms including the establishment of an independent regulatory authority, AUSTEL. A key reform in 1991 was the admission of Optus into the long distance and mobile phone markets, which challenged Telstra's monopoly for the first time. During 1993 the Government increased the level of competition in the mobile market by awarding a third mobile carrier licence to Vodaphone.

Box B4.1: Time frame for structural change in telecommunications

November 1990	Government announces program for liberalisation
June 1991	Telecommunications Act 1991
July 1991	Telstra's first phone monopoly ends
November 1991	Government selects Optus as second national carrier
January 1992	Optus licensed as second national carrier
February 1992	Optus starts operations
June 1992	Optus starts mobile services
November 1992	Optus starts domestic long distance and international services
1993	Vodafone selected as third mobile carrier and commenced operations
1995	Review of carrier arrangements
1997	Legislated duopoly ends

Source: BIE (1992a).

The increased competition in the telecommunications industry has had a significant impact. For example, AUSTEL determined in 1994 that Telstra had lost its former dominant position in the mobile market. However, this remains the only market sector where such a determination has been made. Some impact will be felt in Telstra's IDD and STD market shares following the pre-selection ballots in large metropolitan areas.

The Commonwealth Government has initiated telecommunications reforms since 1991. The clear intention is to review the operating environment in 1997 with the aim of establishing a more open and competitive environment. A formal review (Lee 1994b) has already commenced, and is being conducted by the Department of Communications and the Arts. One of the key outcomes of this review will be the choice between industry-specific regulation and general regulation. In Box B4.2 the issues being considered are reviewed.

Box B4.2: Review of regulatory arrangements

The starting point for the review of the regulatory regime is the Government's commitment to full competition after 30 June 1997. Therefore, the review is about establishing an appropriate regime for the introduction and operation of greater competition. Issues to be considered include:

- the relevance of the current carrier licensing scheme post-1997;
- the types of new carriers that might be licensed;
- inter-connect and equal access arrangements;
- consumer and social issues including universal service, privacy and numbering policy and the future of price regulation, including price caps;
- ongoing industry development arrangements; and
- the development of technology-neutral service regulation and service-neutral technology regulation including the future role of AUSTEL as a specialist industry regulator vis-a-vis the Trade Practices Commission (or its successor body under the Hilmer reform recommendations).

Source: IC(1994a).

Two other important issues to be faced in 1997 include the provision of local services in relation to private competition, and the financing of community service obligations (CSOs). First, international experience has shown that local networks are rarely deregulated, predominantly due to the large capital costs involved in laying out telephone cables to all users.

Second, the future regulation of Telstra's pricing policy which is dependent on whether Telstra's operations will continue to be classified as a natural monopoly. If a second operator is permitted to provide a universal service it is unlikely that Telstra would remain restricted in its pricing policies. However, if the Government chooses to retain Telstra's monopoly in the provision of universal services, it is likely the PSA will remain involved in Telstra's pricing arrangements.

International experience in deregulation of telecommunications

The experience in international telecommunications regulation can provide important indicators of the likely outcome of deregulation within Australia. The BIE (1992a) found that incumbents generally maintained a large market share in most facets of the telecommunications industry, following

deregulation, and that competition in local call provision has not occurred in any major industrial country. However, the BIE concludes:

Although there has been a relatively short history of competition, available evidence tends to suggest that its introduction into various sectors of the telecommunications industry has, on balance, encouraged a greater convergence between prices and costs, a proliferation of new products and services, and a faster adoption of new cost-saving technologies. (BIE 1992a, p.13)

Examining some specific cases, the United States deregulated telecommunications in 1984, setting up the Federal Communications Commission to oversee the legally imposed divestiture of AT&T. Divestiture led to two distinct markets, the competitive long distance market, and the local access or district monopolies. Currently, three carriers operate in the long distance market — AT&T, MCI and Sprint — with AT&T maintaining a 65 per cent share (BIE, 1992a).

The Office of Telecommunications regulates the British telecommunications system and presided over the introduction of Mercury in 1985 to compete with British Telecom in a regulated duopoly. Again district monopolies have continued to exist, and British Telecom has maintained a 90 per cent share of long distance calls, and 80 per cent of international calls. Table B4.1 provides the projected losses of market share of British Telecom to Mercury from 1992 to 1997.

Table B4.1: OFTEL's projection of British Telecom's loss of market share, 1992 to 1997^a (per cent)

	<i>Low estimate</i>	<i>High estimate</i>
Access lines	5.0	14.0
Local calls	5.0	14.0
National calls	15.0	27.0
International calls	25.0	51.0
Implied rate of return on capital	18.5	16.5

a OFTEL is the British telecommunication's regulatory authority

Source: Cave (1993).

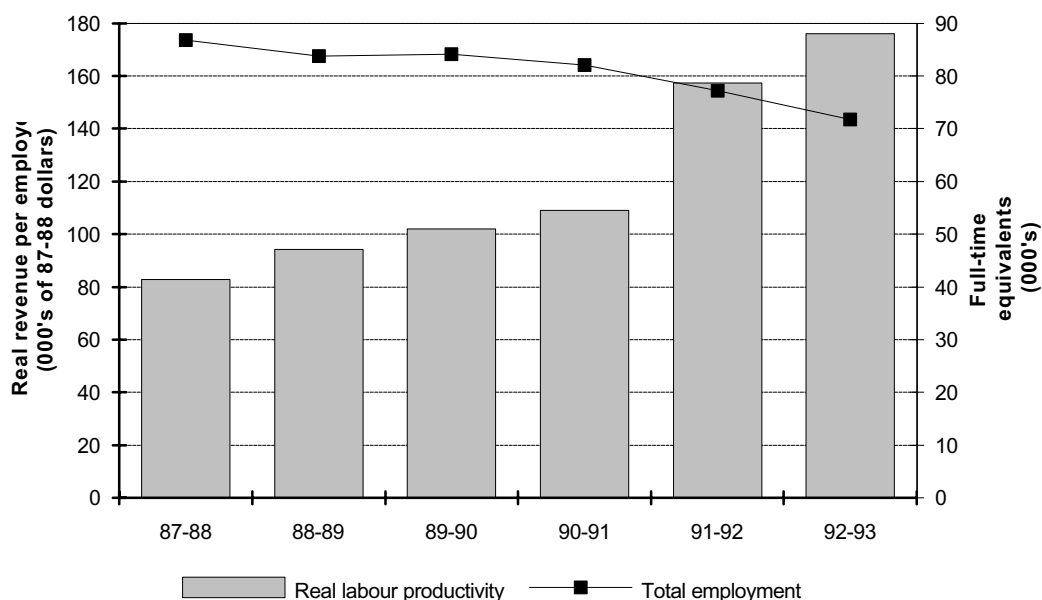
Canada and New Zealand both have duopolies in their telecommunications industries. However, Canada still retains a monopoly in the international call market. Most of Europe and Asia continue to have monopolies in telecommunications although most countries have moved towards the privatisation of their respective carriers.

B4.1.3 The likely impacts of Hilmer reforms on Telstra

Productivity

Following the introduction of competition, total employment has steadily fallen in line with Telstra’s continued cost cutting and restructuring process in order to improve the agency’s competitiveness.¹ As displayed in Figure B4.1 real revenue per employee increased substantially over the period 1991–92 and 1992–93. The staff employed by contractors are not included in this measure. Hence, the actual increase in labour productivity will be less than that indicated in Figure B4.1.

Figure B4.1: **Real labour productivity and total employment, 1987 88 to 1992–93^a**



a The real labour productivity measure is constructed by deflating each organisation’s total revenue by its own price deflator (not the CPI). This produces an implicit quantity measure that is then divided by total employment to obtain the real labour productivity measure. An industry average is calculated as the sum of these measures across the industry, with each organisation’s measure weighted by its share in total industry revenue.

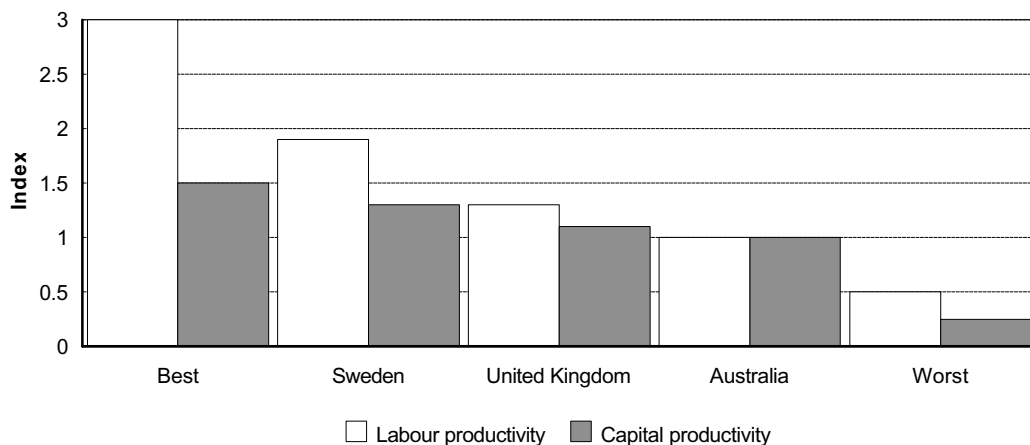
Source: SCNPMGTE.

The BIE, in its study on international performance indicators for the telecommunications industry (BIE, 1992a), measured the absolute level of

¹ SCNPMGTE (1994, p. 409).

labour productivity in the provision of telecommunication services across 20 major industrialised nations. Overall, it found Australia's physical labour productivity (output per full-time employee) to be 34 per cent of the physical labour productivity of the leading nation, Switzerland.² Australian capital productivity (output per main lines) rated higher with Australia ahead of countries such as Canada and Japan. Overall Australia's capital productivity was 66 per cent of best international practice (Switzerland). However, the Swiss system is not directly comparable with the Australian system given factors such as the volume of calls, and main lines required. Sweden and the United Kingdom were identified by the BIE as the systems most closely comparable with Australia, taking size and other factors into account. Australia's labour productivity was 53 per cent of Sweden's and 77 per cent of the United Kingdom's. In the case of capital productivity, Australia's productivity was 77 per cent of Sweden's and 90 per cent of the United Kingdom's. Figure B4.2 provides a summary of the BIE's results.

Figure B4.2: Labour and capital productivities, 1990



- a Labour productivity has been calculated as output for each telecommunications employee. Australia's productivity was normalised to one and the remaining labour productivities set relative to it. Similarly, capital productivity was measured as output per main line and Australia was normalised to a value of one.

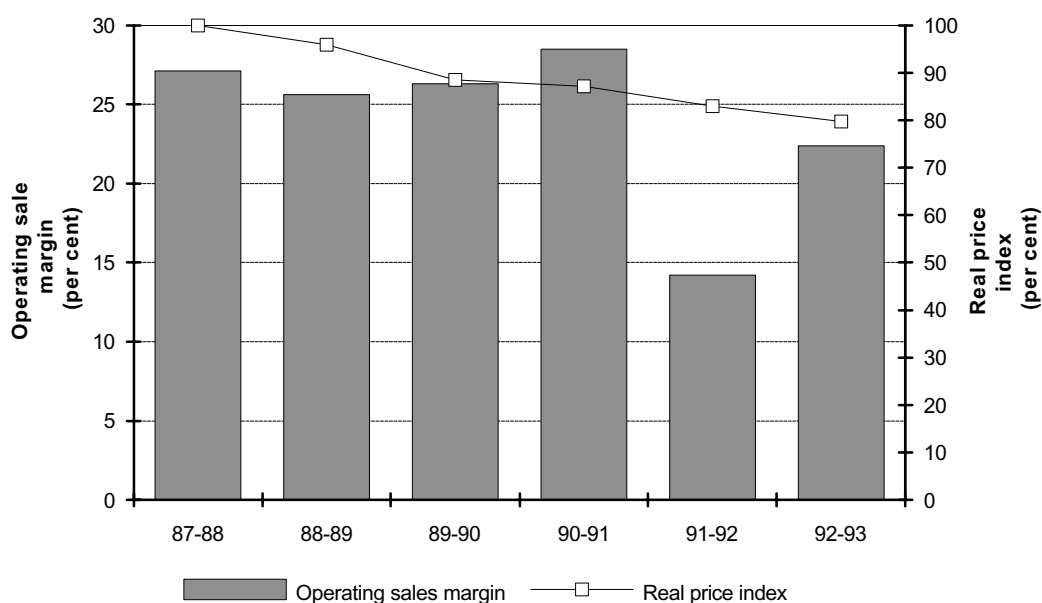
Source: BIE (1992a).

² Output of international telecommunications is measured as the number of minutes of international telecommunications traffic.

Pricing

Under the *Telecommunications Act 1991*, Telstra is required to operate within a regime of Government price controls. The current price controls apply only to Telstra. They are based on a series of revenue weighted baskets of services, within an overall price controlled limit of less than 5.5 per cent of CPI (Hambleton, 1994). In other words, Telstra must reduce its price by an average of 5.5 per cent per annum below inflation. Hence the real price index (Figure B4.3) exhibits a steady decline which would be expected to continue, at least until 1997, when the price control comes under review. AUSTEL estimated that the reduction in Telstra's prices saved consumers \$300 million in 1992-93 (Lee, 1994a).³ Telstra's operating sales margin has fallen, particularly over the past two financial years with deregulation. This trend is expected to continue.

Figure B4.3: Real price index and operating sales margin, 1987-88 to 1992-93^a



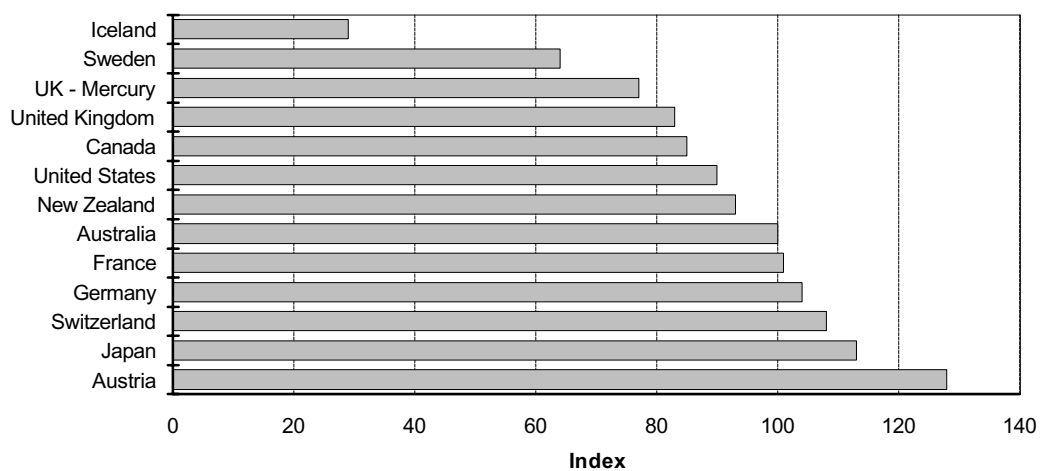
a Operating sales margin is equal to earnings before interest and tax (EBIT) less investment income as a proportion of total revenue less investment income.

Source: SCNPMGTE.

³ These savings accrued from Telecom's requirement to meet the price ceiling and do not include other savings arising from greater competition in the supply of services exempt from the price ceiling.

BIE (1992a) also examined numerous measures of the price of telecommunication services across countries. Figure B4.4 presents indices of the prices of a basket of services, including installation, subscription and usage, relating to intra-country calls for thirteen countries. The study found Australia has relatively high intra-country call charges, higher than Canada and the United States (which are geographically comparable with Australia). It should be noted that Australia is one of the few countries with untimed local calls, and has relatively large local call zones.

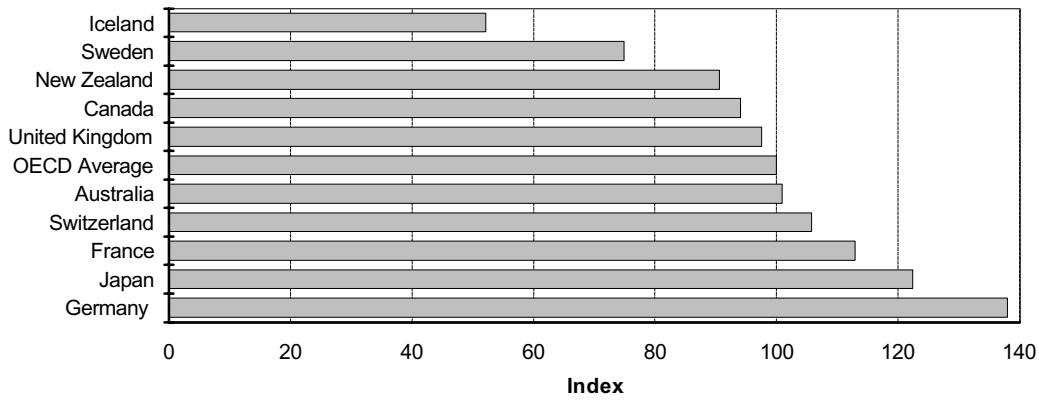
Figure B4.4: **Comparison of national call basket prices, January 1992**



Source: BIE (1992a).

Figure B4.5 presents a composite basket of tariffs including national, international, package switched data network (PSDN), mobile, and leased line charges. Australia ranks close to the OECD average, behind deregulated markets such as New Zealand, Canada, and the United Kingdom, but ahead of the Japanese deregulated market. The performance of regulated markets in Europe varies.

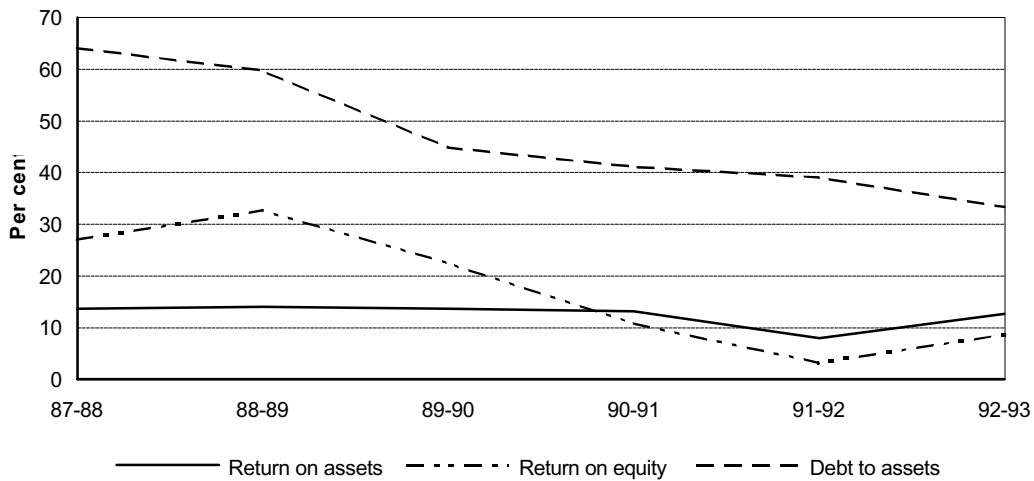
Figure B4.5: **Comparison of composite business basket prices, January 1992**



Source: BIE (1992a).

Financial performance

Figure B4.6: **Return on assets and related measures, 1987-88 to 1992-93**



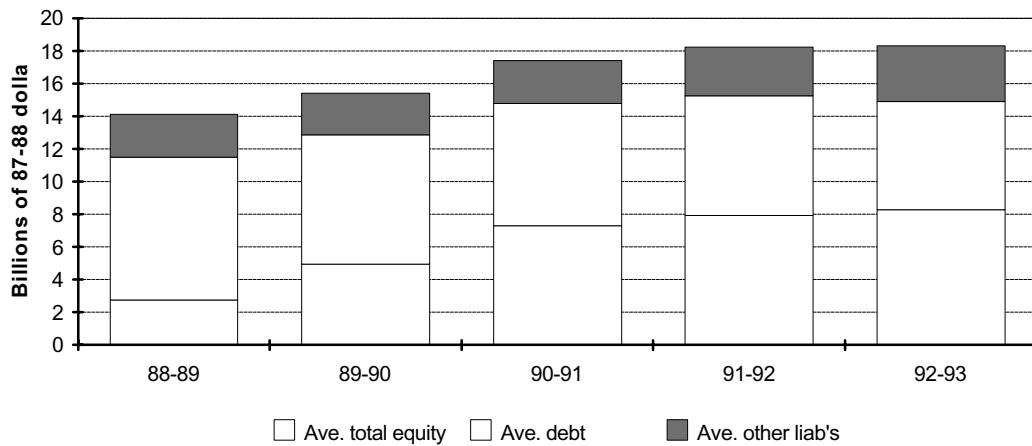
Source: SCNPMGTE.

Telstra’s return on assets has remained relatively stable over the past five years (Figure B4.6). Average total equity has increased progressively as the Commonwealth Government continues to convert debt to equity holdings and

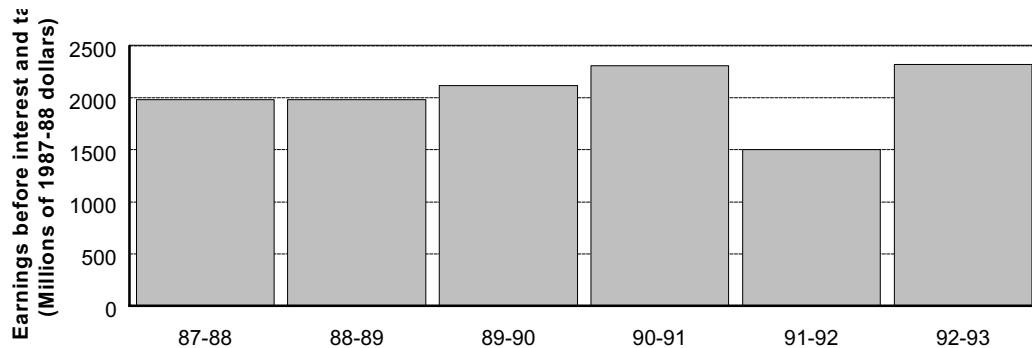
retained earnings continue to finance growth in total assets. The current financing split is comparable to commercial structures.

Figure B4.7: Funding of total assets and earnings before interest and tax, 1988-89 to 1992-93

Panel A: Funding of total assets ^a



Panel B: Earnings before interest and tax

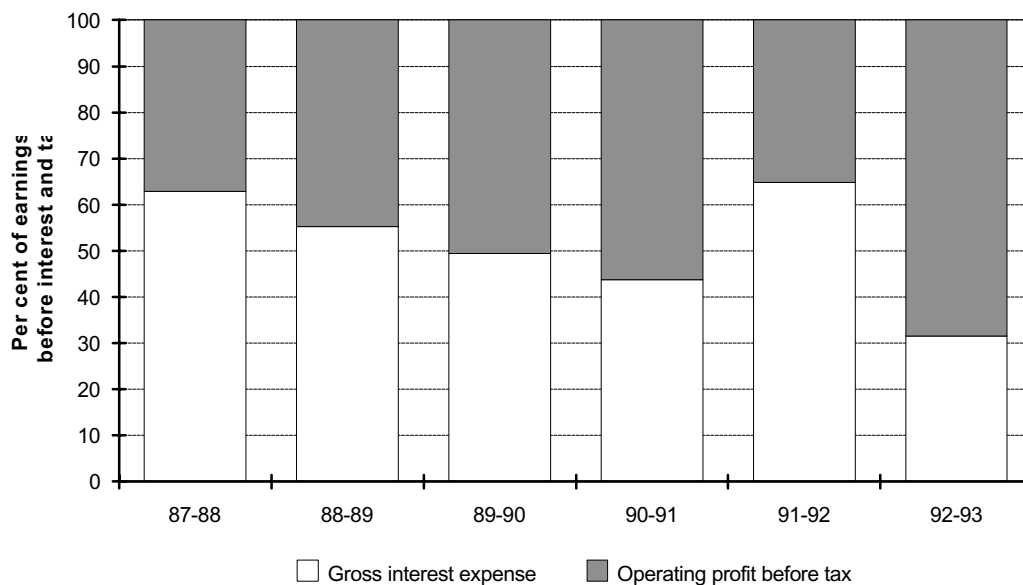


^a The stacked bars indicate how total assets are funded, that is total equity plus debt plus other liabilities. Source: SCNPMGTE.

Converting debt to equity has resulted in a significant decline in gross interest expense and an increase in pre-tax profits over the past six years (Figure B4.7).⁴ The trend is expected to continue through the remainder of the decade, resulting in gross interest expense further declining (Figure B4.8).

⁴ SCNPMGTE (1994, p.409).

Figure B4.8: **Composition of earnings before interest and tax, 1987–88 to 1992–93**

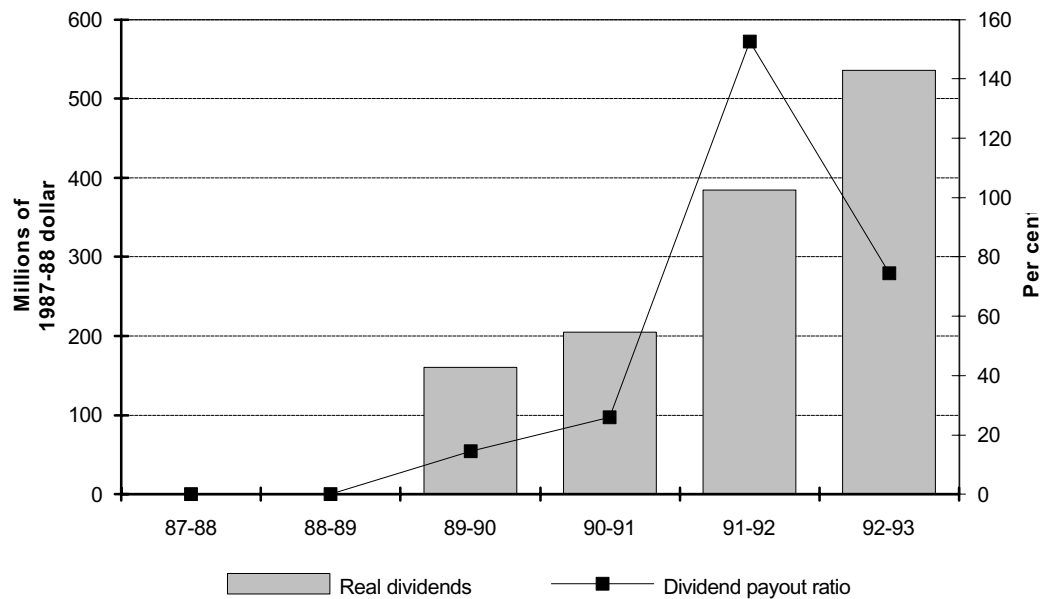


Source: SCNPMGTE.

Payments to government

Dividends have progressively risen in real terms since the corporatisation of Telstra to a level comparable with commercial payout ratios. The dividend payout ratio has also grown, although a lower pre-tax profit figure in 1991–92 resulted in a dividend payout larger than Telstra’s profit for that year. Retaining earnings from the network development reserve allowed the 1991–92 payout to be made. Telstra is liable for corporate taxes at commercial rates on profits.

Figure B4.9: Real dividends and payout ratios, 1987-88 to 1992-93



Source: SCNPMGTE.

B4.1.4 Reforms considered by the Commission

To model the effects of introducing Hilmer and related reforms to the telecommunications industry, a range of specific price and productivity changes have been discussed. As mentioned previously, the Commission chose to include the current reform program in modelling Hilmer reforms. As a result the price changes and productivity improvements modelled below capture the impact of the telecommunications reforms from 1 July, 1994. The scenario implied by these changes is summarised in Box B4.3.

Improvements in labour and capital productivity are calculated using the benchmarking study of the BIE (1992a). As a result of the reforms, it is envisaged that labour and capital productivity will improve to achieve the best practice of countries with comparable telecommunications systems, Sweden and UK. The partial labour and capital productivities on which these estimates are based appear in Figure B4.2. Estimates of the reduction in labour and

capital requirements detailed in Box B4.3 are based on a weighted average of Sweden and the UK, with Sweden accounting for 92 per cent of best practice.⁵

Telstra's current pricing arrangements will exist at least until the 1997 review. Based on the current pricing arrangements, and assuming an inflation rate between 2 and 3 per cent, a real price reduction of 20 per cent is expected.

As part of the Hilmer reforms under consideration by COAG, all governments will agree to apply competitive neutrality arrangements that seek to equalise net competitive advantages of government agencies arising from their public ownership. This involves imposing commercial capital structures, debt guarantee fees, commercial dividend payout ratios and tax equivalent regimes. While progress has already been made, these arrangements are still far from being universal in coverage or consistent in approach.

While recognising that the optimal level of competitive neutrality arrangements may vary between GBEs, the stylised competitive neutrality arrangements assumed here are:

- a commercial capital structure as represented by a debt to assets ratio of 50 per cent;
- a dividend payout ratio of 75 per cent; and
- a tax equivalent regime that charges income tax at 33 cents in the dollar.

The imposition of debt guarantee fees is not modelled.

The impacts on prices, quantities and other sectoral variables of reform in Telstra are summarised in Box B4.3. These expected impacts form the basis for evaluating the economy-wide and fiscal implications of reform through model experiments summarised in Chapter A2.

⁵ These weights were taken from BIE (1992a, p.52)

Box B4.3: Summary of the Telstra scenario*Achieving best practice*

Change per unit labour requirements by (per cent)	-45
Change per unit capital requirements by (per cent)	-22

Adjustments in the price of telecommunications

Change in Telstra's real price (per cent)	-20
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Imposing competitive neutrality arrangements

Target debt to assets ratio (per cent)	50
Target dividend payout ratio (per cent)	75
Target income tax (or TEP) rate (per cent)	33

Source: Commission estimates.

B4.2 Australia Post**B4.2.1 Hilmer reform**

Australia Post currently faces limited competition in most segments of the letter and parcel delivery market. The *Australian Postal Corporation Act 1989* provides Australia Post with a statutory monopoly on most letter mail and with partial protection on parcel mail through price controls on competitors. Hilmer reform will introduce competition to some segments of the mail market through PSA and TPC supervision. Where the Commonwealth Government considers the statutory monopoly to be essential for community service obligations, these will be funded explicitly.

Australia Post operates under PSA supervision in its pricing operations, but is partially exempt from TPC legislation. Australia Post is also liable for corporate taxes and does pay dividends to the Commonwealth Government. Under competitive neutrality conditions Australia Post will be required to raise its dividend payout ratio to a level more comparable with commercial payouts. Hilmer reform will most likely subject Australia Post's total operations to TPC supervision.

B4.2.2 Recent developments

Australia Post was created in 1975 when the Postmaster General's Department was separated into postal and telecommunications authorities. In 1989 the authority was corporatised as part of the Commonwealth Government Business Enterprise reform process. Australia Post conducts three major operations, namely letter delivery, parcel delivery and third party agency services. Australia Post has a statutory monopoly on the letter delivery service, and faces growing competition in the parcel delivery market from large national and multinational organisations — TNT, Mayne Nickless, DHL and Federal Express. The authority also operates under two community service obligations in the letter service delivery operation:

- Australia Post must provide a letter service, charging a uniform price for standard letters carried within Australia; and
- standards of performance must reasonably meet the needs of the community, including being accessible to all Australians.

Following the announcements made in Beddall (1993), the Commonwealth Government has progressively reduced Australia Post's monopoly in various areas through the reforms enacted in the *Australian Postal Corporation Amendment Act 1994*. The reforms include:

- lowering the minimum delivery charge for private competitors on parcels less than the minimum weight from ten times the standard rate (\$4.50) to four times the standard rate (\$1.80);
- lowering the minimum weight of parcels able to be carried by private competitors at no minimum price from 500g to 250g;
- allowing carriage of mail by competitors within and between different parts of an organisation (previously only an organisation employee was permitted to do this) and carriage of mail within a document exchange network;
- no longer requiring businesses to lodge bulk mail at their nearest post office and allowing businesses to negotiate rates with Australia Post when they lodge mail at designated mail centres closer to final delivery locations; and
- deregulating all outgoing international mail and partially deregulating incoming international mail.

Currently letterbox distributors, document couriers, and document exchangers appear to operate only at the fringes of the postal market. Hilmer reforms however have the possibility of changing Australia Post's operating

environment substantially. The Industry Commission found in its *Mail, Courier and Parcel Serves* report that:

In the future the development of new technology has the greatest potential to provide substitutes for the letter service. The choices are expanding but it will take some time before their coverage is comprehensive enough to make the reserved services legislation ineffective (IC 1992b, p.156).

While Section 2(A) of the *Trade Practices Act 1974* (TPA) subjects the business dealings of Australia Post to the Act, there are still some Australia Post activities not subject to the Act. Under Section 51(1) of the Act, activities specifically authorised by Commonwealth legislation are exempt from the controls on restrictive trade practices under Part IV of the TPA. Since the letter service is reserved to Australia Post under the *Australian Postal Corporation Act 1989*, this service is exempt from the TPA.

B4.2.3 The likely impacts of Hilmer reform

Productivity

Labour productivity has steadily improved following corporatisation, increasing 24 per cent over the past six years (Figure B4.10). Employment has declined by 2500 full time equivalent staff since 1990–91 as rationalisation achieving corporate labour productivity targets of 2.5 per cent per annum continues. This equates to a cumulative increase of 9 per cent in labour productivity over the next four years. However, increased use of contracting out may account for this apparent increase in labour productivity.

Changes in the productivity of labour, capital and materials, can be jointly measured by a total factor productivity index. Australia Post provides this measure in SCNPMGTE (1994). Over the past six years Australia Post's productivity has increased by 12 per cent (Figure B4.11). A separate measure of capital and material productivity was not available.

Pricing

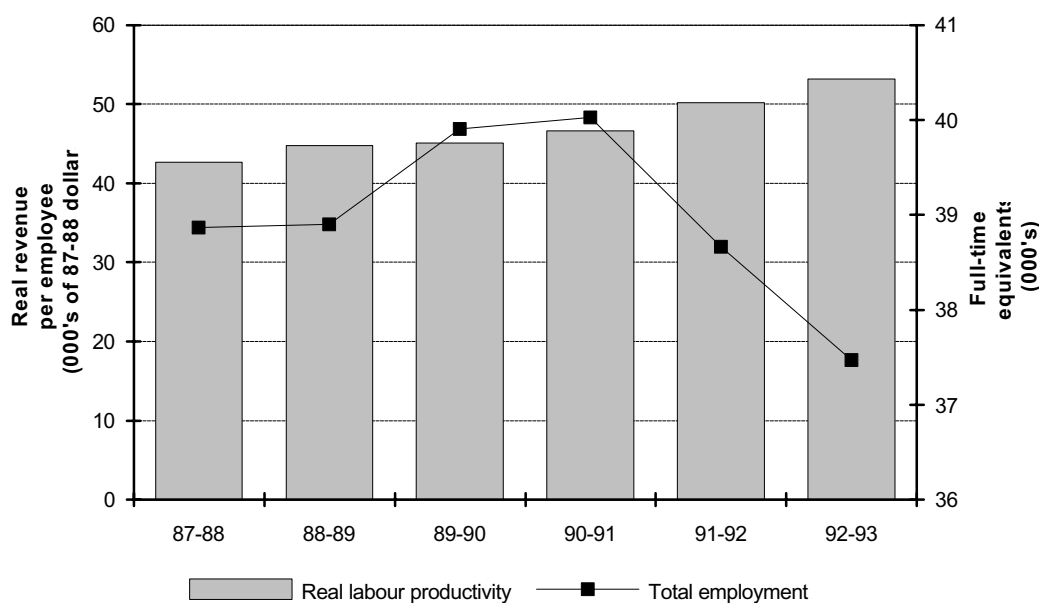
Prices pertaining to Express Post, international letters, some non-standard letters, Certified Mail, Security Post, Print Post and standard letters are all governed under the *Price Surveillance Act 1983*. Real prices declined from 1987–88 to 1990–91 (Figure B4.12) but increased after the following three recommendations by the PSA (PSA 1991). First, standard letter prices should rise to 45 cents⁶. Second, registered publications should be phased out. Third,

⁶ In August 1994 Australia Post announced that the standard letter rate of 45 cents will be fixed until at least the beginning of 1997 (Lee, 1994c).

a new service called Print Post should be introduced with average prices increased by 30–35 per cent to eliminate the cross subsidy previously received by registered mail users.

Operating sales margins have also increased by 8 per cent since 1989–90 reflecting the outcomes of the PSA’s 1991 public inquiry which placed greater emphasis on cost recovery (Figure B4.12).

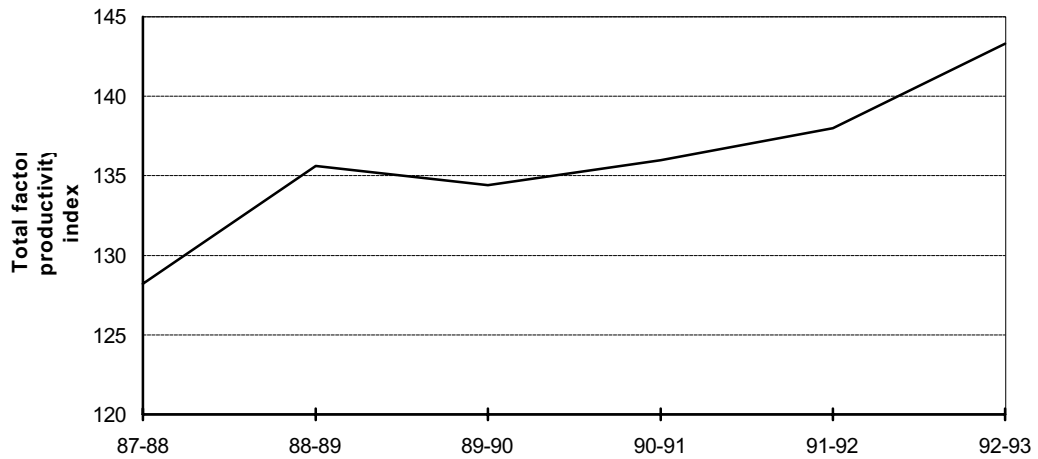
Figure B4.10: **Real labour productivity and total employment, 1987–88 to 1992–93^a**



a The real labour productivity measure is constructed by deflating each organisation’s total revenue by its own price deflator (not the CPI). This produces an implicit quantity measure that is then divided by total employment to obtain the real labour productivity measure. An industry average is calculated as the sum of these measures across the industry, with each organisation’s measure weighted by its share in total industry revenue.

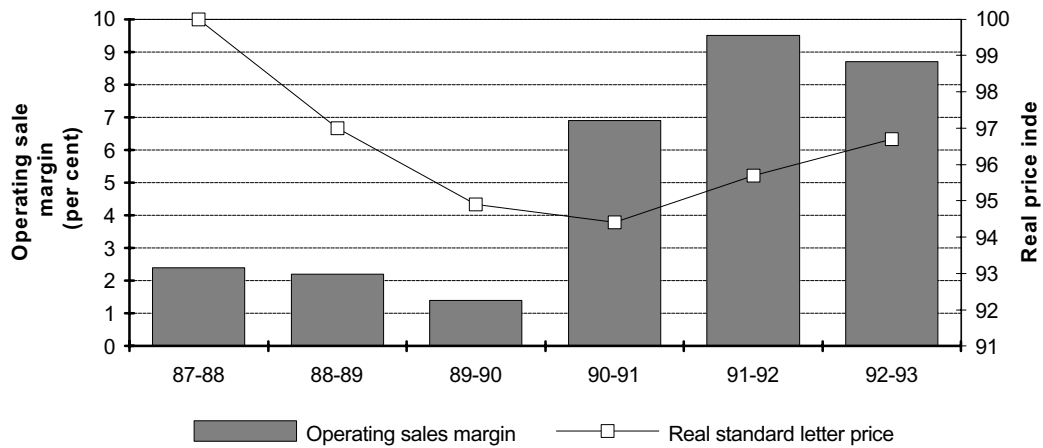
Source: SCNPMGTE.

Figure B4.11: Total factor productivity, 1987-88 to 1992-93



Source: SCNPMGTE (1994).

Figure B4.12: Real price index and operating sales margin, 1987-88 to 1992-93



a Operating sales margin is equal to EBIT less investment income as a proportion of total revenue less investment income.

Source: SCNPMGTE.

Financial performance

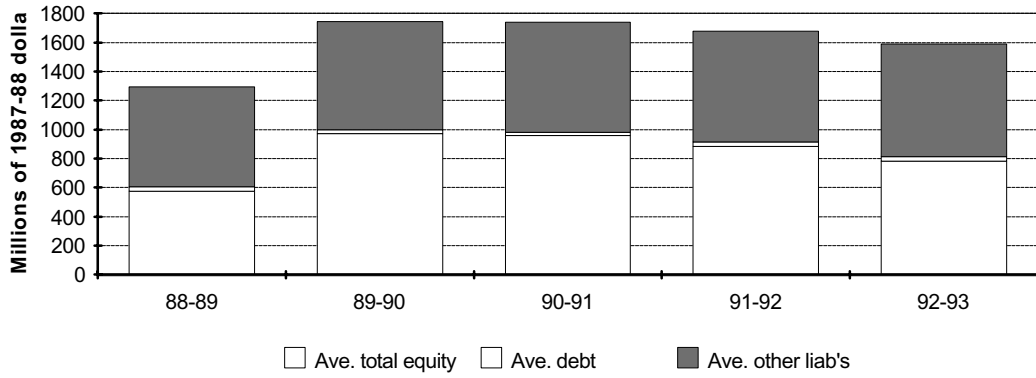
Australia Post's policy has been to maintain a very low level of debt throughout the six years, 1987–88 to 1992–93 (Figure B4.13, Panel A). This policy is not expected to change. Total assets have remained stable although the returns to assets and equity have varied. Regular revaluations of Australia Post's property assets are reflected in the fall in return on assets and return on equity in 1989–90, while improved 1991–92 to 1992–93 results reflect the fall in commercial property values around Australia⁷ (Figure B4.13, Panel B) and increased earnings before interest and tax (Figure B4.13, Panel C). Overall, total assets, debt, and equity holdings are expected to remain constant in real terms.

Australia Post's choice of using equity financing almost entirely rather than a mixture of debt and equity financing is not a common corporate practice. Debt financing imposes commercial disciplines on GBEs that equity financing does not. Debt has to be paid back where bad capital purchases can be devalued. Moreover, debt financing ensures that lenders get a return on their investment through interest payments, where dividend payments may be reduced if an investment goes bad. Hence the Commission notes Australia Post's debt to equity ratio to be abnormally low, but does not impose the debt to assets ratio requirement of 50 per cent as is the case of modelling competitive neutrality in other GBEs.

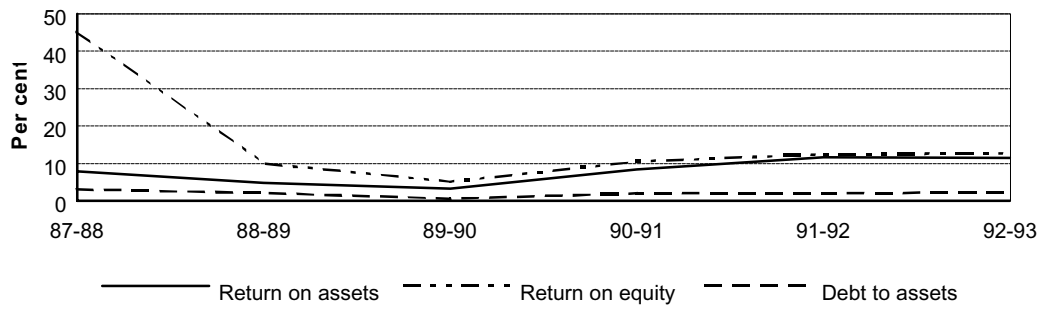
⁷ SCNPMGTE (1994) p.39 9.

Figure B4.13: Funding of total assets, return on assets and earnings before interest and tax, 1988-89 to 1992-93

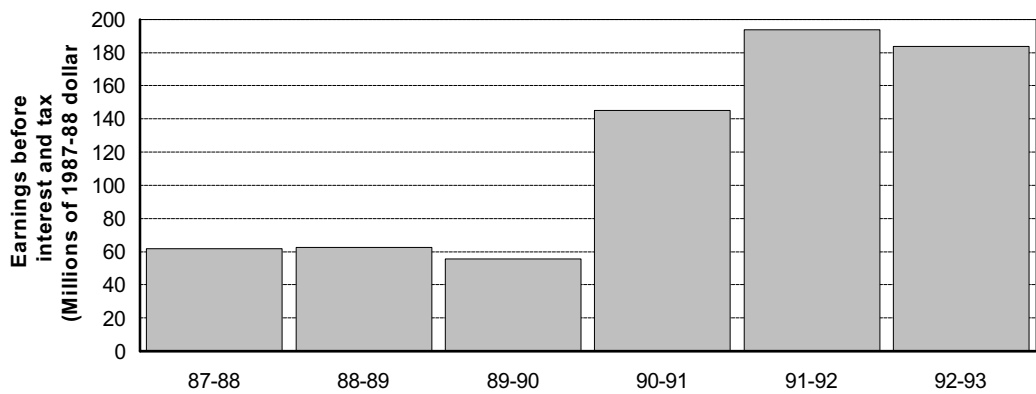
Panel A Funding on total assets, 1988-89 to 1992-93



Panel B Return on assets, 1988-89 to 1992-93



Panel C Earnings before inte rest and tax, 1988-89 to 1992-93



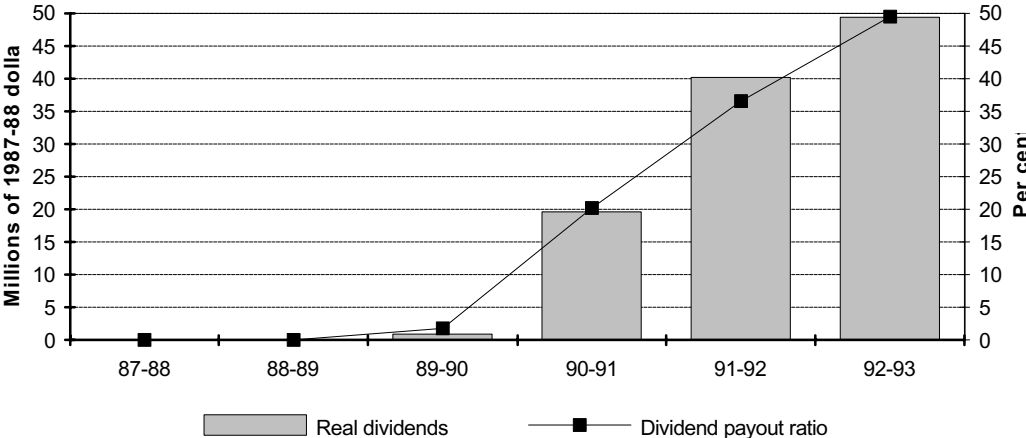
Source: SCNPMGTE.

Payments to government

The corporatisation of Australia Post in 1989–90 initiated the payment of dividends to the Commonwealth Government. Subsequently dividend payouts have risen from zero to close to \$50 million (Figure B4.14). Similarly, the dividend payout ratio has risen by 12.5 percentage points per annum over the last four years to a 50 percent dividend payout ratio (Figure B4.14). Under competitive neutrality conditions, it is expected that Australia Post’s dividend payout ratio will rise to the standard commercial payout ratio of 70 to 80 per cent.

Australia Post is liable for corporate taxes, and has paid taxes since corporatisation.

Figure B4.14: Real dividends and payout ratios, 1987-88 to 1992-93



Source: SCNPMGTE.

B4.2.4 Reforms considered by the Commission

To model the effects of introducing Hilmer reform to Australia Post, a range of specific price and productivity changes have been discussed. The scenario implied by these changes is summarised in Box B4.4.

Labour productivity estimates relate to Australia Post’s forecasted 2.5 per cent per annum increases in labour productivity over the next four years. Given that Australia Post has easily achieved this target over the previous three years, a per

annum increase of 3 per cent was chosen. No capital productivity measures have been found or assumed by the Commission. Hence, capital productivity improvements for Australia Post have not been modelled in the same manner as for other GBEs.

A price reduction in Australia Post's services is calculated on the basis of standard letter prices being fixed in nominal terms until 1997. Hence the high estimate assumes a CPI of 3 per cent per annum, the low estimate one of 2 per cent per annum, with the preferred estimate being one of 2.3 per cent per annum.

As part of the Hilmer reforms under consideration by COAG, all governments will agree to apply competitive neutrality arrangements that seek to equalise net competitive advantages of government agencies arising from their public ownership. This involves imposing commercial capital structures, debt guarantee fees, commercial dividend payout ratios and tax equivalent regimes. While much progress has already been made, these arrangements are still far from being universal in coverage or consistent in approach.

The stylised competitive neutrality arrangements are modelled as:

- a dividend payout ratio of 75 per cent; and
- a tax equivalent regime that charges income tax at 33 cents in the dollar.

The imposition of debt guarantee fees is not modelled. As has been discussed, Australia Post already has moved some way towards achieving competitive neutrality arrangements.

The impacts on prices, quantities and other sectoral variables of reform in Australia Post are summarised in Box B4.4. These expected impacts form the basis for evaluating the economy-wide and fiscal implications of reform through model experiments summarised in Chapter A2

Box B4.4: Summary of the Australia Post scenario

Achieving best practice

Change per unit labour requirements by (per cent) -12

Decreases in the price of postal services

Change real postal prices by (per cent) -9

Imposing competitive neutrality arrangements

Target debt to assets ratio (per cent) 0

Target dividend payout ratio (per cent) 75

Target income tax (or TEP) rate (per cent) 33

Source: Commission estimates.

B4.3 Federal Airports Corporation

B4.3.1 Hilmer reform

The proposed Hilmer reforms are expected to affect all Commonwealth GBEs through the imposition of competitive neutrality arrangements, the review of anti-competitive legislation and the extension of the application Part IV of the *Trade Practices Act 1974*. For Commonwealth GBEs, it is not always possible to distinguish between the effects of Hilmer reforms and other government reforms that proceed independently of Hilmer. This is particularly true when considering the effect of Hilmer reform on the Federal Airports Corporation (FAC) where the Commonwealth's recent policy decisions have, to some extent, anticipated the discipline of the proposed Hilmer reforms.

Increased competition in the aviation sector — whether through implementation of Hilmer reforms or through other government policies concerning the FAC — is expected to increase productivity in the FAC and to change the pricing policies of the FAC. The analysis includes expected productivity improvements that are outcomes of the Commonwealth's commitment to reform in aviation services because the reform is in the spirit of Hilmer's principle of promoting competition.

The Hilmer reforms' implications for the FAC's pricing policies are important but are difficult to predict so are not modelled. Currently aeronautical charges

do not cover the full cost of providing aeronautical activities. The revenues from non-aeronautical activities cover the associated shortfall (FAC 1994, p.13). However, joint costs in the production of aeronautical and non-aeronautical services make the extent of cross subsidisation between these activities unclear. If cross subsidisation between the two activities exists, increased competition or the unbundling of aeronautical and non-aeronautical services may lead to either rising aeronautical charges or the Commonwealth maintaining charges at the current level and applying a community service obligation payment to the FAC. The question of price regulation at airports is being considered by an Inter-Departmental Committee drawn from officials of the Departments of Transport, Treasury and Finance.

Competitive neutrality arrangements seek to equalise the net competitive advantages of government agencies that arise from their public sector ownership. The impact of 'stylised' competitive neutrality arrangements was modelled to remain consistent with the effect of Hilmer reforms on other Commonwealth GBEs. Moreover, the Commonwealth Government has announced its intention to lease airports that the FAC currently owns and operates. Therefore the imposition of competitive neutrality arrangements on the FAC will also reflect the average commercial characteristics of businesses that lease the airports.

B4.3.2 Recent developments and the Federal Airports Corporation

The FAC assumed control of six capital city and eleven smaller airports on 1 January 1988 following a Department of Aviation task force review (Minister for Aviation, 1984). The FAC purchased six other airports on 1 April 1989 and sold the Cambridge airport in April 1993. It now owns twenty-two airports that range in size from small regional airports to those in large capital cities.

Following the FAC's establishment, the Commonwealth Government adopted a policy of full cost recovery for aviation facilities and services provided by the Commonwealth (IC, 1992a). The Government has set the FAC three financial objectives⁸:

- to place airports on a sound commercial basis so financial performance can be measured;
- to produce an adequate return on the Commonwealth's investment, consistent with the corporation achieving an economic rate of return set at 7.5 per cent per annum; and

⁸ IC (1992b) p.97.

- to improve revenue from non-aviation activities while taking account of other objectives.

Currently the FAC's role is to own, develop and operate the great majority of Australia's main civil aviation airports. The primary aeronautic and non-aeronautic activities carried out by the FAC are described in Box B4.5.

Box B4.5: Activities carried out by the Federal Airports Corporation

Activities conducted by the FAC constitute the following. All other activities conducted at airports are the responsibility of the Civil Aviation Authority.

Aeronautical activities

- runways;
- taxiways;
- aprons and general aviation parking areas;
- facilities to transfer passengers and baggage from aircraft to terminals;
- visual navigation aids;
- security; and

Non aeronautical activities

- leasing land to allow airlines to provide terminal gates and maintenance facilities;
- leasing space in common user areas for trading and retail outlets;
- leasing land for car parks, hotels, offices, warehouses, and cold storage.

Source: IC (1992a).

The FAC is not responsible for investigating the need for new airports and needs the Minister's approval to close an airport. Both these conditions may impede the autonomy of the FAC since it is unclear as to which directions are in the public interest and which are 'in accordance with Commonwealth policy' (IC 1992a, p.95).

In May 1994, the Commonwealth Government announced its intention to divest the FAC's airports as part of its 'Working Nation: Policies and Programs'. On 22 September 1994 the Minister for Transport announced that 'Cabinet endorsed a package of recommendations for the lease of the 22 airports currently owned and operated by the FAC'. Following the leasing of the airports — which is planned to commence in late 1995 or early 1996 — the FAC is likely to exist as an airport management company only.

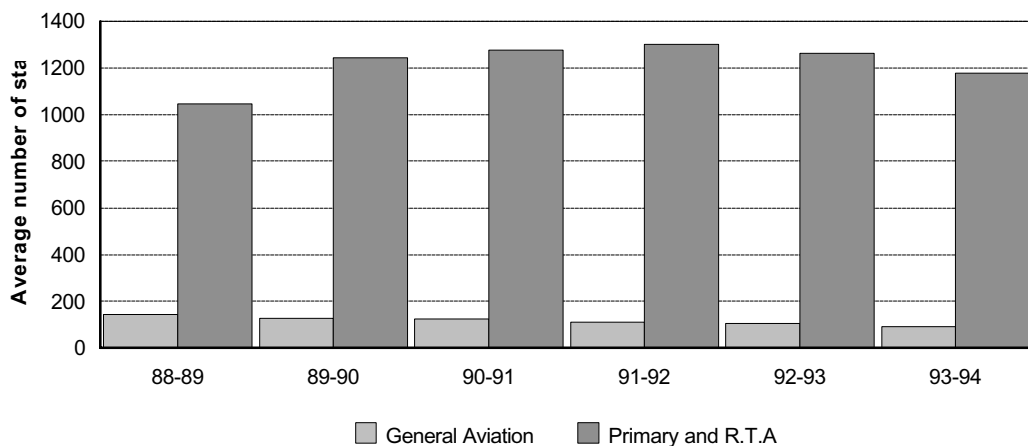
B4.3.3 The likely impacts of Hilmer reform on the Federal Airports Corporation

Whether driven by Hilmer reforms or by other Government policies consistent with Hilmer reforms, competitive pressures are expected to lead to improved labour and capital productivity, as airports move towards best practice.

Labour productivity

As the FAC has acquired airports over the past six years its total number of employees has increased (Figure B4.15). For example, the large increase between 1988–89 and 1989–90 is due to the purchase of six further airports which added 149 employees. Since 1991–92, however, total number of employees has declined slightly.

Figure B4.15: **Total employment, 1987-88 to 1993-94^a**



a Includes allocation of head office staff. Contractors and agency staff were added from 1991–92 while staff equivalents are used from 1993–94.

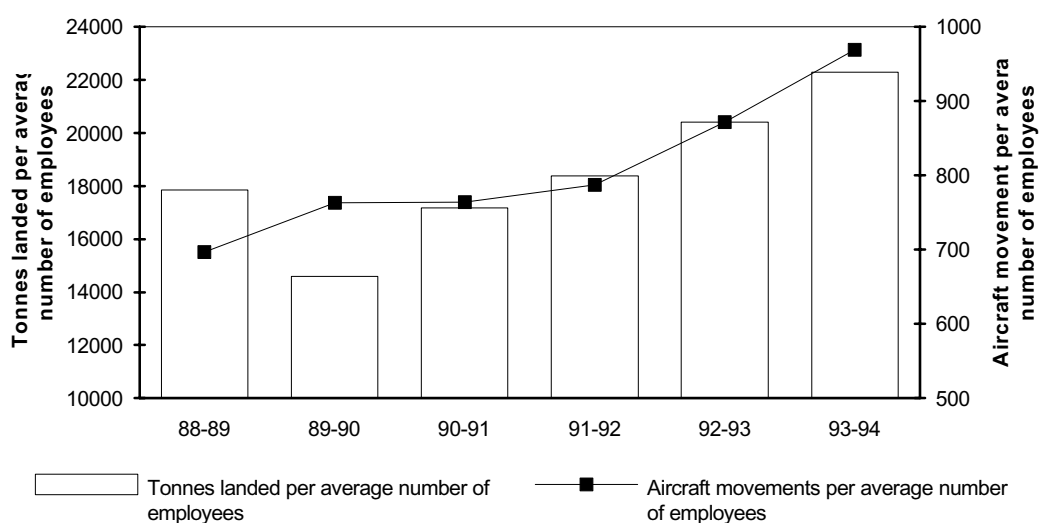
Source: FAC (1994).

Labour productivity measured such as passenger movements per employee, aircraft movements per employee and tonnes landed per employee is reported in the FAC Annual Reports. The general aviation airports account for around 10 per cent of FAC staff numbers and are influenced significantly by changes in general aviation activity. Therefore it is useful to consider changes in labour productivity indicators for regional and primary airports separately from general aviation airports. By doing this, the influence of ‘uncontrollable’ factors such as pilots dispute in 1989, airline deregulation in 1990 and the recession in the early 1990s is lessened.

The labour productivity measures indicate the FAC’s labour productivity at regional and primary airports has increased from 1988–89 to 1993–94

(Figure B4.16). The relatively large labour productivity increases seen in 1993–94 (15 per cent for the FAC in total and 10 per cent for regional and primary airports) reflects the two year enterprise agreement signed in 1994 by the five trade unions associated with the FAC (FAC, 1994). It should be noted that both these indicators are not ideal and that neither encompasses the role of contract labour.

Figure B4.16: Labour productivity, regional and primary airports 1988–89 to 1993–94

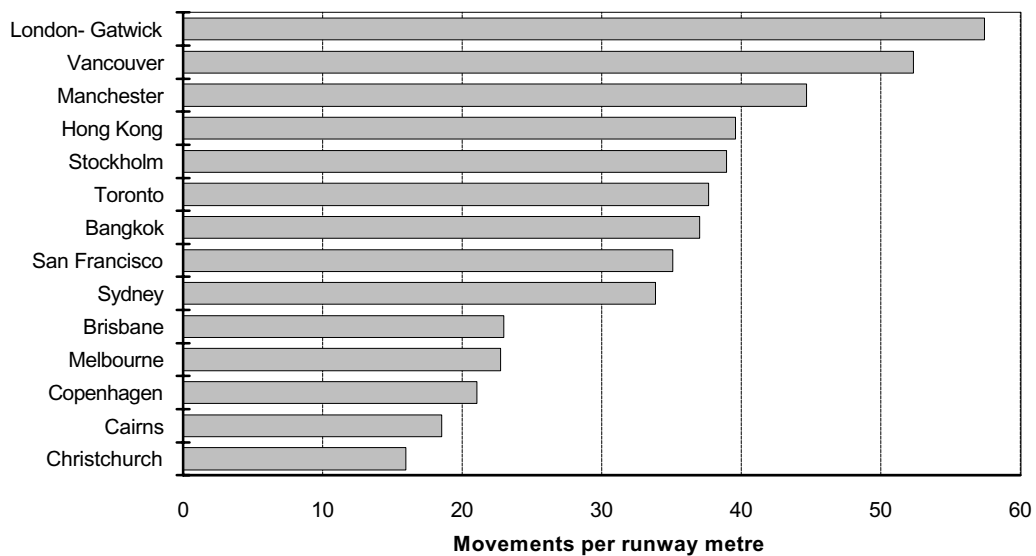


Source: FAC (1994).

Capital productivity

Capital productivity was measured by the BIE (1994a) as aircraft movements per runway metre. This measure, the BIE notes, is open to substantial criticism because some airports require greater length runways to serve larger aircraft and because some airports must install cross-runways to compensate for ‘tricky winds’ creating additional capacity that is under utilised in normal circumstances. However, in the absence of other capital productivity measures, aircraft movements per runway metre was chosen to indicate the scope for capital productivity improvements.

Australian airports have poor capital productivity using this partial measure (Figure B4.17). Sydney is the best performing Australian airport but falls significantly short of international best practice. With reform, all Australian airports are expected to see large capital productivity improvements.

Figure B4.17: **Capital productivity— runways, 1992-93**

Source: BIE (1994), p.84.

Pricing

Since no real price index for the FAC services is available, it is impossible to examine the charges imposed by the FAC on its customers. It is known however that aeronautical charges are derived on the basis of an aircraft's maximum take-off weight. The charges are uniform across a wide range of airports, although there are some differences between groups of airports and between categories of aircraft.

Aeronautical charges are defined in Section 56 of the *Federal Airports Corporation Act 1986* and relate to aircraft landing and parking, passenger boarding and alighting and cargo handling. In Sydney, peak and shoulder surcharges are applied. Aeronautical charges are constrained by the *Federal Airports Corporation Act 1986* which stipulates:

An aeronautical charge shall not be fixed at an amount that exceeds the amount that is reasonably related to the expenses incurred or to be incurred by the Corporation in relation to the matters in respect of which the charge is payable and shall not be such as to amount to taxation.

As well, aeronautical charges are declared under the *Prices Surveillance Act 1983* and are subject to PSA surveillance.

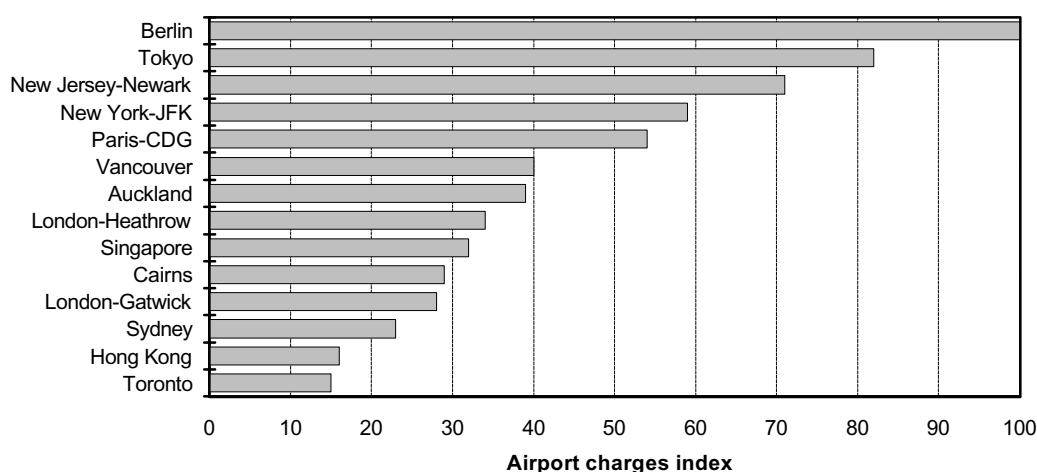
Non aeronautical charges are all those that are excluded from the definition of aeronautical charges in the FAC Act and include the leasing of terminal space

for airline activities and commercial trading. The IC recommended in relation to non-aeronautical charges:

... that airport operators and businesses located at airports should not be able to create and use their market power to earn above normal rates of return. Where there is significant potential for the abuse of market power, charges for non aeronautical activities levied by airport operators, airlines, and other lease holders should be subject to scrutiny by the PSA. (IC 1992a, p.123)

The BIE provides an airport charges index that proxies aeronautical charges for Australian and international terminals (Figure B4.18).

Figure B4.18: **Aeronautical pricing, 1993^a**



a Airport charges are the same at the FAC's major capital city airports of Sydney, Melbourne, and Brisbane.

Source: BIE (1994).

Internationally Australian charges are low, even though Australian airports recover a greater amount of aeronautical costs than most countries. Hilmer reforms could involve some examination of the FAC's charging policies for aeronautical and non-aeronautical services but these effects are not included in further analysis.

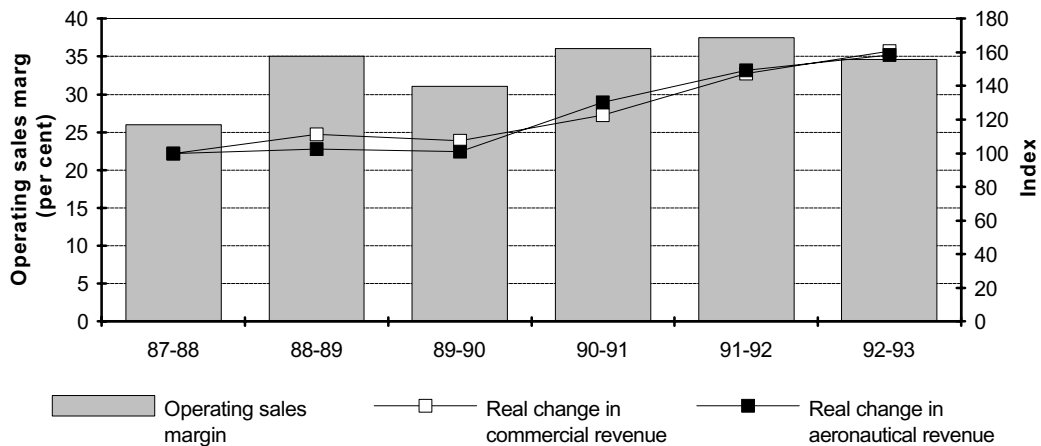
Financial performance

The FAC became liable for company tax in 1991–92 and receives no subsidy or budgetary fund allocation from the Federal Government (FAC, 1994).

Prior to the creation of the FAC in 1986, cost recovery at Australian airports was below 66 per cent and resulted in a shortfall of \$1.5 billion from 1970 to

1986.⁹ The change in real revenue from commercial and aeronautical activities indicates that since its inception, the FAC in total has more than recovered its costs (Figure B4.19).

Figure B4.19: **Changes in real revenue and operating sales margin, 1987–88 to 1992–93a,b**



a Operating sales margin is equal to EBIT less investment income as a proportion of total revenue less investment income.

b Changes in real revenue measure growth in real revenue for commercial and aeronautical activities.

Source: SCNPMGTE.

The charges for aeronautical services do not, however, cover the costs of producing them. Revenues from non aeronautical services cover the shortfall. The IC (1992a) found that the FAC only attains a 75 per cent cost recovery for aeronautical activities with non-aeronautical activities cross subsidising the remainder. In 1993–94 revenue from aeronautical services increased by 4.9 per cent to account for 39 per cent of FAC revenues, but the associated aeronautical costs accounted for 67 per cent of the FAC's total costs (FAC 1994).

Cross subsidisation may also exist between airports. In 1992–93, 14 of the 22 airports owned by the FAC did not trade profitably (FAC 1993) suggesting that these airports are subsidised by the profitable (major city) airports.

The choice of techniques to value assets is particularly pertinent to the efficient operation of airports. This is because capital expenditure decisions, the airport's earning capacity, and the airport's charges all depend on asset values.

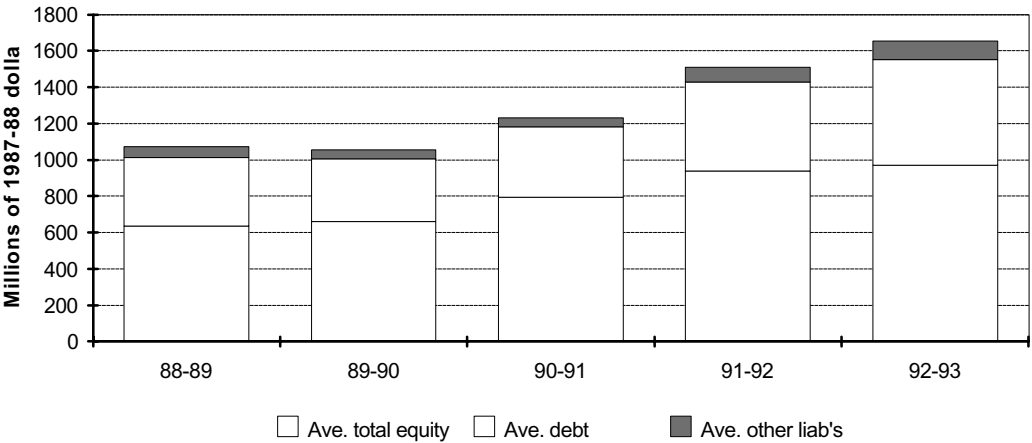
⁹ IC (1992a) p.90.

Initially, FAC assets were valued on physical examination as well as on a discounted cash flow model. The IC questioned the FAC's valuations methods:

While, to some extent, all valuations methods possess deficiencies, this does not reduce the need for accurate asset valuation. In this context, the Commission notes that current FAC practice may not be consistent with this principle since recent valuations have been capped. (IC 1992a, p.111)

Aside from the valuation issue assets have grown strongly at an average of 17 per cent per annum to a level of \$2.1 billion. Growth is largely attributable to the purchase of five additional airports, asset revaluations and capital expenditure to upgrade airport facilities. Equity has financed most of the expansion with only a moderate increase in debt levels (Figure B4.20). The Commonwealth Government has injected significant amounts of equity into the FAC, most for the development of Stage 1 of Badgerys Creek Airport.

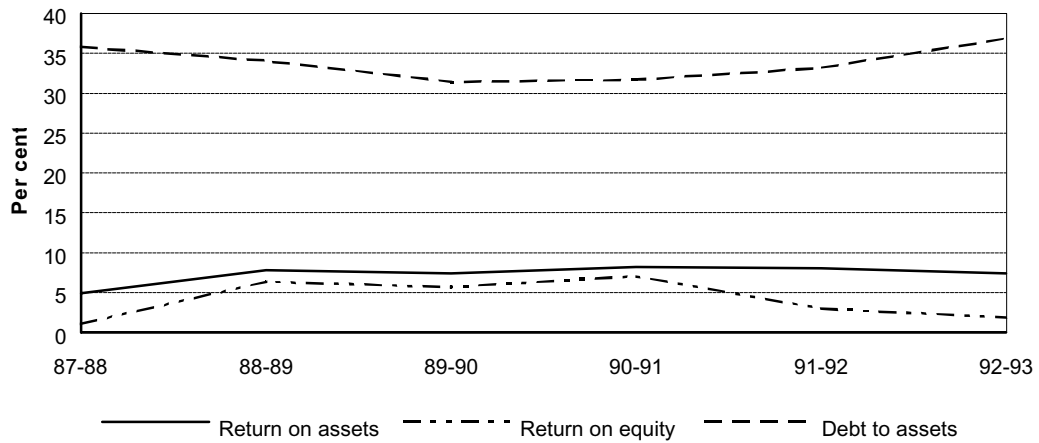
Figure B4.20: Funding of total assets, 1988-89 to 1992-93^a



^a The stacked bars indicate how total assets are funded, that is total equity plus debt plus other liabilities. Source: SCNPMGTE.

Return on equity has declined by 5.2 percentage points over the past two years, as total assets increased faster than profit. Return on assets has remained in line with government targets and would be expected to continue to do so (Figure B4.21). However, some caution must be exercised when interpreting these figures given the limitations imposed by the FAC's accounting treatments.

Figure B4.21: **Return on assets and related measures, 1987-88 to 1992-93**



Source: SCNPMGTE.

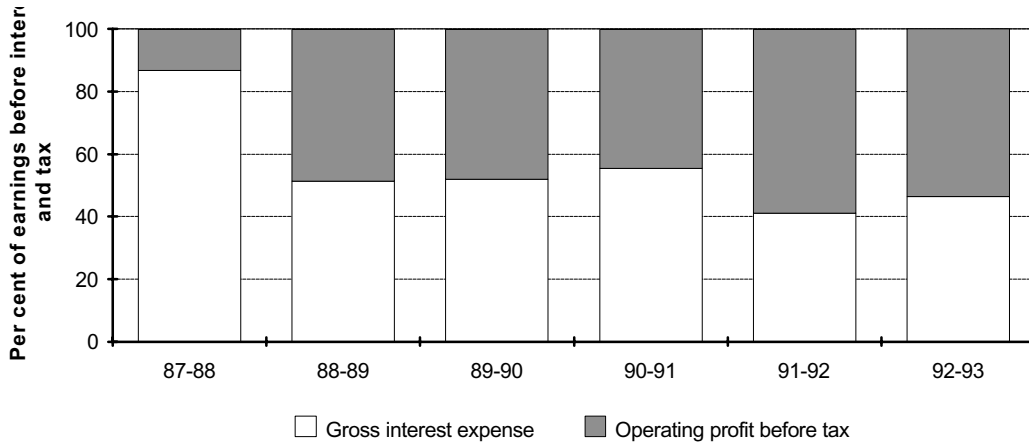
Close to 50 per cent of earnings before interest and tax (EBIT) are directed towards interest payments (Figure B4.22, Panel A). Since 1987-88 however, gross interest expense has been kept at a stable proportion of EBIT (Figure B4.21, Panel B).

Payments to government

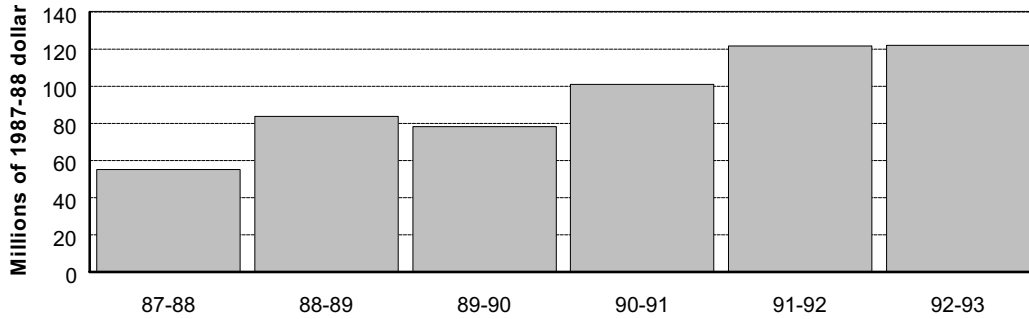
Real dividends and the dividend payout ratio have fluctuated over the six years, 1987-88 to 1992-93. Real dividends declined from \$12.7 million in 1990-91 to half that in 1992-93. The dividend payout ratio throughout the past six years has remained well below commercial rates (Figure B4.23).

Figure B4.22: Composition of earnings before interest and tax and earnings before interest and tax, 1987-88 to 1992-93

Panel A: Composition of earnings before interest and tax, 1987-88 to 1992-93

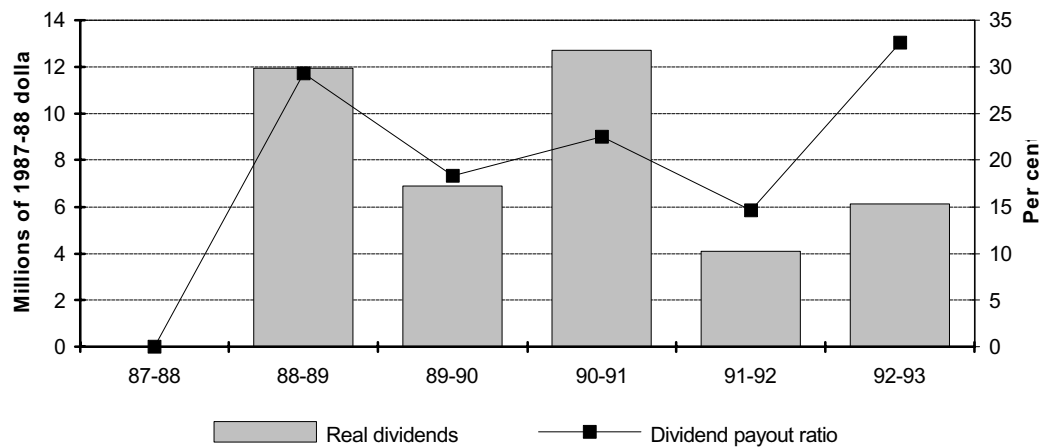


Panel B: Earnings before interest and tax, 1987-88 to 1992-93



Source: SCNPMGTE.

Figure B4.23: **Real dividends and payout ratios, 1987-88 to 1992-93**



Source: SCNPMGTE.

B4.3.4 Reforms considered by the Commission in relation to the Federal Airports Corporation

To investigate the effects of Hilmer reforms on the FAC, a range of specific price and productivity changes have been discussed. The scenario implied by these changes are summarised in Box B4.6.

Increasing competition between airports will move all airports towards best practice and result in large labour and capital productivity improvements, which will lower the total operating costs of the FAC.

Labour productivity improved significantly between 1988–89 and 1993–94 (Figure B4.16) with the largest improvements occurring in more recent years. If labour productivity improves at the rates seen between 1988–89 and 1993–94 then the implied labour cost savings between the present and the end of the next six year period are about 4 per cent. This analysis uses the 1993–94 labour cost shares where labour accounts for around 17 per cent of total operating expense.

As seen in Figure B4.17, there is a large scope for all Australian airports to increase capital productivity. However international comparisons were not chosen to calculate the magnitude of the capital productivity improvements, as the precise activities and size of international operations could not be ascertained. Instead, the magnitude of these productivity improvements for all airports was set at the difference between the capital productivity of an ‘average’ Australian airport in 1992–93 and that of Sydney airport in that

year.¹⁰ Using 1993–94 capital cost shares (where capital accounts for around 29 per cent of total operating expense), the cost savings from implied capital productivity improvements is of the order of 8 per cent.

The overall effect of the expected labour and capital productivity improvements is modelled as a 12 per cent fall in total operating costs by the end of next four years. Given the Commonwealth's adoption of policies that foster competition, future changes in labour productivity are expected to be at least as large as those seen in the past, so the total cost saving may in fact be larger. The effect of cost savings from labour and capital productivity is moderated somewhat by the relatively small share of labour and capital in overall operating costs.

Competitive neutrality arrangements seek to equalise the net competitive advantages of government agencies that arise from their public sector ownership. The impact of 'stylised' competitive neutrality arrangements was modelled to remain consistent with the effect of Hilmer reforms on other Commonwealth GBEs and to reflect the expected commercial characteristics of the privately leased airports. The stylised competitive neutrality arrangements assumed are:

- a commercial capital structure as represented by a debt to assets ratio of 50 per cent;
- a dividend payout ratio of 75 per cent; and
- a tax equivalent regime that charges income tax at 33 cents in the dollar.

The imposition of debt guarantee fees is not modelled.

The impacts on prices, quantities and other sectoral variables, of the reforms considered, are summarised in Box B4.6. These expected impacts form the basis for evaluating the economy-wide and fiscal implications of reform through model experiments summarised in Chapter A2.

¹⁰ The capital productivity measure for this 'average' Australian airport was calculated as the average of the capital productivity scores for Sydney, Brisbane, Melbourne and Cairns airports reported in BIE (1994a).

Box B4.6: Summary of FAC scenario*Achieving best practice cost*

Change in operating costs (per cent)	-12
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Imposing competitive neutrality arrangements

Target debt to assets ratio (per cent)	50
Target dividend payout ratio (per cent)	75
Target income tax (or TEP) rate (per cent)	33

Source: Commission estimates.

B4.4 Civil Aviation Authority**B4.4.1 Hilmer reforms**

When considering the effects of the Hilmer reforms on the CAA, it is important to distinguish between the CAA's regulatory and non-regulatory functions. The CAA's regulatory functions were recently placed into a separate directorate within the organisation. The directorate will soon form the basis of an independent organisation called the Civil Aviation Safety Authority (CASA). This should avoid conflicts of interest between the CAA's current regulatory and non-regulatory functions.

As part of the Hilmer reforms, all Governments will agree to review anti-competitive legislation, with a view to developing non-legislative approaches to meeting policy objectives which do not unnecessarily restrict competition. Accordingly, the CAA's legislative monopoly on the provision of its non-regulatory services may end in the near future, if COAG agrees to implement the Hilmer reforms.

In the event of competition, the pre-eminent position of the CAA may give it market power. The CAA is, however, currently subject to TPC and PSA supervision, which would control any illegal exercise of that power.

Irrespective of whether competition is allowed, the Hilmer reforms also involve imposing competitive neutrality arrangements on the CAA. This may have a limited effect, however, because the CAA already pays corporate income tax and dividends to the Commonwealth Government, it has a commercial rate of return target and it is subject to loan guarantee fees.

B4.4.2 Recent developments

The Civil Aviation Authority is a Commonwealth Government business enterprise responsible for providing a variety of services to the aviation industry. These services include: air traffic control; traffic and flight information; navigation services; aeronautical information; aviation safety and regulatory services; search and rescue; and airport rescue and fire fighting.

The CAA was formed on 1 July 1988 as part of the general reform of the aviation industry. Prior to this, the services the CAA now provides were the responsibility of the Department of Transport and Communications. While initially formed as a statutory authority, on 20 June 1990 the CAA became a Government Business Enterprise, and it now pays corporate income tax and dividends to the Commonwealth Government.

An important development was the creation of the Directorate of Aviation Safety Regulation (DASR) as a separate entity within the CAA.

DASR has been given the responsibility to oversight at arm's length the safety aspects and issues associated with any change or new development being contemplated by the Authority. (CAA 1994, p.19)

In 1993–94 the aviation regulatory certification of all CAA service providers (for example air traffic control and rescue and fire fighting) was consolidated within DASR.

The project [consolidation of regulatory services] is aimed at ensuring that the safety regulation functions of the CAA are distanced from the provision of services to the industry. This approach will also allow the Authority to certify the operations of private enterprise organisations should the Government allow competition for provision of what are now CAA monopoly services. (CAA 1994, p.21)

As of 1 July 1995, the DASR activities will be carried out by an independent organisation called the Civil Aviation Safety Authority (CASA).

Revenue sources

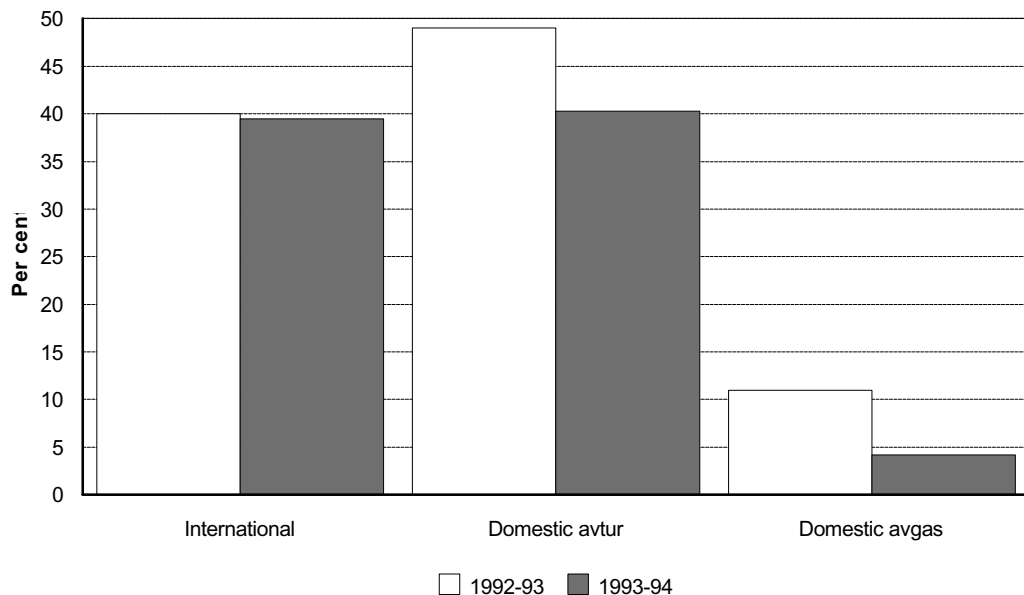
Most of the CAA's revenue flows from direct charges for terminal navigation (air traffic control and other airways costs associated with take-off and landing), rescue and fire-fighting services and enroute charges. The charges are levied according to the type of aircraft. For Avtur aircraft (jet aircraft using aviation turbine fuel) charges are based on the weight of the aircraft and distance travelled (for the calculation of enroute charges). There is also an excise on Avtur fuel that is collected solely for safety regulation cost recovery but its total value is small relative to the other charges on Avtur aircraft. For Avgas aircraft (conventional aircraft using aviation gasoline) operators only pay terminal navigation and rescue and fire-fighting charges at capital city primary airports

and contribute to the provision of these and other services at smaller facilities through the payment of excise on Avgas fuel.

In September 1993, the CAA increased the excise on Avtur and Avgas fuels by 0.264 cents per litre to offset the reduction in the Commonwealth's contribution to safety regulation, (CAA 1994, p.67). Currently the level of excise on Avtur and Avgas which is directly related to safety regulation cost recovery is 1.476 cents per litre. The excise on Avtur and Avgas fuels is an interim measure for 1993–94 and 1994–95 whilst long term funding arrangements are finalised. The interim arrangements also involve a special fee being paid to the CAA by Australian based airlines for the regulation of their international operations (CAA 1994, p.67). On 1 July 1994 the fee increased to \$1 million.

A significant portion (in the order of 87 per cent) of the CAA's total revenue comes from airways revenue — revenue from air traffic and safety services paid by domestic and international airlines. In 1993–94, the composition of CAA's airways revenue was 47 per cent from international airlines, 48 per cent from domestic Avtur, and 5 per cent from domestic Avgas (CAA 1994, p.67), while in the 1992–93 the respective percentages were 40, 49 and 11 (CAA 1993, p.25) (Figure B4.24).

Figure B4.24: **CAA airways revenue shares, 1992–93 and 1993–94**



Sources: CAA, 1992 and CAA, 1993

A significant part of the CAA's non-airways revenue — Safety services, Regulatory services and 'other' revenue — consists of Commonwealth Government payments for safety services. In the 1990–91 Budget, the Commonwealth announced its intention to phase in full cost recovery for aviation standard setting and enforcement from 1 November 1991. The introduction of this policy was later delayed to 1 July 1992. The 1992–93 budget provided on-going funding for 50 per cent of these costs up to an inflation indexed limit of \$22.8 million per year. From 1 July 1993 the Commonwealth contribution was to decrease to achieve the 50 per cent target cost recovery level by 1 July 1995. As well the Commonwealth also decided to phase in full cost recovery for implementing aviation standards (including the provision of regulatory services) with full cost recovery by 1 July 1994. Aviation search and rescue costs will continue to be met by the Commonwealth Government (Working Group 1993, p.40).

In October 1994 the Commonwealth revised its policy on aviation safety regulation cost recovery and announced that it will fund that part of aviation safety regulation that is a public good. This will increase the Commonwealth's contribution somewhat. The CAA and the aviation industry are currently consulting to determine the method of cost recovery from industry and the travelling public for their portion of the cost associated with their use of aviation safety regulation. The final agreements will recognise the need to provide an appropriate level of resources for the effective regulation of aviation safety and to ensure the efficient allocation of those resources. In this regard it will be important to ensure that funding arrangements remain transparent.

B4.4.3 The likely impacts of reform

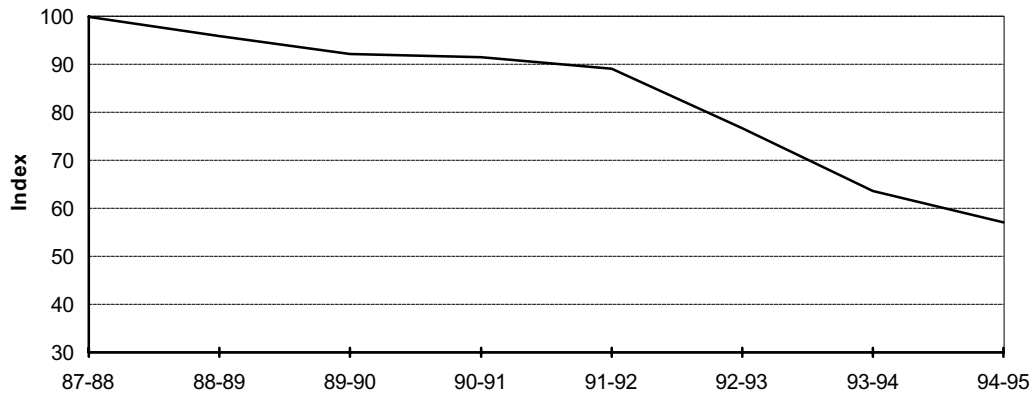
As a monopoly provider of its services the CAA's performance — both in terms of efficiency and effectiveness — is important to the entire aviation industry. As pointed out by the BIE (1994a, p. 27), the CAA has both direct and indirect effects on airline costs. For instance, the CAA's overall performance will determine the level of its charges — which account for between 5 and 10 per cent of the total costs of major airlines — while its management of air traffic will affect airline costs associated with airport congestion (BIE 1994a, p. 27).

Pricing

In general airways charges fell by 44 per cent in real terms from 1 July 1988 to 1 July 1994 (Figure B4.25). Over the period 1 July 1988 to 1 July 1993 airways charges fell by close to 25 per cent in real terms. From 1 July 1993 these charges were reduced by a further 17 per cent in real terms and were

reduced by a further 10.4 per cent on 1 July 1994 when the CAA fixed prices for air traffic and rescue and firefighting services.

Figure B4.25: Real price index of airways charges, 1988–89 to 1994–95^a



^a The figure for 1994–95 is a forecast.
Source: SCNPMGTE and CAA, 1994.

The charges for the CAA's other services have been rising as full cost recovery is phased in. While these services generate less than 2 per cent of CAA revenues, they can still have a substantial impact on operators, particularly of Avgas aircraft. However, the CAA states that:

An important development is that the excise on Avgas, which is attributable to the provision of air traffic services to small general aviation aircraft, will be reduced by 7.152 cents per litre from 1 July 1994 – a saving of 34 % (real) to operators of these aircraft. (CAA 1994, p.70)

As discussed in IC (1992a), cross-subsidies arise because charges for air traffic control, rescue and fire fighting and en-route services often do not directly relate to usage. This is a particular problem for Avgas aircraft operating in areas not provided with these services, as the excise on Avgas fuel does not vary by location. In addition, until the recent change in the Avgas excise mentioned above, Avgas aircraft operating out of capital city primary airports paid terminal navigation and rescue and fire fighting charges while also paying for these services through the Avgas excise.

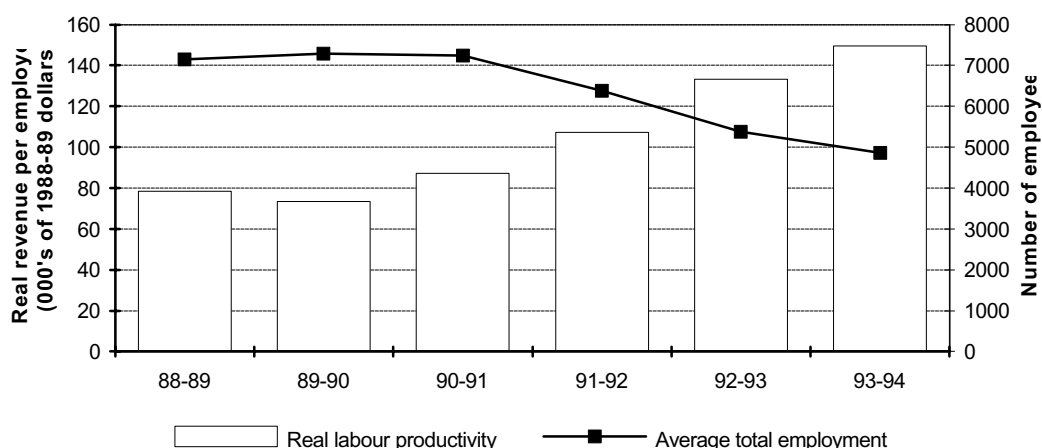
One immediate effect of introducing even limited competition would be a decline in cross-subsidies between various types of operators. More generally though, operational concerns hamper the task of removing cross-subsidies. The Avgas excise is comparatively easy to collect and any more elaborate system of charging would require a detailed examination of costs and benefits.

Productivity

To achieve the efficiency improvements which have allowed the reductions in its charges, the CAA has recently been involved in a heavy program of labour shedding. On 30 June 1991 the CAA's total staff stood at 7008, and by 30 June 1994 it numbered 4729, a decrease of 33 per cent. Given the labour intensive nature of the CAA's services (staff costs were 63 per cent of operating expenses in 1993-94), this decrease in staff has contributed significantly to CAA's declining operating costs.

Staff reductions coupled with changes in domestic and international aviation activity have resulted in the CAA's real labour productivity increasing over the period 1989-90 to 1993-94 (Figure B4.26). So, while staff numbers have decreased by 33 per cent, real labour productivity has almost doubled. However, this figure is based on airways charges alone, so to the extent that charges for other services have not decreased as much as airways charges, the measure of real labour productivity will be biased upward.

Figure B4.26: **Real labour productivity and total employment, 1988-89 to 1993-94^{a,b}**



- a Includes the CAA's safety services.
- b The real labour productivity measure is constructed by deflating each organisation's total revenue by its own price deflator (not the CPI). This produces an implicit quantity measure that is then divided by total employment to obtain the real labour productivity measure. An industry average is calculated as the sum of these measures across the industry, with each organisation's measure weighted by its share in total industry revenue.

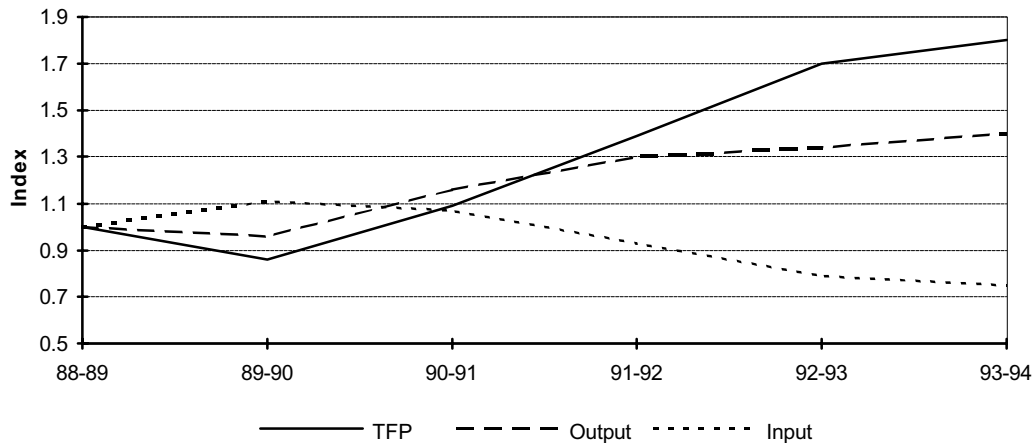
Source: SCNPMGTE and CAA, 1994.

Labour productivity is not a good measure of total productivity. For example labour productivity would increase if the CAA substituted capital for labour. A

better indicator of total productivity improvements is total factor productivity (TFP) which will compensate for changes in relative input use.

As depicted in Figure B4.27, the CAA's TFP (excluding the Directorate of Aviation Safety Regulation) has increased by over 80 per cent since 1988–89 (when the CAA was established). This is due to reduced input usage and growth in output. Productivity improvements from enterprise bargaining agreements have acted as an important mechanism for achieving cost efficiencies (CAA 1994, p.68) and improvement in the Australian economy has led to output growth. For example, the use of the CAA's Air Traffic Service and Rescue and Firefighting Service by domestic and international airlines grew by 4.5 per cent and 2.5 per cent respectively in 1993–94 (CAA 1994, p.67).

Figure B4.27: **Total factor productivity, input and output indices, 1988–89 to 1993–94^a**



a Does not include the CAA's safety services.

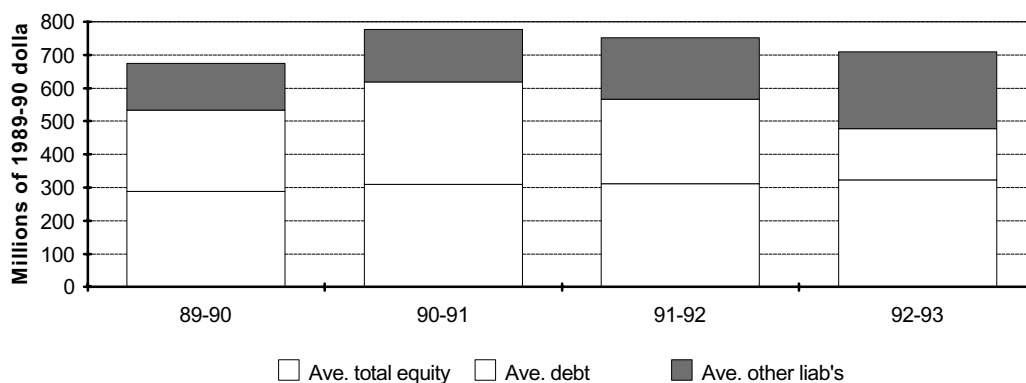
Source: CAA, 1994.

Financial performance¹¹

Over the period 1989–90 to 1992–93, the CAA's financial performance was mixed. Over the period, there has been little change in the value of the CAA's total assets (Figure B4.28).

¹¹ To remain consistent with the Government's decision to apply the CAA economic rate of return to all assets except those used for safety regulation and for search and rescue, the financial calculations presented should exclude DASR. However, the use of financial data presented in SCNPMGTE precludes DASR's exclusion.

Figure B4.28 Financing of total assets, 1989–90 to 1992–93, b



a Includes the CAA’s safety services.

b The stacked bars indicate how average total assets are funded, that is average total equity plus average debt plus average other liabilities.

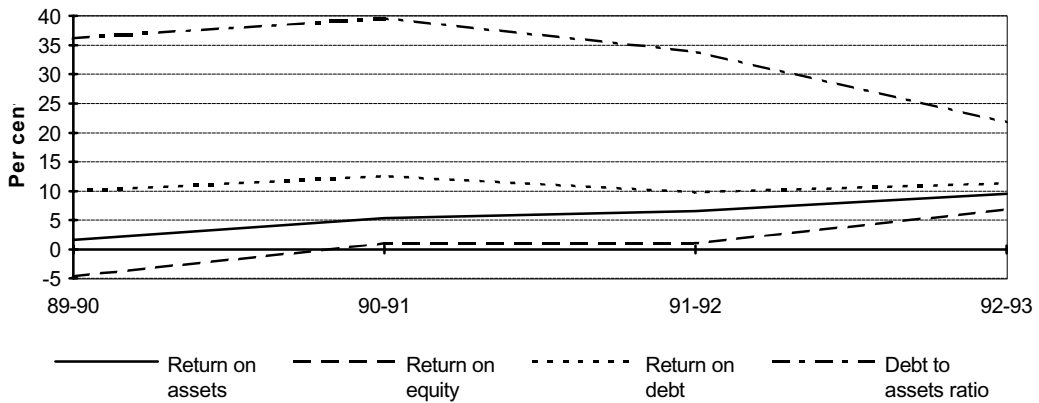
Source: SCNPMGTE and CAA, 1994.

The CAA’s return on assets (Figure B4.29, Panel A) was positive in all years and has improved over the period. Return on equity was negative in 1989–90 reflecting a poor operating result for that year, but has improved since, in part because of debt reductions. This is reflected in the CAA’s falling debt to assets ratio and the decrease in gross interest expense as a percentage of earnings before interest and tax (EBIT) (Figure B4.29, Panel B).

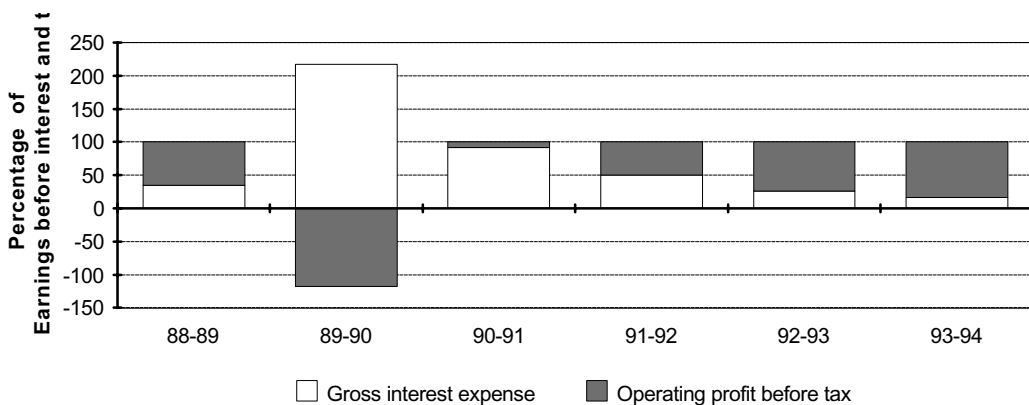
When it was established as a GBE in 1990–91, the CAA was set a real rate of return target of 7.5 per cent to be achieved on all assets but those used for safety regulation and search and rescue. Calculated on this basis, the return achieved for 1993–94 was 13.3 per cent (CAA 1994, p.70). In future years the CAA will be expected to achieve an economic rate of return target based on a fixed risk margin over the long-term Government Bond Rate.

Figure B4.29: **Return on assets and related measures and composition of earnings before interest and tax, 1989–90 to 1992–93^a**

Panel A *Return on assets and related measures*



Panel B *Composition of earnings before interest and tax*

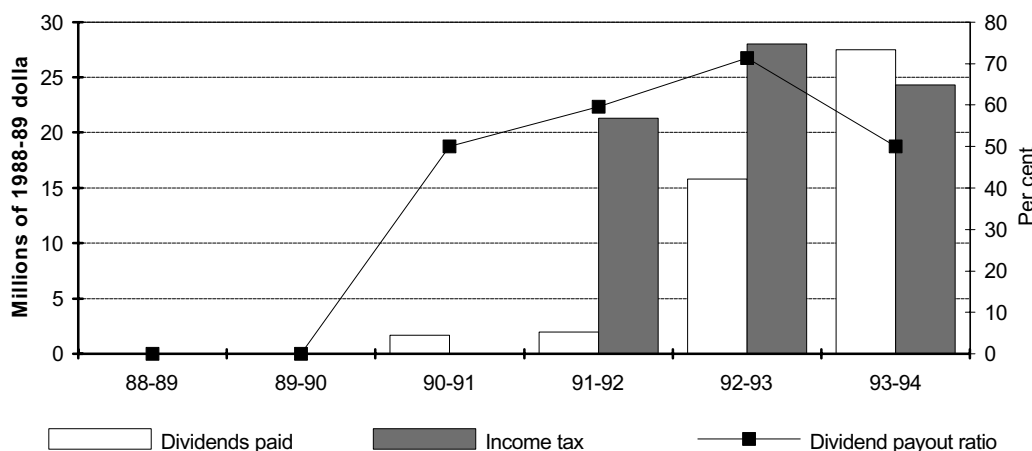


a Includes the CAA’s safety services.
Source: SCNPMGTE and CAA, 1994.

Payments to Government

The CAA has been making dividend and income tax payments to the Commonwealth Government since 1991–92. Dividend payments have increased every year since that time (Figure B4.30).

Figure B4.30: **Payments to Government by the CAA, 1988–89 to 1993–94^{a, b}**



a Includes the CAA’s safety services.
 b Calculated on accrual not cash basis.
 Source: SCNPMGTE and CAA, 1994.

International comparisons

In its aviation benchmarking study, the BIE (1994a) reported that landing and en-route charges in Australia are low by international standards. However, aviation worldwide has traditionally been highly regulated, and with it landing and en-route charges, so these international comparisons may be an imperfect guide to the optimal level of such charges.

On labour productivity, the performance of the CAA was also found to be better than that at many of the airports sampled by the BIE. The labour productivity of air traffic control employees at Australian airports, as measured by aircraft movements per employee, was found to be better than many of the airports sampled, including Copenhagen, Hong Kong and Stockholm. However, the labour productivity for the best performing Australian airport, Sydney, was still only 20 per cent of that achieved at San Francisco airport.

The labour productivity of fire and rescue employees at Australian airports, again measured by aircraft movements per employee, was also found to lag North American airports. While labour productivity at Sydney airport was similar to that at European airports, at other Australian airports performance was somewhat worse. The BIE (1994a, p.82) report that this is because staffing levels are the same across all Australian airports while there are large differences in aircraft movements.

B4.4.4 Reforms considered by the Commission

The restructuring of the CAA in recent years has already put it on a more commercial footing, and as yet there are no signs that this program of reform is finished. Accordingly, the efficiency of the CAA may be expected to improve in the years to come. This should make the CAA more competitive if and when alternate suppliers of non safety services, such as air traffic control services, are permitted.

Although removing cross-subsidies are part of Hilmer reforms, these are not modelled. Instead, attention is focussed on the overall cost reductions seen when past productivity improvements continue into the future.

When the CAA's TFP annual growth rate for 1993–94 is projected forward to the year 1997–98, then TFP increases by 22 per cent. This translates into a 18 per cent decrease in total costs. As the CAA's TFP study does not include safety services, which account for 10 per cent of operating costs (Working Group, 1993), the projected cost reduction for the CAA as a whole is 16 per cent. This forms the basis of Scenario 1 presented in Box B4.7.

In Scenario 2, a set of stylised competitive neutrality arrangements are investigated. These comprise:

- a commercial capital structure as represented by a debt to assets ratio of 50 per cent;
- a dividend payout ratio of 75 per cent; and
- a tax equivalent regime that charges income tax at 33 cents in the dollar.

The imposition of debt guarantee fees is not modelled.

The impacts on prices, quantities and other sectoral variables of reform in the CAA are summarised in Box B4.7. These expected impacts form the basis for evaluating the economy-wide and fiscal implications of reforms through model experiments summarised in Chapter A2.

Box B4.7: Summary of the CAA scenario

Total factor productivity increases at the 1993 –94 growth rate until 1997 –98

Change in operating costs (per cent)	-16
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Competitive neutrality arrangements

Target debt to assets ratio (per cent)	50
--	----

Target dividend pay out ratio (per cent)	75
--	----

Target income tax rate (per cent)	33
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Source: Commission estimates

B4.5 Rail reform

This section explores the implications of Hilmer and related reforms for the rail industry. Although rail is not explicitly mentioned in the terms of reference (as set out in Attachment A in Appendix D1), its inclusion and separate analysis is necessary in order to investigate the full effect on economic growth and revenue of Hilmer and related reforms. There are a number of reasons why this is so.

First, although rail is not included as a related reform in the terms of reference, a primary competing sector, road transport, is included¹². Given the competition between these modes of transport, particularly in the provision of freight services, to consider reforms in one sector in isolation from reforms in the other would be amiss.

Second, an important part of the Hilmer reforms (discussed further below) is that all governments will agree to apply competitive neutrality arrangements that seek to equalise net competitive advantages of government agencies arising from their public ownership. Considered in isolation from reforms in competing modes of transport, this is sufficient to warrant the inclusion of rail, because government rail authorities currently enjoy net competitive advantages arising from their government-owned status (for example, being allowed to operate with non-commercial capital structures and rates of return).

Third, as rail constitutes a large part of the transportation sector, its performance has implications for the performance of other industries and the economy as a whole. Given that the increase in competitive pressures resulting from the Hilmer reforms (through, for instance, third party access provisions) will affect the performance of the industry, the implications of these reforms on overall economic performance should be captured.

A broader discussion of how the (prospective) Hilmer reforms relate to the rail industry is provided in the following section.

B4.5.1 Hilmer reforms

Applying Hilmer reforms to government rail authorities is likely to result in greater competition in the rail industry and the transport industry more generally. While there is already strong competition between road and rail in some transport activities, this should intensify and pervade the industry. This would particularly occur through:

- extending Part IV of the Trade Practices Act to all State rail authorities;

¹² The consequences of related reform of road transport are analysed in Chapter B.9.

- establishing a legal right to negotiate access to rail infrastructure on commercial terms, where an effective access regime is not in place;
- applying the Prices Surveillance Act to those State rail authorities not subject to effective price oversight arrangements;
- applying competitive neutrality arrangements that seek to equalise net competitive advantages of government rail authorities arising from their public ownership;
- removing statutory monopolies with respect to the transport of some commodities; and
- establishing the appropriate structure for a rail authority before that rail authority is exposed to competition from the private sector or before it is privatised, and removing any regulatory functions from the rail authority before it is exposed to competition.

Of particular importance for the analysis of the impact of Hilmer reforms in the rail sector is the identification and funding of CSOs, and the interpretation of CSOs in justifying the deficits of government rail authorities. Payments for the provision of CSOs by government authorities are consistent with the Hilmer reforms. However, to ensure these payments do not provide a competitive advantage to government rail authorities, the contracts for the provision of transport CSOs must be open to tender to public and private rail operators (particularly for those operating under third party access provisions), and operators of competing modes of transport. For instance, if there is a CSO in the transportation of grain, the tender for the contract must be open to road and rail transport providers, be they public or private.

Another implication of the Hilmer reforms, under competitive neutrality, is that government rail authorities must achieve a commercial rate of return on their capital. This implies each authority must fully recover its costs of providing each service. For example, the revenue from the transportation of grain on a particular route must cover the costs of providing that service, where the costs include a commercial rate of return on the assets employed. The aim of the analysis that follows is to determine the real price changes for each service required to cover costs, after accounting for achievable improvements in productivity.

When calculating the proportion of cost currently recovered, it is important to correctly account for the funding of CSOs. This raises two issues. First, the allocation of contracts to provide CSOs will be determined in the competitive environment described above: the funding of CSOs should reflect the true costs of providing the service, including a commercial rate of return on the assets

employed. Second, all CSOs are expected to be separately identified and funded. For passenger rail, the current arrangements for the costing and funding of CSOs suggest that the dollar value of payments for identified CSOs understates the true cost of providing the non-commercial services required by governments. As a result, different scenarios regarding the degree to which payments for CSOs currently understate their true cost are presented and accounted for in the analysis.

While the Hilmer reforms would involve substantial changes to the rail industry in the future, most rail authorities are already involved in ongoing reform programs. It is therefore important to review recent developments in the industry, particularly in relation to arrangements for the introduction of competition.

B4.5.2 Recent developments

The rail industry is currently dominated by GBEs that were monopoly providers of rail services in a particular state or territory until very recently. This historical non-integration of the rail system makes it preferable to review recent developments in the industry on an authority by authority basis, as is done below. However, to provide a snapshot of the current structure of industry as a whole, Table B4.2 identifies for each rail authority the nature and geographic area of its operations, as well as its ownership.

Table B4.2: Summary of rail authority operations

<i>Rail authority^a</i>	<i>State of operation</i>	<i>Urban passenger service</i>	<i>Rural and interstate passenger service</i>	<i>Intra state freight</i>	<i>Inter state freight</i>	<i>Owner government</i>
SRA	NSW	Y	Y	Y	N	NSW
PTC	Victoria	Y	Y	Y	N	Victoria
QR	Queensland	Y	Y	Y	N	Queensland
AN	SA and Tasmania	N	Y	Y	N	Commonwealth
Westrail	WA	N	Y	Y	Y	WA
NR	NSW, Victoria, Queensland, SA, and WA	N	N	N	Y	Commonwealth, NSW, and Victoria ^b

a The full name of each rail authority is as follows: SRA, State Rail Authority; PTC, Public Transport Corporation; QR, Queensland Rail; AN, Australian National Railways Commission; Westrail, Western Australian Government Railways Commission.

b Western Australia and South Australia are not shareholders but are signatories to the Shareholder's Agreement

Source: Various rail authority annual reports.

State Rail Authority (NSW)

The State Rail Authority (SRA) is responsible for providing passenger and freight rail services in New South Wales. SRA is organised into three business groups, CityRail, CountryLink, and FreightRail. CityRail provides passenger rail services from Newcastle in the north to Nowra in the south and Lithgow to the west. CountryLink provides intrastate and interstate long distance passenger rail services as well as connecting road coach services. FreightRail provides an intrastate rail freight service.

SRA was first established as a statutory body of the NSW government under the *Transport Authorities Act 1980*. On 16 January 1989 the *Transport Administration Act 1988* came into effect and redefined the relationship between SRA and the government (SRA 1991, p.54). This required SRA to operate on a commercial basis, with an independent commercially oriented board. The Act delineates SRA's managerial responsibility for commercial decisions and ministerial responsibility for social policy decisions (IC 1991b, p.25).

To reconcile these competing objectives, SRA has received CSO payments from the NSW government since 1 July 1992 (SRA 1992, p.13). As provided for under the *Transport Administration Act 1988*, these payments reimburse SRA for any revenue shortfall (measured against best practice costs) arising from non-commercial services provided under the direction of government.

Currently, the NSW rail industry is in a phase of major change following,

...the State Government's adoption of an "Open Access" policy, whereby third party operators are permitted access to the State's rail infrastructure. State Rail is currently developing and will progressively implement an Access Policy to ensure access is granted to all operators on an equitable basis (NSW Government 1994, p.129).

This policy is set to have a particularly large impact on the rail haulage of coal. The Hunter Valley Rail Project, funded by a consortium of Hunter Valley coal producers, has put forward several proposals to introduce private involvement and competition into the rail haulage of coal, following an invitation from the NSW government to the coal industry in May 1992. These proposals aim to reduce coal freight rates that are high by international standards (BCA 1994, p.35).

In its 1993–94 Annual Report, SRA's Chairman, John Landels, reported on a program to place SRA's business groups on a fully commercial basis. This will involve separate financial structures, balance sheets and outsourcing arrangements for each business group. Non-core assets will be transferred to the newly formed Rail Services Group.

On the related issue of industrial reform, SRA reported that the number of employee classifications has been reduced from thirty to just one at two wagon maintenance centres, and from fourteen to four at the XPLOER/Endeavour Service Centre (SRA 1994, p.5 and p.22).

SRA has also set a target to reduce costs by 12 per cent and increase revenue by 6 per cent over the next five year (SRA 1994, p.5).

During 1993–94, at the mid-point of its strategic plan, SRA contracted Mercer Management Consulting Inc. to conduct a review of the non-financial performance targets established for SRA by consultants Booz-Allen and Hamilton in 1989 (SRA 1994). This review found that FreightRail had already achieved its targets and will reach updated targets adjusted for changes in world best practice (SRA 1994, pp.12-13). With CityRail, the review found that the original 1989 targets will be achieved by 1995. New (higher) targets were set based on international benchmarks, and CityRail says it is confident of meeting them (SRA 1994, p.16). CountryLink has already met both its original and updated targets, these being related only to staff numbers (Mercer, 1993).

The Mercer review also identified areas requiring further improvement. These are:

- FreightRail — train crew productivity, planning process, capital program management and industrial relations;
- CityRail — operating labour productivity, capital program management, engineering staff levels, services outsourcing, marketing, fare structure, industrial relations, cost and productivity management, CSO management process and risk management; and
- CountryLink — train crew productivity, catering services, ticket sales and reservation systems, fare policy, and marketing programs (Mercer 1993, p.3).

Public Transport Corporation (Victoria)

The Public Transport Corporation (PTC) was formed in July 1989 through the amalgamation of the State Transport Authority (V/Line) and the Metropolitan Transit Authority (The Met). The PTC provides tram, bus, interstate and intrastate train services. Intrastate freight and country passenger services continue to be marketed as V/Line (SCNPMGTE, 1994).

On 6 January 1993, the Victorian Minister for Public Transport, Alan Brown, announced a transport reform package. The main aims of the package are to tailor the public transport system to respond to customer needs and to ensure the long term viability of public transport in Victoria (PTC 1993, p.4).

As a first step, this package aims to cut Victoria's public transport funding deficit by \$245m per year by December 1995 (PTC 1993, p.4). However, this should be placed in the context of the level of support from government at the time that the package was announced. In that year, 1992–93, the PTC received contributions totalling \$844m, in respect of: operating subsidy, \$488m; concession reimbursements, \$46m; payments to superannuation schemes, \$144m; works and services expenditure, \$8m; rental of operating vehicles, \$38m; termination payments, \$113m; and other operating expenses, \$5m (PTC 1994, p.31).

Since the reform package was announced a number of organisational changes have occurred.¹³

- The Minister, the PTC and the rail unions reached agreement over work practice and efficiency reforms. These include: driver-only train operation; automated ticketing at stations; changes to station staffing and mobile customer service staff; operation of services to international best practice; and the substitution of buses for trains on certain lines.
- The successful tendering of country passenger rail lines: the Melbourne to Warrnambool and Melbourne to Shepparton lines are now operated privately; the Sale to Bairnsdale, Melbourne to Leongatha, Shepparton to Cobram, Ballarat to Dimboola, Ballarat to Ararat and Melbourne to Mildura lines have been replaced by a luxury coach service; and the remaining services to Albury, Swan Hill and Stony Point are to be operated with a combination of train and coach services at international best practice levels (PTC, 1993 and 1994). The Government's country passenger reforms are now complete (PTC 1994, p.5).
- During 1993–94 work began on Melbourne's new automated ticketing system under a 10 year, \$300m, contract to OneLink Transit Systems that covers installation, operations and maintenance (PTC 1994, p.5).
- Various contracts for cleaning, maintenance, security and infrastructure were awarded during 1993–94 (PTC 1994, p.5).
- In 1993–94 the PTC was restructured into five businesses (Met Trains, Met Bus, Met Trams, V/Line Passenger and V/Line Freight), a small corporate headquarters, and three Commercial Services Groups (Central Services, Infrastructure and Maintenance). The five businesses, each headed by a managing director, will eventually operate as trading entities with 'full

¹³ A number of changes to the operation of the PTC's tram and urban bus services have also occurred. However, as this section focuses on rail transport, these are not discussed further.

bottom line ownership' (PTC 1994, p.4). The Commercial Services Groups, which support these businesses, are establishing annual trading agreements under which they will provide specialist support services at cost (PTC 1994, p.4).

The PTC report that they reduced their call on government for operating subsidies by \$96.9m during 1993–94 (\$170m since 1992–93). In addition, total staff numbers (excluding contract and temporary staff) dropped from 14 603 in 1992–93 to 11 643 in 1993–94, a fall of 2 960 staff (20 per cent). However, the labour cost savings arising from this are at least partly offset by the increased use of contractors mentioned above.

At present, the PTC receives concession reimbursements, but no CSO payments, from the Victorian government. A CSO policy statement was released by the Government in August 1994. While it was concerned mostly with definitional, funding and costing issues, this statement

...recognised that it is necessary to phase in CSO policy consistent with the overall timetable for GBE reform. As the Autumn Statement of 1993 indicated, this program will be extensive over the next three years and will cover all GBEs. A key milestone in the appropriate treatment of CSOs will be their consideration during the reform and restructure of GBEs (OSOE 1994, p.12).

Queensland Rail (Queensland)

Queensland Rail (QR) began operations in 1865. It currently provides heavy haul (coal and minerals), general freight, livestock, suburban and long-distance passenger services. QR faces direct competition for its services in all sectors except coal and minerals. In that sector, a permit from the Department of Transport is required to use alternative means of transport (SCNPMGTE 1994, p.311).

For the first 126 years, QR's operations were structured according to engineering functions. However, in 1990 QR created three business groups focussed on customer service and commercial imperatives: Coal and Minerals; Freight; and Passenger. In 1991, the *Transport Infrastructure (Railways) Act 1991* established QR as a Body Corporate controlled by a Board of Directors (SCNPMGTE 1994, p.311).

During 1991, a number of other important developments took place:

- QR was given legislative power to allow other operators to run trains over the QR network (SCNPMGTE 1994, p.311);
- an Enterprise Bargaining Agreement was reached between QR and unions (QR 1992, p.3); and

- the Queensland Industrial Relations Commission ratified a new classification structure on 1 June 1992 as part of the ongoing award restructuring process (QR 1992, p.3).

As part of the commercialisation process, QR began accrual accounting for the first time in 1992–93. This, together with finalising a framework for the treatment of CSOs and operating subsidies, and the treatment of capital grants as equity rather than revenue, is readying QR for corporatisation on 1 July 1995 under the *Government Owned Corporations Act 1993* (QR 1994, p.9). CSOs payments appeared in QR's accounts for the first time in 1993–94, and totalled \$215 million (\$237 million if concession reimbursements are classed as a CSO). Only concession reimbursements had been paid by the Queensland government prior to this.

A further important development was the payment of de facto coal royalties (\$221m) to the Queensland Treasury for the first time in 1993–94, the amount being agreed upon by QR and the Treasury (QR 1994, p.69).

The previous Government's policy was to include a de facto royalty component in the freight rates applying to export coal projects. This de facto royalty was in addition to the royalty collected under the Mineral Resources Act of 4% or 5% of the free-on-rail (f.o.r.) value of the coal (Queensland Government, 1993 p.1).

Previously, this de facto royalty was not identified in coal freight rates. A recent review of coal rail studies shows that rates for coal haulage include an 'excess' freight charge (BCA 1994). The de facto royalty probably does not represent the full amount of QR's excess coal rail freight charges. On a dollar per tonne basis, the de facto coal royalty paid by QR (applicable only to export coal) amounts to \$3.06 (calculated from QR (1994)). However, estimates presented in the Commission's 1991 Rail Report suggested that QR's excess freight charges, averaged over both domestic and export coal, were of the order of \$7 per tonne in 1990 (including the de facto royalty). This was based on an estimate of costs of around \$4 per tonne, including a return on capital (IC 1991b, p.263). Since then, QR's average coal freight charge has only decreased marginally (in nominal terms), from \$11.38 per tonne in 1990 to \$12.05 per tonne in 1993–94 (IC, 1991b and QR, 1994). After deducting the de facto royalty paid on export coal, QR's average freight charge for domestic and export coal is \$9.16 per tonne. Assuming no change in unit costs (estimated at \$4 per tonne in 1990), QR may currently be overcharging coal producers by about \$5 per tonne (excluding the de facto coal royalty). This is an indicative figure only; it is sensitive to both the original estimate of unit costs and movements in unit costs since that time.

The Queensland Government aims to eliminate all excess coal rail freight charges by 2000 (and with it the need for QR to pay a de facto royalty) by

applying commercial pricing principles as existing contracts are renegotiated or terminated for mutually beneficial reasons, or as new contracts are entered into (Queensland Government 1993). This is consistent with one of QR's strategic objectives, as detailed in its 1991–92 Annual Report, to make (only) a commercial rate of return on assets for the coal and minerals businesses (QR, 1992).

A new ad valorem coal royalty of 7 per cent on the free-on-rail value of both domestic and export coal (collected directly by the Queensland Treasury) is currently being phased in, having taken effect in January 1994.¹⁴ Although this represents an increase in the rate of the (explicit) coal royalty, the Queensland Government aims to offset this by reducing QR's freight rates on coal through a combination of (only) commercial rate of return targets and price monitoring (Queensland Government, 1993). In addition, mines on existing contracts are to be offered productivity sharing through the application of between CPI-0.3 and CPI-0.6 pricing formulas to their coal freight rates (this being limited, however, to only those mines which have moved to the CPI method of price indexation).

On its overall freight business, QR aims to break even on an operating basis (after CSOs) by 1999–2000 (QR 1994).

Westrail (Western Australia)

Westrail is a statutory authority that provides freight, passenger and related transport services to southern Western Australia. Following a Government decision to corporatise Westrail, the organisation was restructured in mid 1992. Autonomous business divisions (Freight, Passenger, Business Development, Engineering, Finance and Human Resources) replaced the previous functional divisions (Westrail 1993, p.2). The Freight Division is divided into three business units: Agriculture, Forestry and General; Ores and Minerals; and Intersystem. In addition to non-urban passenger services, the Passenger Division operates the Perth metropolitan rail service (owned by Westrail) under contract to Transperth (Westrail, 1994). However, it is understood that in future Westrail will contract directly with the Western Australian government for the provision of this service.

Westrail operates in a competitive transport environment where traffic is fully deregulated, except for major (non-grain) bulks, a policy that is currently under

¹⁴ Previously, export coal attracted a 5 per cent royalty if it was extracted from an open cut mine and a 4 per cent royalty if it was extracted from an underground mine. The domestic coal royalty was explicitly set at 5 cents per tonne (Queensland Government 1993).

review. Bulk fuel and minor bulks were deregulated from 1 July 1992 and timber transport from October 1992 (Westrail 1993, p.5). Westrail reports that mining customers are pressing for the deregulation of major bulks. However, the Government deferred making a decision on this in April 1993 to allow Westrail to undertake major reforms (Westrail 1994, p.3).

Almost all companies that use rail transport (in Western Australia) do so under commercial contracts that were renegotiated in 1991–92 to include productivity-based transport specifications. Westrail's pricing policy now takes into account cost recovery, productivity initiatives and external competition to Westrail and its clients (Westrail 1992, p.13).

On 14 January 1993, an Enterprise Bargaining Agreement was ratified. It is aimed at improving productivity and workplace flexibility. During 1993–94 Westrail reduced its staff from 4722 to 3409, a drop of 1313 (28 per cent). This reflects, in part, the policy of replacing in-house staff with consultants and contractors (Westrail 1994, p.2).

Westrail currently receives CSO payments from the Western Australian government for non-commercial passenger services (Westrail, 1994 p.29).

On the issue of third party access to the WA network for interstate freight business,

Westrail is prepared to provide track access and other services to other interstate freight operators on commercial terms. The encouragement of competition on the interstate rail network could stimulate the WA economy because the interstate rail network has a 70 per cent market share of land freight into WA (Westrail 1994, p.3).

Australian National Railways Commission (Commonwealth)

The Australian National Railways Commission (AN) was formed in 1975 and commenced operations in 1978 following the merger of the Commonwealth Railways, the non-urban rail operations of South Australian Railways and the Tasmanian Railways. AN was given substantial freedom from government direction following legislative changes in 1983 (the *Australian National Railways Commission Act 1983*) (SCNPMGTE 1994, p.321). CSO payments commenced in 1988 as part of the Commonwealth Government Business Enterprise Reform Package announced in May of that year (IC 1991b, p.31). In 1989, some strategic controls (for example, wage and employment conditions) and certain day to day controls (for example, approval to enter into contracts) were removed or relaxed, providing AN with even greater commercial autonomy (IC 1991b, p.31).

This initial, and increasing, level of autonomy has allowed AN to implement substantial restructuring and rationalisation of its activities. When it

commenced in 1978, AN's total staff was 11614. By 1993–94 this had fallen to 3662, a decrease of 7952 (68 per cent) (AN 1994, pp.72–73).

AN currently operates three separate businesses: AN Freight (South Australian freight operations); AN Tasrail (freight operations in Tasmania); and AN Passenger and Travel (mainland passenger services, marketing Australian rail and other travel worldwide). Each business reports its financial results separately.

As a result of the transfer of its interstate freight rail functions to the National Rail Corporation (NR) which represented about 65 per cent of its business (BIE 1993a), AN has had to rethink its corporate objectives. It now intends to increasingly direct its business focus towards: intrastate freight services in South Australia and Tasmania; interstate rail passenger services; and contracted services to NR and outside industry (AN 1994, p.3). The Commonwealth is currently reviewing the future of AN in light of the establishment of NR (IC 1994a, p.138)

To expand its role as a contractor, AN's Rail Industry Services Division will be restructured to form its own profit centre (AN 1994, p.10). In 1993–94 this division won several contracts including one from NR for the maintenance of 2800 freight wagons.

While AN discontinued its South Australian country passenger operations at the end of 1991–92, it has been making concerted efforts to secure single management of interstate passenger corridors. It already manages the Ghan (Adelaide to Alice Springs) and Indian Pacific (Sydney to Perth) corridors, and is negotiating for single management of the Overland (Melbourne to Adelaide) corridor.

National Rail Corporation

The National Rail Corporation Limited (NR) was established in 1991–92 to operate the interstate freight business in Australia as part of the microeconomic reform movement in the rail industry. It commenced commercial operations on 5 April 1993, although it was legally enabled to commence on 1 February 1993 (NR 1994, p.4).

Under the National Rail Corporation Agreement between the Commonwealth, State and Territory Governments, NR is required to operate in accordance with the (commercial) principles set out in the Heads of Government Agreement on the National Rail Freight Corporation dated 31 October 1990. These principles are:

- (a) that the Company will:

- (i) operate on a strictly commercial basis, with a financially viable corporate plan, and be subject to the Trade Practices Act 1974 (Commonwealth);
 - (ii) have access (by ownership or other appropriate arrangements) to the assets, including track infrastructure, necessary to achieve commercial viability;
 - (iii) operate under labour arrangements incorporated in an enterprise award, which reflects best practice in productivity standards through efficient work and manning practices, determined by the technical capacity of its equipment and commercial considerations, with cost efficiencies being, as a minimum, in line with those identified by the National Rail Freight Initiative Task Force in Attachment I to its Report of 21 March 1991;
 - (iv) have the capacity to contract out activities where that is the most efficient approach;
 - (v) provide access on a commercial basis to the NRC network and to terminal facilities for private and public sector operators;
 - (vi) have the capacity to provide services to Governments, with the charging for such services being on a strictly commercial basis; and
 - (vii) not be responsible, financially or in any other way, for redundancies that may arise in rail authorities resulting from its formation and transfer of functions and assets to it; and
- (b) that during the Establishment Period the current financial position of the Commonwealth and State rail authorities' interstate rail freight operations will not deteriorate as a result of the Commonwealth and the States participating in the formation and operation of the Company (Commonwealth Government 1992, pp.377-378).

While there was agreement to the formation of NR from all Governments, only the Commonwealth, New South Wales, Victorian and Western Australian governments initially elected to become shareholders. All non-shareholder State and Territory governments, such as Queensland (that chose not to be a shareholder given its small interstate business), are signatories to the Agreement, in which they are referred to as 'Other States'.

Under the Agreement, NR was to receive \$415 million from shareholder governments as initial equity. Funds were to be provided as follows: the Commonwealth, \$296 million; New South Wales, \$76 million; Victoria, \$35 million; and Western Australia \$8 million (National Rail Corporation Agreement Act 1992). However, in April 1993, Western Australia announced that it wished to cease being a shareholder and change its status under the Agreement to that of 'Other State' (NR 1993b, p.16). This exempts Western

Australia from the requirement to transfer Westrail's interstate freight functions to NR.

The Agreement specifies the manner in which the transfer of interstate freight functions and access to and transfer of assets should occur. Furthermore, it specifies that this process must be complete by the end of the three year Transition Period on 31 January 1996. Shareholders are required to allow NR to assume the performance of interstate freight operations. This does not apply to the 'Other States', as mentioned above in the case of Western Australia. With regard to access rights, both shareholders and the 'Other States' are required to arrange, within a reasonable period of time, for the transfer of ownership, lease or access to assets used for interstate rail freight. A request is formally made when NR identifies the particular assets or classes of assets it requires in its corporate plan.

By the end of 1993–94, NR had assumed responsibility for the bulk of interstate rail freight customers (marketing and revenue collection) all relevant freight terminals (except Perth), for train crew on the east coast and for wagon deployment. Through negotiations completed in August 1994, Westrail agreed to transfer all terminal operations and all marketing and revenue-related functions for eastwards carriage of interstate goods (in September 1994), take-up of train crewing west of Kalgoorlie (progressively from 1 April 1995), access by National Rail trains to track and other infrastructure west of Kalgoorlie, and availability of for-hire locomotives (NR, 1994).

No assets were transferred to NR by shareholders during 1993–94 (NR 1994, p.25). However, the NR Board established a Due Diligence Committee to assist it in reviewing which specific assets or classes of assets it should nominate for transfer. This Committee has been investigating whether NR should nominate track and other infrastructure.

To date, NR's operations have been hampered by dated rolling stock, terminal equipment, and inadequate infrastructure, inherited from various State authorities, during its first year of operation. In 1992, the NR Board decided to defer long-term borrowing for at least three years following the shareholders decision not to guarantee borrowings directed towards NR's capital program (NR 1994, p.24). While this borrowing is now anticipated to commence sooner than expected, significant funding has already been made available to NR through the *One Nation* rail infrastructure package (worth some \$454m). Most of the projects approved under that package are directly managed by NR (IC 1994a). These include:

- bridges crossing loops and track upgrading in the Brisbane-Sydney corridor (\$85m) and Sydney-Melbourne corridor (\$49m);

- track and signalling upgrading to improve freight access to Sydney (\$49m);
- gauge standardisation of the Melbourne-Adelaide corridor (\$172m); and
- upgrading Melbourne Freight Terminal, including the Dock Link Road (\$23m).

It is estimated that the five government-owned rail authorities collectively lost \$324 million on interstate freight from total revenue of \$468 million in 1991–92. The Perth corridor accounts for about 40 per cent of the total interstate freight revenue (\$187 million), covering operating costs and allocated fixed and overhead costs (NR, 1993a). Table B4.3 details the components of interstate freight by tonnage and revenue, 1991–92.

Table B4.3: Tonnage and revenue of interstate freight, 1991–92

<i>Classification</i>	<i>Tonnes (m)</i>	<i>Revenue (\$m)</i>
Mining	0.79	19.4
Grain	0.30	18.3
Non-Bulk	8.53	430.5
Total	9.62	468.2

Source: Derived from NR (1993a).

NR has set itself the goal of making interstate freight profitable within 5 years of commencing operations. To meet this target, average productivity gains of at least 35 per cent (through revised work practices and new investment) are necessary. Other performance targets include an EBIT (earnings before interest and tax) to interest ratio of greater than 2 and a debt to assets ratio of less than 65 per cent (NR 1993a).

NR is organised around two business units. The Intermodal Division is responsible for domestic general freight customers, freight forwarders and shipping companies. This principally involves transporting container and other intermodal transport media between common user terminals, forwarders' premises and ports. The Industrial Products Division focuses on the specialised needs of major industrial clients including the steel and manufacturing industries. This involves the transport of steel slab and finished products, paper products, vehicles, bulk products and other direct customers' goods (NR 1993a).

B4.5.3 The likely impacts of reform

On the basis of the earlier discussion on how Hilmer reforms relate to the rail industry, this sub-section draws out some of the likely impacts of those reforms.

Given its long history of low productivity and large deficits, the likely impacts of the Hilmer reforms on the rail industry are discussed below under the following headings:

- employment and labour productivity;
- capital productivity;
- pricing and cost recovery; and
- return on assets and capital structure.

Employment and labour productivity

Total employment in rail authorities decreased by 22 per cent over the period 1989–90 to 1992–93 (Figure B4.31). Over the same period, real labour productivity increased by nearly 28 per cent (Figure B4.30), a rise that is almost totally attributable to the reductions in total employment.

Improved labour productivity is common to all rail authorities, reflecting reduced workforce numbers and the removal of restrictive work practices. However, as the labour employed by contractors is not included in the labour productivity measure, the apparent productivity gains may be overstated, to the extent that contracting out is now more prevalent. Nonetheless, further rationalisation of operations, prompted (at least in part) by the Hilmer reforms, is expected to increase labour productivity, and result in genuine cost savings.

Figure B4.31: Total employment and real labour productivity, 1987–88 to 1992–93^{a,b,c}



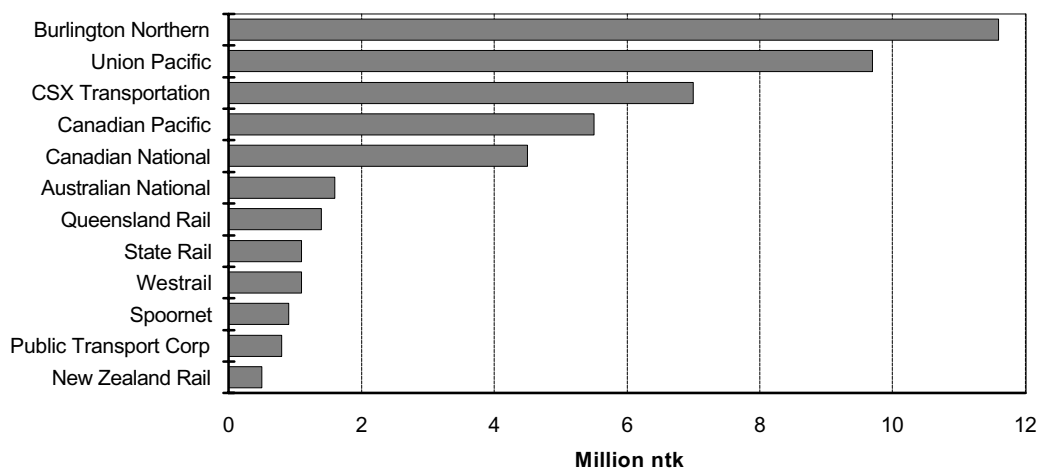
- a Includes SRA, PTC, QR, Westrail and AN.
- b SRA and PTC figures include urban rail operations.
- c The real labour productivity measure is constructed by deflating each organisation's total revenue by its own price deflator (not the CPI). This produces an implicit quantity measure that is then divided by total employment to obtain the real labour productivity measure. An industry average is calculated as the sum of these measures across the industry, with each organisation's measure weighted by its share in total industry revenue.

Source: SCNPMGTE.

To determine the scope for improvements in labour productivity for Australian railways, international comparisons such as those undertaken by the BIE (1992b and 1993a) are useful. However, international comparisons are complex exercises and may be open to misinterpretation due to fundamental differences in terrain and climate (BIE 1992b). For example, the average Australian freight haul moves less tonnes of freight and covers a shorter distance than in North America (IC 1991b). In spite of such differences in operational parameters, the spectrum of operational performance is wide enough to suggest that Australian railways have considerable room for improvement.

Figure B4.32 presents labour productivity for selected international systems' freight operations in 1990–91. Measured in terms of net tonne kilometres (ntk) per employee, labour productivity for Australian railways is significantly lower than for private North American railways. This is reflected in a tenfold difference between Australia's worst performer and North America's best.

Figure B4.32: Labour productivity: ntk^a per freight employee, 1990–91



a Net tonne kilometres, the number of kilometres travelled multiplied by the number of tonnes carried.
Source: BIE (1992b).

In light of these comparisons, the introduction of competition into the rail industry (through, for example, third party access provisions), bringing with it pressures to move to world best practice (WBP), is likely to involve substantial labour productivity improvements. Based on the scope for passenger labour productivity improvements identified in the Commission's 1991 Rail Report, this is expected to occur in both the passenger and freight components of the industry.

Capital productivity

Measures of capital productivity for the rail industry relate almost exclusively to freight. Although it is recognised that capital productivity trends may vary markedly between freight and passenger operations, in the analysis below only current and future trends in freight capital productivity are considered (due to insufficient data on passenger capital productivity). These trends may, however, be indicative of trends in passenger capital productivity.

There are three commonly used freight capital productivity measures: ntk per locomotive, ntk per wagon, and ntk per track kilometre. In Table B4.4, the 1991–92 Australian average for each of these capital productivity measures is presented, together with the best observed in the US, based on data published in BIE (1993). Also presented are the reductions in the locomotive and wagon fleets required to reach WBP utilisation (adjusted for Australian conditions by Travers Morgan for the BIE (1993a)). The estimated WBP locomotive and wagon productivity levels for Australian conditions are also presented. On the basis of these estimates, Australian railways would have to raise the capital productivity of their freight operations by between 37 and 54 per cent in order to reach WBP, based on 1991–92 levels.

Table B4.4: Australian, US and WBP freight capital productivity (millions of ntk per capital unit), 1991–92

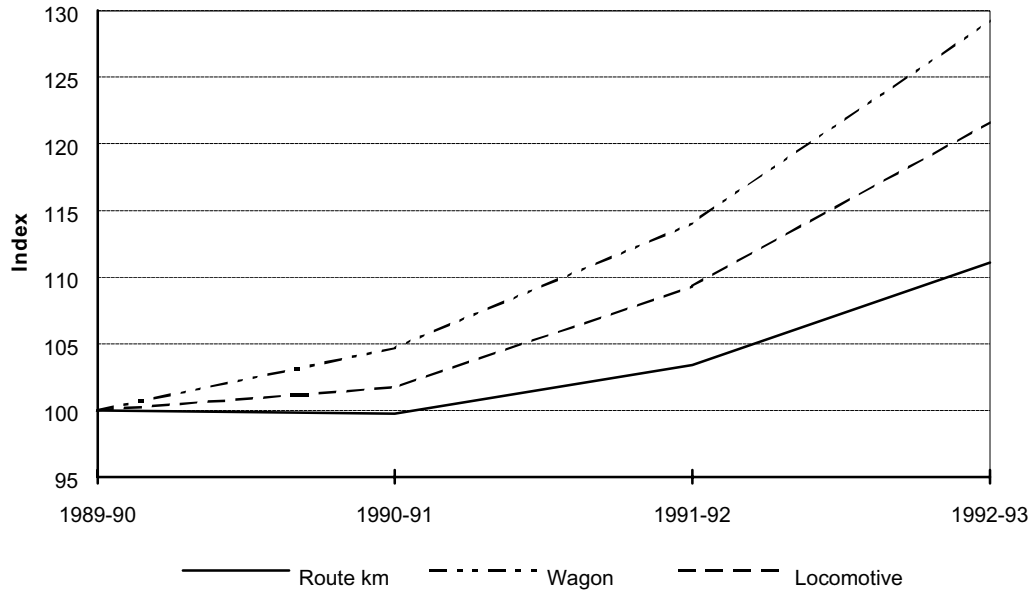
	<i>Locomotive</i>	<i>Wagon</i>	<i>Track</i>
Australian average	35.7	1.49	1.48
Best observed US system	145.0	5.77	6.25
Reductions in fleet to reach WBP utilisation (per cent)	27	35	na
Implied WBP adjusted for Australian conditions	48.9	2.30	na

na Not applicable.

Source: Derived from BIE (1993a).

Between 1989–90 and 1992–93, capital productivity increased by between 11 and 29 per cent, depending on the measure (Figure B4.33). While over half of this increase occurred between 1991–92 and 1992–93, there remains a large gap between the Australian average capital productivity and WBP (as presented in Table B4.4). Accordingly, significant capital productivity improvements are likely to result from Hilmer reform of the rail industry. Although derived from an analysis of freight operations, based on the scope for passenger capital productivity improvements identified in the Commission's 1991 Rail Report, similar improvements are expected in passenger rail.

Figure B4.33: **Capital productivity: ntkper capital unit (index), 1989–90 to 1992–93^{a,b}**



a Includes SRA, PTC, QR, Westrail and AN.

b Physical units are converted to an index (with a base year of 100 in 1989–90) because of fundamental differences in scale.

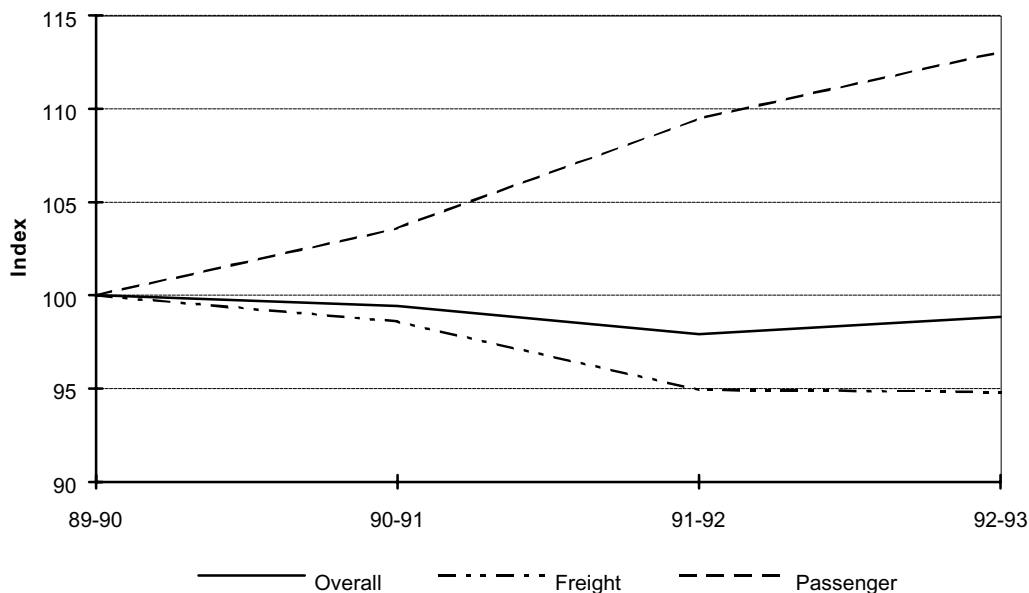
Source: SCNPMGTE.

Pricing and cost recovery

Current and future trends in pricing and cost recovery between rail activities are interdependent and are therefore discussed together in this section.

Average real prices in the rail industry decreased marginally (1 per cent) over the period 1989–90 to 1992–93 (Figure B4.34). However, looking at freight and passenger activities separately, price restructuring is evident. Real freight prices decreased by 5 per cent, while passenger prices increased by 13 per cent. This reflects pricing reform aimed at reducing cross-subsidies between freight and passenger activities.

Figure B4.34: Overall, freight and passenger real price indexes, 1989–90 to 1992–93^{a,b}



a Includes SRA, PTC, QR, Westrail and AN.

b The overall real price index is calculated as the average of the freight and passenger indexes, with weights corresponding to each activities share in overall total revenue.

Source: SCNPMGTE.

An indication of the pattern of cross-subsidies in 1989–90 is provided in the Commission’s 1991 Rail Report. As reproduced in Table B4.5, a cost recovery ratio for each rail sector was estimated by transport consultants Travers Morgan for that report. These ratios are based on the costs of each sector (excluding long run non-avoidable cost items). A return on assets (such as locomotives and rolling stock) is therefore incorporated in this definition of cost. The resulting cost recovery ratios indicate that in 1989–90 cross-subsidies existed both between freight and passenger activities and between different types of freight activity. The high cost recovery on other bulk (coal and minerals) freight is partly due to excess coal freight charges.

Table B4.5: Cost recovery ratios by rail sector (per cent), 1989–90

<i>Rail sector</i>	<i>Cost recovery ratio</i>
Freight	
Grains	77
Other bulk	121
Non-bulk	50
Passenger	30

a Cost recovery is here based on the revenue (excluding government subsidies) and costs (excluding long run non-avoidable cost items) for each rail sector. A return on assets (such as locomotives and rolling stock) is therefore incorporated in the definition of cost.

Source: IC (1991b).

In the above table, passenger rail has the lowest cost recovery of all the rail sectors. This view of Australian passenger rail as a low cost recoverer is reinforced by comparisons of Australia's urban passenger rail operations with overseas systems in the Commission's recent Urban Transport Report. As presented in Table B4.6, in 1991 the overseas systems sampled exhibited operating cost recovery ratios¹⁵ that are often far higher than those for Australian systems. However, as noted in the Urban Transport Report, some care must be exercised in making inter-city comparisons since revenues and expenditures may be defined differently, and in some cases the costs of operation may be affected by geographic and other factors. This is in addition to the more fundamental concern when making such comparisons; that observed differences may not reflect differing levels of performance, but rather differing social objectives which lead to a greater or lesser willingness to fund public transport systems.

For freight rail, cost recoveries in 1989–90 were higher than in passenger rail (Table B4.5). To explore the revenue side of this, attention is focussed on the BIE's international and intermodal comparisons of freight rates (BIE 1993a).

¹⁵ Operating cost recovery is here defined as the ratio of farebox revenue (excluding government subsidies) over operating costs (as they appear in rail authority financial statements).

Table B4.6: Australian and overseas urban passenger rail operating cost recovery ratios (per cent), 1991^a

<i>City</i>	<i>Cost recovery ratio</i>
Australian cities	9 to 47
Munich	52.4
Singapore	163.0
Toronto ^b	63.5
Vancouver	52.0
Washington D.C.	66.4
Zurich ^b	57.0

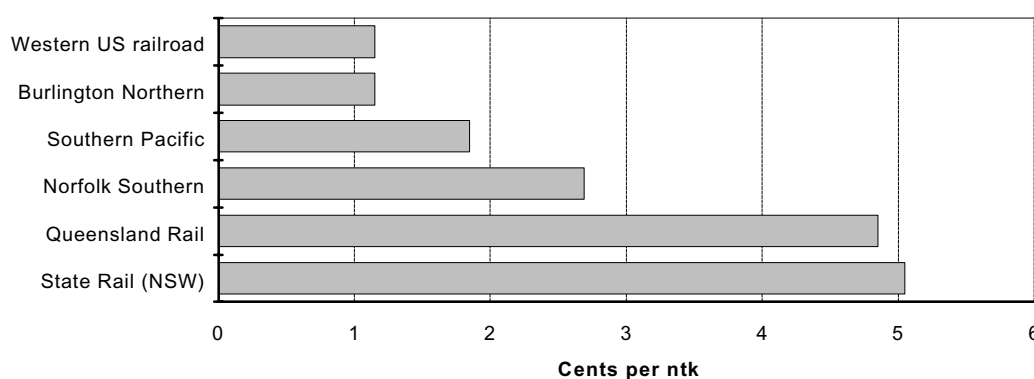
a Operating cost recovery is here defined as the ratio of farebox revenue (excluding government subsidies) over operating costs (as they appear in rail authority financial statements).

b Cost recovery ratios are for 1992.

Source: IC (1994b).

Australian coal freight prices in 1991–92 were found to be significantly higher than those charged by North American railways (Figure B4.35). There are, however, three qualifications to these observations. First, the average haul length was not taken into account. Second, QR’s rates should be adjusted upwards to take account of coal producers’ contribution to financing relevant rail infrastructure. Such an adjustment increases the effective cost of coal rail freight by up to 30 per cent relative to the charges reported for QR (BIE 1993a). Third, as discussed previously, QR’s coal freight rates include a de facto coal royalty and other ‘excess’ freight charges which are now being phased out.¹⁶

Figure B4.35: Coal revenue per ntk, Australia and US, 1991–92

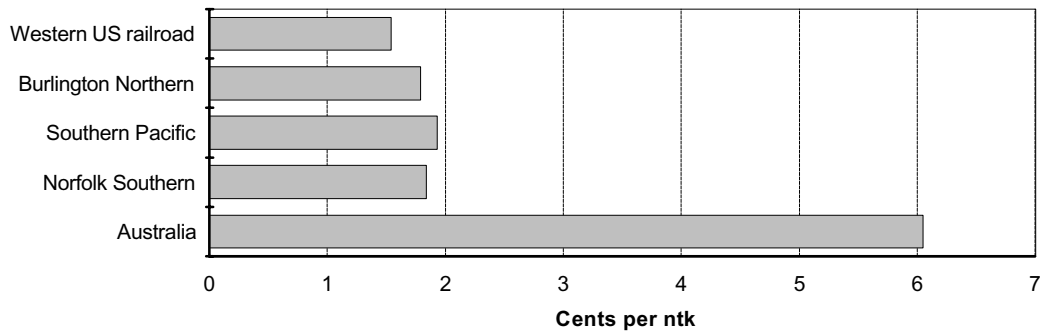


Source: BIE (1993a).

¹⁶ However, until that process is complete the de facto coal royalty will be separated from coal freight revenue and paid to the Queensland Treasury.

Australian grain freight rates were found to be three times the price of similar services in the United States in 1991–92 (Figure B4.36). Various inquiries, including the Royal Commission into Grain Storage, Handling, and Transportation, the Railway Industry Council, and the Industry Commission’s Rail Report have suggested many areas in which costs reductions are possible, without reducing services. These areas include overmanning, stalling plant utilisation and inappropriate pricing systems (BIE 1992b).

Figure B4.36: **Average grain rates, Australia and US, 1991–92**

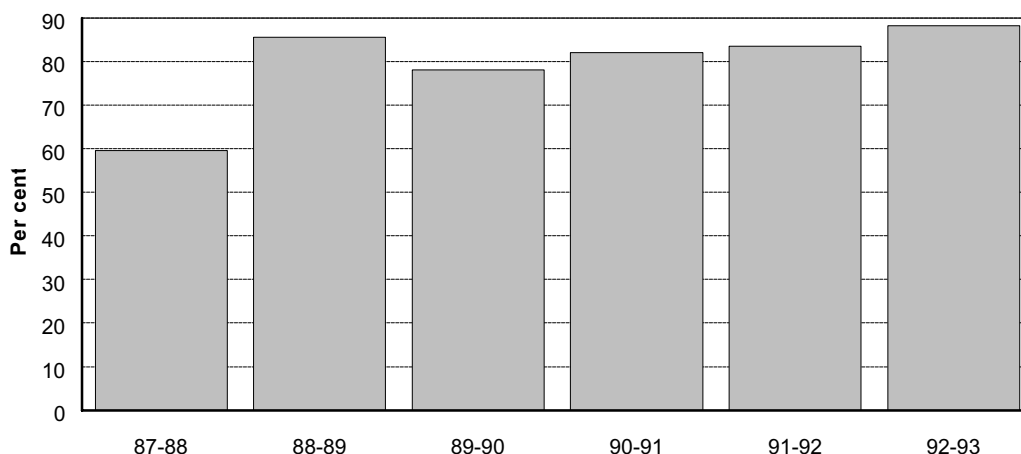


Source: BIE (1993a).

The BIE (1993a) also compare the average charges for non-bulk rail and road freight in Australia gained from a survey of transport users on the main freight corridors. Rail was found to be cheaper than road transport in every sector, reflecting its need to compensate for lack of door-to-door service. However, this pricing differential has been at the expense of below full cost recovery.

For the rail industry as a whole, operating cost recovery (as distinct from the concept of cost recovery in IC (1991b)) appears to have increased over the period 1987–88 to 1992–93 (Figure B4.3). However, this observation is based on a definition of operating cost recovery that includes CSO payments as revenue. As the recognition of CSOs has occurred progressively over this period, much of the movement in the ratio may therefore not reflect actual improvements in cost recovery. Instead, it may represent a partial shift from deficit funding to specific CSO payments. Regardless of this, it suggests that even after including all payments for identified CSOs in revenue, in 1992–93 there was a 12 per cent shortfall between operating revenue and operating expenses over all rail sectors.

Figure B4.37: Operating cost recovery ratio (per cent), 1987–88 to 1992–1993^{a,b,c}



- a Includes SRA, Westrail and AN. QR is excluded because it only started accrual accounting in 1992–93, while the PTC is excluded because it does not publish separate data for its rail operations as distinct from its tram and bus operations.
- b SRA and Westrail figures include urban rail operations.
- c Operating cost recovery is here defined as the ratio of operating revenue (farebox revenue plus CSO payments) over operating expenses (which only include the depreciation element of capital costs).

Source: SCNPMGTE.

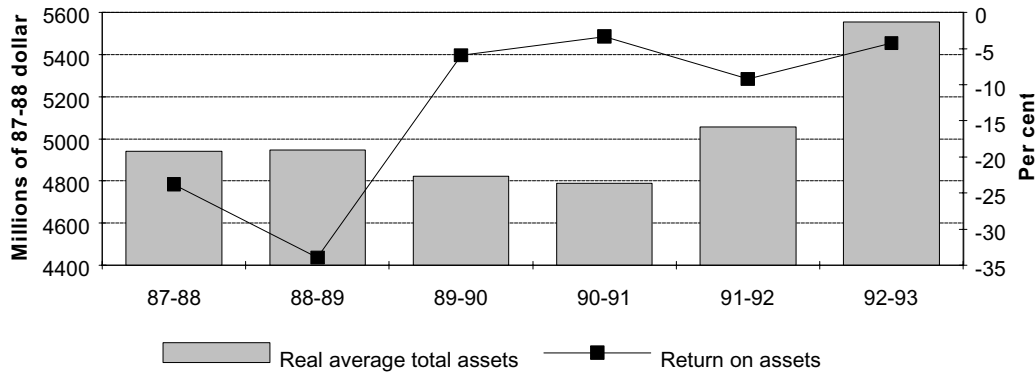
Taken together, it would appear that under the Hilmer reforms cost recovery and pricing may require substantial adjustment to reach commercial levels. As discussed previously, the extent of the required price adjustments depends on the extent of identified CSOs. This is discussed further in section B4.5.4 ‘Reforms considered by the Commission’.

Return on assets and capital structure

As shown in Figure B4.38, the value of average total assets in the rail industry increased suddenly in 1992–93, following five years of relatively constant asset values. However, due to marked differences in asset valuation methodologies across rail authorities, little interpretation can be placed on such movements. Over the same period, the return on assets¹⁷ fell to a low of close to –35 per cent in 1988–89 and then rose to –4 per cent in 1992–93. As with the cost recovery ratios in Figure B4.37, the introduction of CSO payments may explain some of the apparent improvement in the return on assets.

¹⁷ Defined by SCNPMGTE (1994) as earnings before interest and tax divided by average total assets.

Figure B4.38 **Average total assets and return on assets, 1987–1988 to 1992–1993 a,b,c**

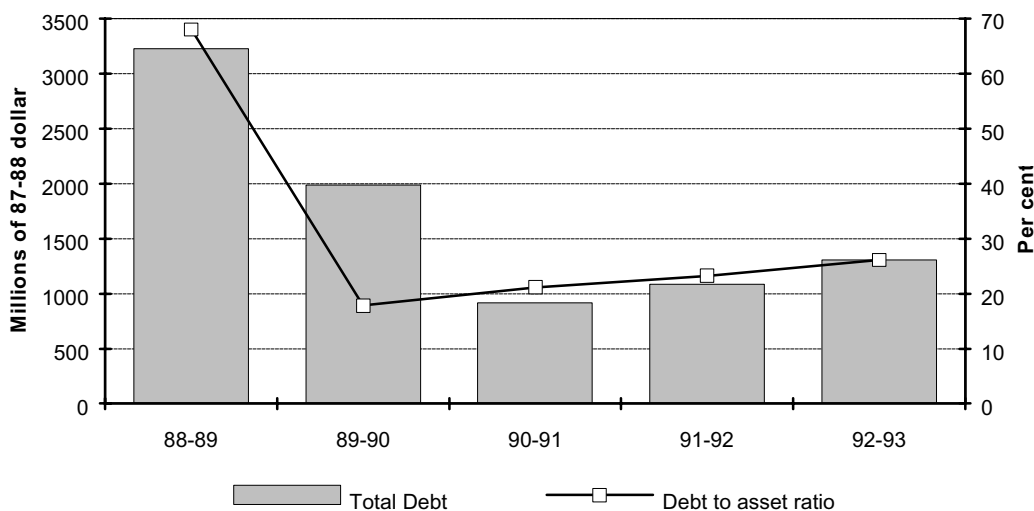


- a Includes SRA, Westrail and AN. QR is excluded because it only started accrual accounting in 1992–93, while the PTC is excluded because it does not publish separate data for its rail operations as distinct from its tram and bus operations.
- b SRA and Westrail figures include urban rail operations.
- c The return on assets includes CSO payments.

Source: SCNPMGTE.

The average debt level in the rail industry has declined substantially as indicated by Figure B4.39. This is largely due to the NSW Government assuming a large proportion of SRA's debt. Although debt levels have increased since then, in 1992–93 the debt to assets ratio was still comparatively low.

Figure B4.39: Real average debt and debt to asset ratio, 1988–1989 to 1992–1993^{a,b,c}



- a Includes SRA Westrail and AN. QR is excluded because it only started accrual accounting in 1992–93, while the PTC is excluded because it does not publish separate data for its rail operations as distinct from its tram and bus operations.
- b SRA and Westrail figures include urban rail operations.
- c These aggregates represent the average level of debt for Australian railway system as a whole, during the given financial year. They do not represent the capital structure of the “average” authority in the industry.

Source: SCNPMGTE.

If the Hilmer reforms are implemented, the rate of return on each rail authority’s assets is expected to increase to a level commensurate with a private sector firm with similar (market) risk. In addition, as required by the principles of competitive neutrality, this return would be earned on each type of rail activity. This would occur through increased labour and capital productivity, as well as through more consistent funding of CSOs and pricing reform. Together with reforms to introduce more commercial capital structures, and the eventual payment of dividends and income tax, this scenario is quantified in the following section.

B4.5.4 Reforms considered by the Commission

The Hilmer reforms would require Australian rail authorities to operate on a commercial basis in a competitive environment, complete with the related reforms for road transport and provisions for third party access to rail

infrastructure. This would put pressure on rail authorities to reduce their large operating deficits through a combination of productivity improvements, price adjustments, consistent identification, costing and payment for CSOs, and competitive neutrality arrangements related to capital structures, dividend payout ratios and taxation.

The main scenario under consideration has three components:

- achieving best practice costs;
- pricing reform; and
- imposing competitive neutrality arrangements.

The pricing reforms considered are based on the current level of cost recovery, the level of identified CSOs and the extent of achievable cost reductions. Sensitivity analysis is considered with respect to the value of identified CSOs.

Achieving best practice costs

The potential cost savings in each rail sector, based on WBP adjusted for Australian conditions, were estimated by Travers Morgan for the Commission's 1991 Rail Report. Like the cost recovery ratios from that report, discussed previously, these cost reductions are based on costs (excluding long run non-avoidable cost items) for each sector, and include a rate of return on assets such as locomotives and rolling stock. As presented in Table B4.7, the estimated available cost savings for the rail industry in 1989–90 were in the range of 35 to 40 per cent for labour and materials and 15 to 20 per cent for capital.

Table B4.7: Unit cost reductions required to achieve world best practice, 1989–90

<i>Rail sector</i>	<i>Unit cost reductions (per cent)</i>			<i>Total</i>
	<i>Labour</i>	<i>Materials</i>	<i>Capital</i>	
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>
Freight				
Grains	40	40	19	35
Other bulk	40	36	17	31
Non-bulk	38	37	18	34
Passenger	37	36	14	31

Source: IC (1991b).

These estimates have the advantage of being disaggregated into four rail sectors. This is valuable because it enables the initial and flow-on effects of reform in a particular rail sector to be modelled more accurately. Unfortunately, no recent estimates of achievable cost reductions are available on a comparable basis. As a result, the Commission has had to update these

estimates to 1993–94 using information from a variety of sources. It is recognised that this is at the expense of the type of accuracy that a full benchmarking study could achieve. However, given the time and resources available, this method will produce results consistent with measuring the outer envelope of the benefits of reform, as done elsewhere in this report.

Referring back to Figure B4.31, real labour productivity has increased by nearly 28 per cent over the period 1989–90 to 1992–93. If this trend is projected forward to 1993–94, an increase of close to 40 per cent is indicated. This translates into a decrease in per unit labour costs of 28 per cent. Assuming no change in WBP, the achievable labour cost reduction from 1993–94 may therefore be estimated by adjusting the 1989–90 figure for the 28 per cent cost reductions estimated to have occurred in the meantime.

As the extent of materials use is often linked with the use of labour, the achievable materials cost reduction is updated using the estimated change in labour costs between 1989–90 and 1993–94. However, the link between the use of labour and the use of energy (an element of materials costs) is somewhat tenuous. This is because improvements linked with productivity changes would be related to changes in technology which are embodied in the locomotives and other vehicles used, and thus linked with capital productivity. However, energy costs are only one element of materials costs, so the achievable energy cost reductions are updated in the same way as for all other components of materials costs.

As reflected in Table B4.7, in 1989–90 the scope for cost savings in capital was only half that of labour, in per cent terms. There is little compelling evidence to suggest that there has been any actual progress in terms of capital cost per unit of output over the period 1989–90 to 1993–94. While the available freight capital productivity measures indicate some improvement, it is uncertain to what extent this is due to the introduction of new, more expensive capital equipment, which may offset those productivity gains, resulting in an unchanged capital cost per unit of output. Hence, it is assumed that capital cost reductions of the order of those originally estimated in IC (1991b) are still required to achieve best practice.

On the basis of these assumptions, estimates of the achievable cost reductions from 1993–94 have been calculated, and are presented in Table B4.8¹⁸. The

¹⁸ As the achievable cost savings for a given rail sector are almost the same for each input, and given the way in which these cost savings were estimated, the cost saving for each input is modelled using the per cent cost saving across all inputs for a particular sector. For example, the achievable labour cost saving for grain rail is modelled as 17.2 per cent, rather than 16.2 per cent.

original cost shares from the Rail Report have been updated to take account of these assumed changes in per unit input cost between 1989–90 and 1993–94.

Table B4.8: Unit cost reductions required to achieve world best practice, 1993–94

<i>Rail sector</i>	<i>Unit cost reductions (per cent)</i>				<i>Achieved between 1989– 90 and 1993– 94^d</i>
	<i>Labour^a</i> (1)	<i>Materials^b</i> (2)	<i>Capital^c</i> (3)	<i>Total</i> (4)	
Freight					
Grains	16.2	16.2	19.0	17.2	21.5
Other bulk	16.2	10.7	17.0	15.1	18.7
Non-bulk	13.5	12.1	18.0	14.7	22.6
Passenger	12.1	10.7	14.0	12.4	21.2
Updated cost structure	40.6	24.8	34.6	100.0	

a Calculated as $\{1 - [(100 - \text{column (1) in Table B4.7}) / (100 - 28)]\} * 100$.

b Calculated as $\{1 - [(100 - \text{column (2) in Table B4.7}) / (100 - 28)]\} * 100$.

c From column (3) in Table B4.7.

d Calculated as $\{1 - [(100 - \text{column (4) in Table B4.7}) / (100 - \text{column (4)})]\} * 100$.

Source: Commission estimates and IC (1991b).

Pricing reform

In considering a scenario of pricing reform, it is first necessary to have some notion of the degree to which governments will require rail authorities to recover their costs. This is estimated on the basis of the value of currently identified CSO payments (including concession reimbursements) as a percentage of costs. One hundred minus this number provides a cost recovery target (in per cent terms) for the sector being considered. However, this is highly sensitive to the costing and coverage of currently identified CSOs. To allow for this, sensitivity analysis is performed on the value of CSOs.

To calculate target cost recovery ratios, information was collected from the 1993–94 annual reports for each rail authority. With the exception of AN (which does not separately identify freight and passenger CSOs in its annual report) and the PTC (which currently has no identified CSOs), CSO payments were identified for the rail sectors as in Table B4.8.¹⁹ Information on expenditures, as reported in each authority's profit and loss statement (or its equivalent), was also collected. Using cost share information from the ORANI

¹⁹ Freight CSOs are attributed to non-bulk freight.

database, this expenditure (being for SRA, QR, Westrail and NR) was then allocated across the four rail sectors. A target cost recovery ratio for each sector was then calculated as one hundred minus the identified CSO payments for that sector as a percentage of its allocated expenditure (costs).²⁰

The results of this process are presented in Table B4.9. However, currently identified CSO payments are probably under-costed and under-funded, in part because many rail authorities have not yet finalised CSO arrangements with their owner governments. Alternative target cost recovery ratios, based on 50 and 75 per cent loadings on the current value of identified CSO payments are therefore also presented in Table B4.9. As it is considered that currently identified CSO payments are an underestimate of the true cost of providing non-commercial services required by governments, the 50 per cent loading on the value of identified CSO payments is taken as the base case. The 75 per cent loading is then used for sensitivity analysis. Note that as no CSOs are identified in the grain and other bulk sectors, their common target cost recovery ratio is 100 per cent.

Table B4.9: Target cost recovery ratios (per cent), 1993-94^a

<i>Rail sector</i>	<i>Target cost recovery ratio by per cent loading of identified CSOs</i>		
	<i>0</i>	<i>50</i>	<i>75</i>
Freight			
Grains	100	100	100
Other bulk	100	100	100
Non-bulk	87	81	77
Passenger	74	61	54

a Based on identified CSO payments for SRA, QR, Westrail and NR.

Source: Various annual reports and Commission estimates.

Now that a target cost recovery has been identified for each sector, the current levels of cost recovery need to be determined. To do this, the cost recovery ratio for each sector in 1989-90 (as reported in Table B4.5) is updated using information on real price changes and per unit cost changes between 1989-90 and 1993-94. The information used, and the resulting estimate of the 1993-94 cost recovery ratio for each rail sector are presented in Table B4.10. As price information is only readily available for the passenger and freight sectors, it is assumed that freight price changes applied uniformly across grains, other bulk and non-bulk over the period.

²⁰ This assumes that SRA, QR, Westrail and NR are together representative of the Australia-wide system.

Table B4.10: Updated unit cost recovery ratios (per cent), 1993–94^a

<i>Rail sector</i>	<i>1989–90 cost recovery ratio</i>	<i>Per cent change in real prices between 1989–90 and 1993–94^b</i>	<i>Per cent change in unit costs between 1989–90 and 1993–94^c</i>	<i>Estimated 1993–94 cost recovery ratio</i>
	(1)	(2)	(3)	(4)
Freight				
Grains	77	-7	-21	91
Other bulk	121	-7	-19	139
Non-bulk	50	-7	-23	60
Passenger	30	17	-21	45

a $(4) = (1) * [100 + (2)] / [100 + (3)]$

b The real price change for the freight sector as a whole between 1989–90 and 1993–94 is assumed to have applied uniformly across grains, other bulk and non-bulk.

c Based on column (5) of Table B4.8.

Source: SCNPMGTE and Commission estimates.

On the basis of these estimates, the real price changes required to move the (estimated) 1993–94 cost recovery ratio for each rail sector to its target level, taking account of the future achievable cost reductions (as presented in Table B4.8) may then be calculated. This calculation is summarised in Table B4.11. Column 1 presents the estimated cost recovery ratio from Table B4.10, columns 2a and 2b present target cost recovery ratios for the 50 and 75 per cent CSO loadings, while column 3 presents the achievable per unit cost reductions from Table B4.10. In column 4 a new cost index is derived based on the achievable cost reductions in column 3. After combining this with columns 1, 2a and 2b, estimates are obtained of the real price changes required to meet the target cost recovery ratios for each rail sector. These estimates are presented in columns 5a and 5b for the 50 and 75 per cent CSO loadings.

Table B4.11: Real price changes required to achieve target cost recovery ratios, 1993–94^a

<i>Rail sector</i>	<i>Current cost recovery^b</i>	<i>Target cost recovery ratio by per cent loading of identified CSOs^c</i>		<i>Achievable cost reductions^d</i>	<i>New cost index</i>	<i>Required real price change by per cent loading of identified CSOs</i>	
		50	75			50	75
	(1)	(2a)	(2b)	(3)	(4)	(5a)	(5b)
Freight							
Grains	91	100	100	17	83	-9	-9
Other bulk	139	100	100	15	85	-39	-39
Non-bulk	60	81	77	15	85	15	9
Passenger	45	61	54	12	88	19	6

a (4)=100-(3)

(5a)=(2a)/[(1)/(3)]-100

(5b)=(2b)/[(1)/(3)]-100

b From column (4) in Table B4.10.

c From Table B4.9.

d From column (4) in Table B4.8.

Source: Commission estimates.

Consistent with the pattern of real price changes in the Commission’s Rail Report, the grain and other bulk sectors are estimated to require price decreases, while the non-bulk and passenger sectors are estimated to require price increases. The magnitudes of these price changes are, however, much smaller than those in the Rail Report for the passenger and non-bulk sectors, and depend upon the extent to which governments are prepared to fund CSOs.

It is worth noting that the required price change is relatively insensitive to the manner in which the cost recovery ratios are updated. For example, a lower estimate of the actual cost reductions over the period 1989–90 to 1993–94 implies a lower current (1993–94) cost recovery ratio, implying a greater required price change. This is offset, however, by the larger achievable cost reductions that are then in prospect from 1993–94.

However, the magnitudes of the prospective cost reductions expected to flow from the implementation of the Hilmer reforms are themselves sensitive to the method of updating used. The outcomes of the experiments based on these scenarios must therefore be qualified in this regard. Particularly as it affects the scope for reductions in government subsidies to the rail industry.

Imposing competitive neutrality arrangements

As part of the Hilmer reforms under consideration by COAG, all governments will agree to apply competitive neutrality arrangements that seek to equalise net

competitive advantages of government agencies arising from their public ownership. This involves imposing commercial capital structures, debt guarantee fees, commercial dividend payout ratios and tax equivalent regimes. While progress has already been made, these arrangements are still far from being universal in coverage or consistent in approach.

The stylised competitive neutrality arrangements modelled involve:

- a commercial capital structure, as represented by a debt to assets ratio of 50 per cent;
- a dividend payout ratio of 75 per cent; and
- a tax equivalent regime that charges income tax at 33 cents in the dollar.

The imposition of debt guarantee fees is not modelled.

Summary

The impacts on prices, quantities and other sectoral variables of reform in the rail industry are summarised in Box B4.8. These expected impacts form the basis for inputs to the model experiments of the economy-wide and fiscal implications of reforms as summarised in Chapter A2.

The benefits from the formation of the NR are not directly modelled. However, the Commission considers that modelling the movement to WBP in both productivity and pricing (after allowing for CSOs) provides an adequate representation of the long run impact of NR on the interstate freight business. Any changes in the stakeholdings between Commonwealth and State governments in particular sectors of the rail industry are assumed to be minor. To the extent that NR is largely assuming the interstate freight functions of its shareholder's own rail authorities in proportion to their shareholdings, this appears to be a reasonable assumption.

Box B4.8: Summary of scenarios

	<u>Base</u>	<u>Alternative</u>
<i>Achieving best practice costs</i>		
Overall per unit costs change by (per cent)		
Freight		
Grains	-17	-17
Other bulk	-15	-15
Non-bulk	-15	-15
Passenger	-12	-12
<i>Price reform</i>		
Real prices change by (per cent)		
Freight		
Grains	-9	-9
Other bulk	-39	-39
Non-bulk	+15	+9
Passenger	+19	+6
<i>Imposing competitive neutrality arrangements</i>		
Target debt to assets ratio (per cent)	50	50
Target dividend payout ratio (per cent)	75	75
Target income tax (or TEP) rate (per cent)	33	33

Source: Commission estimates

B5 ELECTRICITY

This chapter explores the implications of Hilmer and related reforms for the electricity supply industry (ESI). It suggests possible outcomes of implementation of reforms in terms of prices, productivity, capital construction costs and financial obligations of public enterprises. Scenarios presented in this chapter for these factors form the basis for the inputs to the model experiments as summarised in Chapter A2.

B5.1 Hilmer and related reforms

As presented in Attachment A to the Terms of Reference, the main elements of reforms to allow a competitive electricity market to commence from 1 July 1995 or as soon as possible thereafter are:

- (i) open access to the eastern and southern Australian grid through establishment of an interstate electricity transmission network;
- (ii) a cost reflective and uniform approach to transmission and distribution pricing;
- (iii) extension of the grid to Queensland (Eastlink) and Tasmania (Basslink) if economically justified;
- (iv) free trade in bulk electricity for private generating companies, public utilities and private and public electricity consumers;
- (v) separation of transmission from generation and distribution elements;
- (vi) competitive sourcing of generation capacity based on merit order dispatch of individual generators;
- (vii) a corporatised Snowy Mountains electricity generation company effectively competing for supply into the national grid; and
- (viii) national regulation of market conduct and national prices oversight with a code of conduct to cover other matters.

In addition, an important part of the Hilmer reforms, as set out in Attachment A to the Terms of Reference, is that all governments agree to apply competitive neutrality arrangements. These arrangements seek to eliminate any net competitive advantages of government agencies arising from their public sector ownership. The most obvious impacts of these arrangements will be on

government business enterprise (GBE) finances. Previously tax exempt GBEs will be required to pay tax (or tax equivalents) in the same way as private enterprises do; government guarantees on GBE debt will be discontinued, or charged for at a commercial rate; and GBEs will be required to adopt commercial capital structures. Owner governments will also be expected to achieve a market rate of return on the community's investment in a GBE, equivalent to that of a private enterprise of similar (market) risk. Dividends to owner governments will also have to be paid at a commercial rate.

It must be emphasised that in this exercise the intention is only to model the effects of the Hilmer and related reforms. While consideration is given below to recent developments in the ESI, this is meant only to provide background information. The reforms actually modelled by the Commission are considered later, in the sections B5.4 (The likely impacts of reform) and B5.5 (Reforms considered by the Commission). In the former section, general trends in productivity, pricing and other key aspects of the ESI are analysed to provide an indication of the likely impacts of the Hilmer and related reforms. However, in the latter section, only those reforms that are capable of being modelled are discussed. In both sections, it is not always possible to distinguish between the Hilmer and related reforms and other government reforms, because the outcomes are often inseparable and the direction of change is often consistent with those expected under Hilmer and related reforms.

In the ESI, the Hilmer and related reforms are aimed at establishing a competitive market structure and enabling free trade of bulk electricity over transmission and distribution networks that may be accessed at cost. However, in order to estimate the economy-wide benefits using the ORANI model, the likely direct impact on GBE performance must first be determined. The changes to the ESI are then applied as perturbations to the ORANI model. These perturbations may, to some extent, reflect the way in which monopoly rents are reduced by competition. It is therefore important to understand how monopoly rents can be appropriated.

B5.2 Monopoly rents

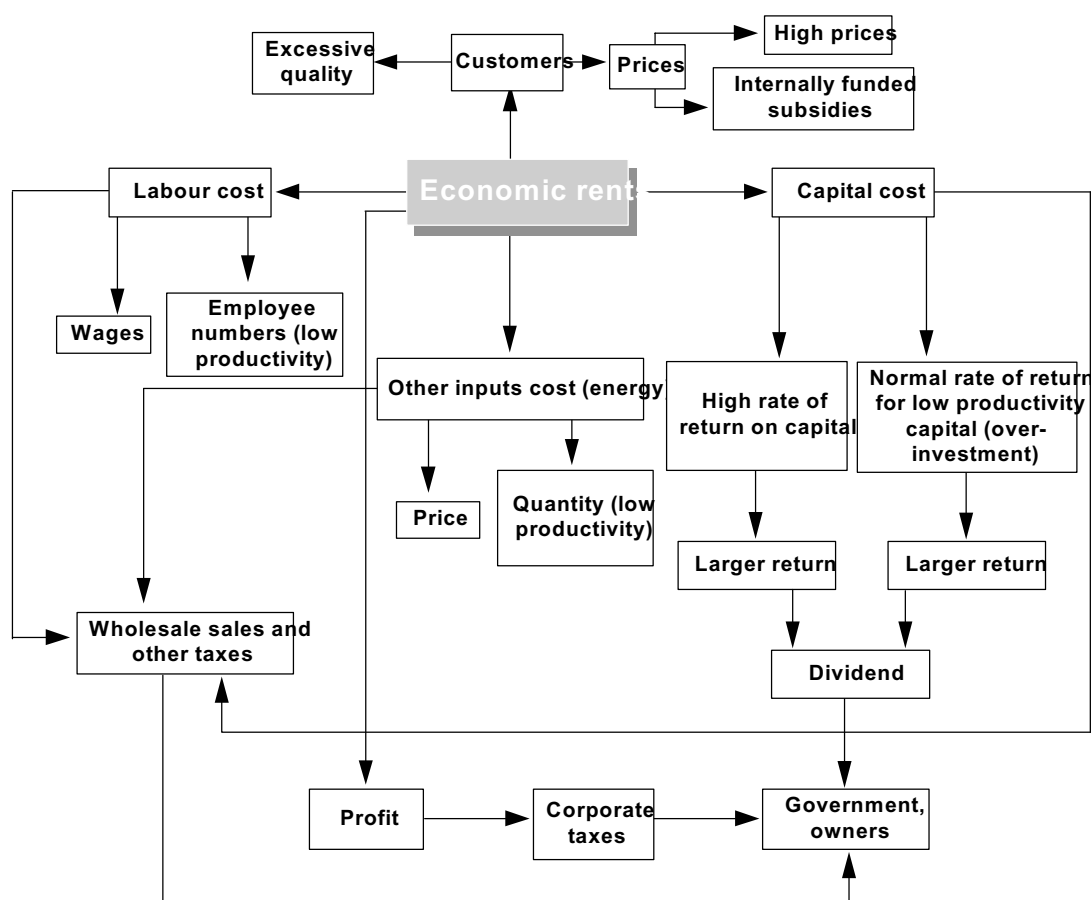
Monopoly rents can be viewed as returns generated by a monopoly over and above the returns that would be generated by a group of businesses producing the same outputs in a competitive environment. These 'excess' returns arise by virtue of the monopoly's market power and can be appropriated in a number of ways.

Figure B5.1 depicts the possible flows of monopoly rents from a GBE to the owners of factors of production, government (through taxation and dividends) and customers. In particular, monopoly rents can be:

- captured by employees through either overstaffing (low labour productivity) or a higher level of wages and conditions;
- dissipated through over-investment (excess capacity or the inefficient use of capacity, maintaining rates of return on capital with low productivity and thereby preventing asset devaluations reflecting excess capacity and poor productivity);
- dissipated by paying a higher price for the purchase or construction of capacity (assets);
- dissipated through excessive cost structures for other non-labour, non-capital inputs, (by either paying too much for the inputs or using them inefficiently);
- used to provide community service obligations (CSOs) to various groups of consumers at the expense of other consumers (through a cross-subsidy);
- used to provide a cross-subsidy to various groups of consumers at the expense of other consumers that are not a recognised CSO; and
- used to provide a higher quality service than implied by the price charged for goods and services.

Given these different ways in which monopoly rents can be appropriated, conclusions regarding their existence are fraught with danger. Further, it is possible that some factors of production, such as capital, are being priced lower than they would under competition, assuming competitive neutrality with the private sector. That is, earning a rate of return lower than a private sector firm with a similar level of market risk. An additional factor complicating these assessments is that GBEs are not generally traded on stock markets, so that asset values and rate of return are based on accounting sources. The difficulty in using accounting data is exacerbated because many GBEs have been revaluing assets from historical cost to current cost, in recent years. These factors have implications for other competitive neutrality issues, such as debt to total assets ratios.

Figure B5.1: Appropriation of monopoly rents



B5.3 Recent developments in the electricity supply industry

While monopoly rents may not be readily identifiable, the same is not true of the reforms which aim to eliminate them. Reform in the ESI has principally focussed on changes to market structures. In particular, vertically integrated utilities are being restructured into separate generation, transmission and distribution businesses in several States. One objective of disaggregation is to facilitate and encourage horizontal competition between businesses within the generation and distribution sectors. Access to transmission assets will be determined independently. Recent developments in each jurisdiction are detailed below.

B5.3.1 New South Wales

Generation and transmission functions are undertaken by Pacific Power in New South Wales. In August 1991, Pacific Power was restructured into five semi-autonomous business units, accompanied by work practice reform. The structure is as follows.

- A generating group comprising three regional-based business units competes to sell power to the grid.
- A marketing group on-sells to county councils, major industrial users and the interstate utilities (Pacific Power Pool Trading).
- An Electricity Exchange market (ELEX) operates as a spot market for wholesale electricity within Pacific Power. Power stations submit daily bids that result in half-hourly prices for electricity supply.
- Pacific Grid was established as a Pacific Power subsidiary to manage the transmission network in July 1994 and is expected to become a wholly independent statutory authority in early 1995.
- A Services Business Unit provides support services such as information systems, engineering and financial services on a commercial basis to the rest of the organisation.

There will be a review of the structure of New South Wales generation prior to July 1995 (IC 1994a, p.57).

Distribution

New South Wales comprises 25 geographically based distributors, the largest of which is Sydney Electricity which represents 40 per cent of all electricity distributed in the State. The distributors purchase electricity in bulk from Pacific Power at designated bulk supply points (London Economics and ESAA 1993, p.12). The metropolitan distributors are being commercialised.

According to Garry West (the former Minister for Energy), the New South Wales Government will consider facilitating private investment and new entrants into the generation and supply segments of the industry. Privatisation of the distribution GBEs is not foreshadowed (ESAA 1994b, p.9).

Pricing

The New South Wales Government Pricing Tribunal (GPT) conducted a fundamental review into electricity prices during 1993–94, releasing its Interim Report in October 1994. The key recommendations and proposals included the following.

Generation and transmission

- Allow free trade in bulk electricity for private generating companies, public utilities and private and public electricity consumers.
- Review Pacific Power's asset base to exclude excess capacity and ensure a rate of return earned on the level of investment necessary for current operations.
- To put pressure on Pacific Power and the generators to reduce the Bulk Supply Tariff (BST) (the price charged to distributors by the generator) by:
 - 8 per cent in nominal terms in 1994–95 (from 1 July 1994)
 - 5 per cent in nominal terms for 1995–96, subject to the clarification of market risks and industry structure associated with the introduction of the competitive wholesale market in July 1995; and
 - To 3 per cent below the rate of CPI increase for the period 1996–97 to 1999–2000.
- Ensure transmission and distribution pricing is cost reflective and uniform. Cross-subsidies are to be removed by reducing the over-recovered business tariffs, rather than through significant increases in residential tariffs;

Distribution

- Establish individual revenue paths (CPI–X) for up to five years for each distributor. This will incorporate differential X factors which reflect financial capacity and scope for efficiency. Subject to clarification of market risks and structure, the Tribunal is considering a range between 3 and 6 per cent for X factors to be applied to distributors' margins.
- Have distributors individually set tariffs subject to broad guidelines established by the GPT.
- Have distributors provide clear proposals for tariff restructuring to eliminate intra-class subsidies within five years.
- That distributors pass the savings from the 5 per cent BST reduction to consumers in a cost reflective manner.

According to the GPT, these price reductions are in prospect because of opportunities to reduce operating costs through:

- improved labour productivity
- advancement of technology in metering, distribution construction and maintenance
- better approaches to asset and risk management which can also lead to reduced capital and maintenance costs. (GPT 1994, p.A5–20)

By taking advantage of these opportunities, the average proposed reduction in total costs per customer is between 3 and 6 per cent per annum (GPT, 1994 p.A5–21). Over the five year price path period,

[a]ll distributors should set their targets to achieve maximum productivity gains by incorporating an efficiency target of 20-30% real operating cost reduction in their business plans. The size and rate of reduction will, however, vary from distributor to distributor, depending on their existing relative performance. (GPT 1994, p.A5–21)

B5.3.2 Victoria

Market structure

Until 1993, the ESI in Victoria was dominated by the State Electricity Commission of Victoria (SECV). The SECV was a Government-owned, vertically integrated monopoly, responsible for the majority of the State's energy supply, including most generation, all transmission, and around 85 per cent of distribution. The Snowy Mountains Scheme met additional generation requirements and there was a small amount of interstate trade. Some private generators also operated in Victoria (OSOE 1993, p.16).

A system of transfer pricing was used to facilitate the trade of electricity between each business unit (OSOE 1993, p.22). In addition, the SECV trialed models for electricity trading at the wholesale level between generators, distributors and large customers, the two phases of the trial being called Vicpool I and Vicpool II. Before October 1993 these models had only been used in trials and had not formed the basis for actual dispatch of plant or any financial transactions (OSOE 1993, p.25).

Recent reform of market structure

The first stage of reform commenced in October 1993 when the SECV was split into the following three new businesses (under the *State Owned Enterprises Act, 1992*):

- Generation Victoria — responsible for the production of power to meet the energy requirements of the system.
- National Electricity — responsible for high voltage transmission, the balancing of supply and demand, and for security of supply across the system.
- Electricity Services Victoria (ESV) — responsible for low voltage distribution, and the sale of electricity to retail customers.

Responsibilities were transferred from the SECV to the relevant businesses when full operations began on 3 January, 1994 (OSOE 1994, p.7).

The second stage of reform began on 3 October 1994, with the disaggregation of the ESV and the split of National Electricity into a transmission provider and market overseer. From October 1994, Victoria's ESI comprised eight State-owned companies.

- Victorian Power Exchange (VPX) — an independent company that monitors and controls the wholesale electricity market and ensures the security of the system. This body may ultimately belong to the competitive market participants, which it will serve.
- Power Net Victoria — a transmission grid company which will own, maintain and manage the high voltage grid. This is a natural monopoly and will remain State owned.
- Generation Victoria — an interim generation structure comprising generating units which will trade in the market as independent producers. This will be reviewed in 1995 to develop a more competitive structure based on four independent generating companies.
- Electricity Services Victoria — now disaggregated into five distribution businesses. It is expected that at least one of these distributors will be privatised in 1995.

The Office of the Regulator-General will act as an independent regulator to protect the consumer, monitor and maintain the integrity of supply, and ensure that the market operates fairly.

The Victorian and New South Wales Governments have signed a memorandum of understanding to facilitate the transition path to a competitive national ESI. Included in this is a commitment to agree on a reform timetable and trading arrangements between the two States.

Pricing

According to the Office of State Owned Enterprises (OSOE 1994, p.23) wholesale prices for electricity in Victoria are currently around 5 cents per kilowatt hour (kWh), which provides an adequate return on assets valued at replacement cost. The Office estimates that, given existing levels of excess capacity, unconstrained competition on the national grid in south-eastern Australia could result in the wholesale price falling to 1–3c/kWh (essentially covering fuel costs) during the next five to ten years. Prices would be expected to rise as demand growth approaches existing capacity limits and new generation capacity is required (around 2005). The market value of generating assets could be expected to fall during the short to medium term.

The Victorian Government has decided, in principle, to manage the wholesale electricity price path during the transition phase in order to share the benefits between the consumer (lower prices) and taxpayer (by reducing debt, associated with excess capacity, through higher profits and retained earnings), and to reduce the risk of substantial price shocks as capacity constraints occur (OSOE 1994, pp.22–23). It is estimated that the shared benefits of reform should provide savings of about \$2.5 billion to customers through lower tariffs and about the same to the State to preserve the budget position (Victorian Government 1994, p.1).

On 1 September 1994, the Government announced a new electricity tariff structure. Electricity prices will be frozen to mid-1996, producing a real reduction of at least 5.3 per cent for all but the largest power consumers. Maximum uniform tariffs for households, small and medium businesses and farms will be maintained until 2000. It is expected that after 2000, the operation of a fully competitive market for electricity and the introduction of regulatory measures would further serve to reduce prices (Victorian Government 1994).

The Government has written down the value of the rural distribution assets in rural zones covered by new electricity distribution businesses to lock in the prices advantages to country consumers. ... [T]he asset write down was a substantial up-front subsidy to rural and farm consumers, ensuring electricity pricing parity with urban consumers. (Office of the Premier and Deputy Premier 1994, p.1)

To offset this asset write down, metropolitan distribution asset values were revalued upwards. However, it is not known if this represented a full or partial offset.

Small and medium sized businesses will receive a 22 per cent real price reduction over the next four years. Large business customers will be provided with pricing certainty through vesting contracts during the transition to a competitive market, but will have the opportunity to benefit further by moving irrevocably to market based pricing.

Following the introduction of consumer choice in 2000, all customers will purchase electricity on a competitive basis. The price of energy will be determined within a wholesale electricity market as generation businesses in Victoria and interstate compete to supply distribution businesses, other retailers and large energy users.

Transmission and distribution charges will be subject to regulation to ensure their structure minimises price differentials for rural and farm customers and residential customers.

B5.3.3 Queensland

Market structure

Until recently, generation and transmission were undertaken by the Queensland Electricity Commission (QEC), a vertically integrated public utility. The QEC was the overall planning, coordinating and regulatory body for the Queensland Electricity Supply Industry (QESI).

Distribution was, and will continue to be, undertaken by seven regional electricity boards. South East Queensland Electricity Board (SEQEB) is the largest, distributing 43.9 per cent of electricity supplied in 1991–92. Capricornia was the next largest, distributing 10 per cent of electricity supplied in 1991–92.

Recent reform of market structure

On 10 May 1993, the Queensland Cabinet agreed to a timetable for implementation of the Government's corporatisation program. This included the corporatisation of the QESI by 1 January 1995 (Queensland Government 1994, p.1).

On 17 May 1993, the Cabinet decided on a restructuring of the QESI in conjunction with corporatisation. This was aimed at promoting competition, including private sector participation, in the industry. The central feature of the restructuring is the separation of generation from transmission. Effective from 1 January 1995, there will be two government-owned corporations (GOCs) and eight subsidiary corporations in place of the existing Queensland Electricity Commission (QEC) and the seven electricity boards.

The Queensland Generation Corporation (QGC) will be a statutory GOC with responsibility for the generation function currently performed by QEC. Publicly-owned generation assets will become the responsibility of the QGC.

The Queensland Transmission and Supply Corporation (QTSC) will also become a statutory GOC. It will operate as a holding company with eight subsidiaries which will own and operate the transmission and distribution assets presently owned by the QEC and the seven Electricity Boards.

The Queensland Transmission Corporation (QTC) will be one of the subsidiaries. The QTC will be responsible for the operation, maintenance and augmentation of the existing high voltage transmission system in Queensland. It will be required to provide a non-discriminatory service. The remaining seven subsidiaries will be the existing electricity boards.

The system operation function will reside with the QTC. There will be provision in the Electricity Act for another body to be given the system control function, if this becomes necessary to ensure competitive neutrality.

Legislation passed in September 1994 created two 'shell' bodies corporate for the QGC and QTSC. Both bodies have interim boards and are preparing for the transfer of assets and obligations from the existing QESI on 1 January 1995.

A statutory regulator will be responsible for regulatory functions currently within QEC, and new functions relating to the development of an electricity market.

Pricing

In view of the productivity improvement expected to flow from the reforms, the Government announced a number of electricity price initiatives in its 1994–95 State Budget. Specifically:

- electricity prices to domestic customers will be frozen until February 1996; and
- gazetted prices to commercial and industrial customers will be reduced by an average of 8 per cent from March 1995.

The Electricity Act will contain provisions for the regulation of retail tariffs and network services. Certain pricing guidelines were also detailed in the Corporatisation Charters for the QTSC and QGC. These guidelines stated that retail electricity prices will be determined by the electricity bodies. Pricing for network services may be determined according to a national framework. The responsible Minister will retain the ability to intervene 'in the public interest', including acting to maintain tariff equalisation throughout the State for a particular group of customers (Queensland Government 1994, pp.9–10).

Competitive neutrality

To ensure competitive neutrality, the new electricity GOCs will be expected to pay tax equivalents to the State Government and adopt commercial dividend and capital structure policies (Queensland Government 1994, pp.12–13).

B5.3.4 South Australia

Market Structure

In South Australia, generation, transmission and distribution are undertaken by a vertically integrated public utility, the Electricity Trust of South Australia

(ETSA). ETSA relies significantly on interconnection to the Victorian system in order to meet its power requirements. In 1991–92, ETSA imported 1287 gigawatt hours (GWh) from Victoria (or 16 per cent of ETSA's total sales).

ETSA was recently restructured from twelve to six divisions. These comprise two operating divisions, an operating support services division and three smaller corporate support divisions.

The State Government established an Electricity Sector Working Party to examine matters including the Hilmer Report, the National Grid, and organisational restructuring following recommendations of a State Government Audit Commission Report. The Audit Commission report recommended dividing ETSA into separate generating and distribution companies. The responsible Minister, Mr John Olsen, stated that he would prefer to introduce a Bill into State Parliament to corporatise ETSA, leading to the establishment of separate distribution, generation, transmission and marketing units within the organisation (ESAA 1994c, p.4). This is echoed in information provided to the Commission by the South Australian Department of Premier and Cabinet, which indicates that likely future reform of ETSA would involve accounting separation ('ring fencing') of generation, transmission and distribution in the short term, while structural separation is being considered for the long term.

Pricing

In May 1994, ETSA announced plans to progressively restructure its electricity tariffs. This includes reduced cross-subsidies between different users. Off peak rates will be reduced to appropriately reflect costs of supply (IC 1994a, p.193)

B5.3.5 Western Australia

The State Energy Commission of Western Australia (SECWA) was the principal supplier of electricity and gas in Western Australia. The electricity business was vertically integrated, undertaking generation, transmission and distribution functions. In addition it provides regulatory services to the ESI throughout the State.

In October 1993, the Government announced that a competitive framework would be introduced by July 1997 to enable large electricity users to contract directly with suppliers (IC 1994, p.204). The framework would apply to the high-voltage electricity transmission network.

During 1994, the Government established an Energy Implementation Group to examine the prospect of splitting SECWA into separate, corporatised electricity

and gas utilities by January 1995. The restructure is aimed at promoting effective competition between these two sources of energy.

Legislation has been passed enabling the split on 1 January 1995. The legislation obliges the new utilities to make available access to spare and new capacity, on a non-discriminatory and first-come-first-served basis, to any existing or prospective electricity generator or gas producer seeking access to the electricity and gas transmission networks.

The legislation also provides for regulations to be made setting out the process by which disputes in relation to access may be resolved. Several of SECWA's functions relating to energy policy, contractor licensing and other regulatory activities, were transferred to the independent Office of Energy on 1 January 1995. Separate reporting of the financial performance of business units will be achieved by ring fencing functions within the electricity and gas businesses.

Pricing

SECWA has made a strong commitment to reduce electricity tariffs by 25 per cent in real terms over the decade (see SECWA 1992, p.10). During the period 1990–91 to 1992–93, SECWA managed to reduce its prices by 2 per cent in real terms (SCNPMGTE 1994). So, over the remainder of the decade, Western Australian electricity users may expect a further price decrease of 23 per cent, in real terms, from 1990–91 prices.

The new electricity authority (Western Power) will also be expected to adopt pricing methods with the objective of achieving cost recovery from consumers in a reasonable time period (including operating and maintenance, capital investment and a reasonable return). It is expected that the pricing structures will be made public. This will allow existing and prospective users to calculate likely transmission and distribution prices and determine how access prices are established.

The introduction of time-of-use tariffs should lead to tariff reductions of between 2 and 10 per cent for medium to large commercial and industrial customers in the south-west grid. This is designed to encourage transfer from 'declining block' tariffs (falling average price with greater consumption) to time-of-use tariffs. This should result in a more efficient use of electricity, improve investment incentives for SECWA and generate cost savings for customers and taxpayers (IC 1994a, p.193).

Competitive neutrality

Western Australia will develop arrangements for the consistent application of tax equivalents to its GBEs over the next three years. The income tax

equivalent payments were introduced for electricity effective from 1 January 1995 and the sales tax equivalent payments from no later than 1 July 1996.

B5.3.6 Tasmania

Market structure

Generation, transmission and distribution are undertaken by the Hydro-Electric Commission (HEC), a vertically integrated public utility.

The HEC commercialised its activities during 1993 and implemented a new business structure. Six business units were established. They are Energy (generation); Network (grid); Retail; Corporate; Engineering; and Consulting.

Pricing

The HEC's tariff structure is in the process of being modified so that prices more closely reflect costs. Reduced operating costs, a focus on core business activities and overall efficiencies from commercialisation are keeping tariff increases low in comparison to historical levels.

Competitive neutrality

Since 1990, the HEC has been paying dividends, tax equivalent payments and debt guarantee fees to the Tasmanian government under the State Authorities Financial Management Act.

B5.3.7 Northern Territory

Market structure

The Power and Water Authority (PAWA) was established in 1987 by the amalgamation of the Northern Territory Electricity Commission, the Northern Territory Water Authority and the Water Resources Division of the Department of Mines and Energy. The Authority is vertically integrated and is the sole provider of public electricity, water and sewerage services throughout the Northern Territory.

At self-government in 1978, the Commonwealth Government entered into an arrangement to continue to subsidise the supply of electricity to urban and minor centres. The value of the subsidy, in 1992–93, was \$10 million and no further Commonwealth subsidy was payable thereafter. One of the Authority's corporate objectives is to break even on its commercial operations in 1994–95.

Pricing

Amendments to the Electricity Act were introduced in May 1993 to enable PAWA to charge different tariffs for different categories of users.

B5.3.8 Australian Capital Territory

Market structure

ACTEW was formed in 1988 by the amalgamation of the ACT Electricity Authority with ACT Water. The Electricity Authority had functioned as a separate commercially oriented organisation for many years prior to amalgamation. Corporatisation has been the subject of examination. There are no current plans for privatisation or separation of water and electricity.

In terms of energy provision, ACTEW is only involved in electricity distribution via its 132 kilovolt (kV) system which rings the ACT. ACTEW purchases most of its power from New South Wales and receives the Commonwealth's fixed allocation from the Snowy Mountain Hydro-electric Scheme. The ACT has a small industry base and its largest customers are the universities and Parliament House.

ACT Treasury estimates that the proposed reforms of the national electricity market will impact negatively on the ACT in the short to medium term (ACT Submission).

Competitive neutrality

Present ACT Government policy does not support privatisation, but is supportive of the introduction of dividend and tax equivalent payments.

Pricing

The ACT Government supports the establishment of a cost reflective and uniform approach to transmission and distribution pricing.

B5.3.9 Commonwealth

The Snowy Mountains Scheme (Scheme) is a large hydro-electric scheme located in southern New South Wales. Its purpose is to divert and regulate water for irrigation and power generation.

The Scheme is a cooperative venture between the Commonwealth, New South Wales and Victoria. The Snowy Mountains Council (which comprises representatives from New South Wales, Victoria, the Commonwealth and the

Snowy Mountains Hydro-Electric Authority) has responsibility for directing and controlling the operation and maintenance of the Scheme. The Snowy Mountains Hydro-Electric Authority (SMHEA) has responsibility for the construction, operation and management of the works of the Scheme.

The entitlements to the outputs of the Scheme are administered under the Snowy Mountains Agreement, which has been ratified by the three parliaments. The Scheme has a generating capacity of 3740 megawatts (MW). It supplied 6535 gigawatt hours (GWh) of power in 1992–93 to: the ACT (13 per cent); New South Wales (58 per cent); and Victoria (29 per cent). The output of the scheme is provided to the States at cost, including debt servicing.

In 1989, the Victorian, New South Wales and Commonwealth Governments agreed to review the Scheme. The aims of the review were to:

- provide funds for a major refurbishment of the Scheme;
- price outputs so that assets earned an appropriate economic rate of return; and
- improve efficiency and accountability.

A series of negotiations followed, between the Commonwealth, Victoria and New South Wales on new management and ownership structures for the Scheme. These negotiations were inconclusive. In May 1992, the Prime Minister wrote to the respective Premiers offering to buy out the States' interests in the Scheme. In January 1995, following a period of further negotiations, agreement was reached by the three Governments on a set of principles to guide reform of the Scheme.

Under these principles, as part of the changes to enable competition, the SMHEA is to be corporatised by 1 July 1995, or as soon as practicable thereafter. Instead of providing electricity under entitlements to New South Wales, Victoria and the ACT, this new corporation will compete to supply into the national grid. However, no timetable has yet been set for effecting this change. The ACT government says, in its submission (ACT Submission, p.6) to this review, that it

considers that the corporatisation of the Snowy Mountains Hydro-Electricity Authority (SMHEA) should not proceed until the ultimate market structure is in place. This would allow the ACT to purchase electricity at competitive market prices through the National Grid arrangements rather than those presently charged by Pacific Power and which may be charged by a corporatised SMHEA.

B5.3.10 Interconnection

There are four topics worth discussing in relation to interconnection. These are:

- the South East Australian Grid;
- the National Grid;
- Basslink, the electricity connection between Victoria and Tasmania; and
- Eastlink, the electricity connection between Queensland and New South Wales.

The South East Australian Grid

The ESIs of three States — Victoria, New South Wales and South Australia — are currently linked with mutually beneficial trade taking place under the Interchange Operating Agreement (IOA). The IOA is designed to provide the opportunity for economic interchange and for sharing of reserve plant margin, and provides for utilities to enter into contracts with each other. In recent times, significant competition between Victoria and New South Wales has been evident through these contracting arrangements in supplying the needs of South Australia. Competition between the New South Wales and Victorian markets is currently limited by a relatively low capacity connection. Studies undertaken for the National Grid Management Council (NGMC) show insufficient benefits to justify the augmentation of the connections before the year 2000. There may be scope for low cost expansion beyond this time (OSOE 1994, p.10).

The National Grid

At the Special Premiers' Conference in July 1991, agreement was reached on the formation of the NGMC. The NGMC comprises representatives of the States of Queensland, New South Wales, Victoria, Tasmania and South Australia, the ACT, the Commonwealth and an independent Chairman.

The role of the NGMC is to encourage open access to the eastern and southern Australian grid, free trade in bulk electricity, coordinate planning and to encourage competitive sourcing of new generation. In May 1992, COAG agreed to develop an interstate transmission network across the eastern States.

Heads of Government endorsed the NGMC's National Grid Protocol in December 1992. It sets down the rules, responsibilities and technical requirements for connection to the National Grid and for participating in trading bulk electricity through it.

Heads of Government have agreed to the introduction of a competitive electricity market in southern and eastern Australia from 1 July 1995, with the transition to a fully competitive market by 1 July 1999. Successive meetings of the Council of Australian Governments (COAG) have endorsed some broad principles for the fully competitive electricity market. These include:

- separating out transmission from generation and distribution activities;
- inter-jurisdictional merit order commitment and dispatch and interstate sourcing of generation;
- customers' choice of supplier;
- non-discriminatory access to the interconnected transmission and distribution networks; and
- no discriminatory legislative or regulatory barriers to entry for new participants in generation or retail supply.

The NGMC has been working within the framework set by COAG to develop and agree on the details of the market design. As part of that process, the NGMC implemented an eight month paper trial in late 1993. The objective of the trial was to allow participants to gain experience in the dynamics of a competitive market and market instruments, and to provide the opportunity to test trading mechanisms and arrangements. Some 170 major customers (10 MW and above), distributors and generation utilities participated in the trial.

Key characteristics of the market design proposed by the NGMC include a common electricity 'pool' serving the interconnected States; choice of bilateral contract arrangements; a short-term forward trading market; and ex post pricing spot market; decentralised generator commitment and centralised competitive merit order dispatch across all generation. Market operations will be covered by a Code of Conduct covering market rules, grid connection/access, network pricing, system security and administration.

The States are undertaking the structural reforms of their utilities to create the conditions necessary for the introduction of the market, particularly separation of transmission from generation. A number of major issues need to be resolved by governments. These include:

- industry structure and competition policy issues;
- analysis of the financial impacts of reform and budgetary impacts on the States;
- programs to reduce franchise customer limits and vesting contracts;
- reconsideration of the existing three State Interconnection Operating Agreement which currently governs electricity trade between the interconnected States;
- reform arrangements for the Snowy Mountains Scheme; and
- industry regulatory and legislative arrangements.

Basslink

The possibility of an undersea cable link between Victoria and Tasmania has been jointly considered on a number of occasions as an alternative option to hydro development in Tasmania. These studies invariably concluded that independent development was more economic than interconnection (SECV in ESAA 1993, p.19).

However, a preliminary study undertaken jointly by the SECV and the HEC in 1990 concluded that it would be technically feasible and prospectively economic to link the electricity systems of the two States. A comprehensive feasibility study was submitted to the Tasmanian and Victorian governments in November 1991. The study identified energy trading benefits and capacity benefits (from sharing reserves and deferment of planned generation) that could arise from interconnection.

The study concluded that the optimum development would be a single 300 MW cable interconnection costing \$400 million (1991 prices) with installation around 1998. This cable would have provision for expansion to 600 MW. This interconnection would defer current generation expansion programs by about 16 months in Victoria and eight years in Tasmania.

By 1993, lower than forecast load growth caused a supplementary study to conclude that the optimum timing for Basslink should be deferred to the year 2000. This study also indicated that the timing issue will require review when the national grid commences operations.

Preliminary results from a further study by the HEC and the Tasmanian Office of Energy and Planning suggest that:

- the arrangements for the National market and particularly the treatment of interconnections will have a major impact on the viability of Basslink and the ability for any party to develop a business case for the project;
- the economic justification for Basslink from Tasmania's view point is still marginal;
- the optimum timing for Basslink now appears to be beyond the year 2000. (Longbottom 1994, p.3)

Eastlink

The feasibility of connecting the New South Wales and Queensland electricity networks has also been examined several times. In the past, interconnection was rejected because few benefits could be identified. The two systems shared similar load characteristics and fuel costs, and long distances resulted in costly transmission (QEC in ESAA 1993, p.16).

However, in 1990, preliminary studies indicated that advances in technology, real cost reductions and network developments had improved the prospects for connection. Several potential benefits were identified. First, the principal benefit of interconnection would be the ability to reduce reserve generation capacity requirements on the interconnected system, resulting in the deferred construction of new capacity. Second, there would be the ability to source capacity from locations across the interconnected States and minimise future energy costs. Third, there would be the ability to minimise overall system operating costs (primarily fuel) through increased ‘opportunity’ energy trading between systems, displacing the use of higher-cost fuels wherever possible. Finally, increased competition between fuel suppliers within the State and between suppliers of different fuels in different States would result.

On present projections of future growth in electricity consumption, new generating capacity will be required each year in Queensland from 1998 onwards. However, New South Wales may not need new generating capacity until some time after the year 2000. Therefore, beyond 2000 there will arise a combined need for additional generating capacity in other States as well as Queensland. The Queensland and New South Wales systems will require generating capacity increments of 300 to 350 MW each year and Victoria may require some 200 MW annually (QEC in ESAA 1993, p.17).

The decision will ultimately depend upon the capacity of the link, connection points, the timing of its commission and the transmission and control technology to be used. The possibility of sharing reserve plant across an expanded grid creates an opportunity to establish an initial interconnection of about 500 MW capacity.

To facilitate the timely development of Eastlink, the QEC, Pacific Power and the Commonwealth Government signed a Memorandum of Understanding on 14 December 1993. It involved arrangements to advance the technical studies, community consultation and route selection to the stage of acquiring easements, under a joint funding arrangement (Smith and Sherman 1994, p.1).

B5.4 The likely impacts of reform

The comprehensive nature of the structural and pricing reforms of the ESI discussed in the previous section, will significantly affect many aspects of GBE performance. For example, the separation of utility activities and the creation of a national grid will encourage competition, cost reductions and productivity improvements. Similarly, the introduction of competitive neutrality arrangements will affect the commercial performance of GBEs.

However, as mentioned at the start of this chapter, it must be emphasised that in this exercise the intention is only to model the effects of the Hilmer and related reforms. While other reforms are ignored, their effects may be present in the available data because it is not always possible to partition outcomes according to the type of reform. Nonetheless, when predicting future trends (as far as is possible) only the effects of Hilmer and related reforms are taken into account.

Accordingly, this section will assess the impact of reform on the elements of GBE performance that are most relevant to this exercise:

- capital productivity;
- labour productivity;
- productivity of other inputs (including energy);
- overall productivity;
- pricing;
- cost of primary energy;
- rates of return;
- dividend and other payments to governments; and
- asset values.

Capital productivity

Capital productivity, here, is physical productivity as measured, for example, by reserve plant margin and capacity factor.^{1,2}

Competition and the rationalisation of generating facilities is expected to reduce the level of excess capacity (reflected in reserve plant margins and capacity factors) in the ESI, and increase capital productivity. In the absence of an increase in the rate of load growth, rationalisation may occur through plant closures ('mothballing').

Major programs to close inefficient plant in the late 1980s have already significantly reduced excess generating capacity in the ESI. Figure B5.2 reflects this decline with average reserve plant margin falling from just over 50 per cent in 1987–88 to 37 per cent in 1992–93. Over the same period, load factor remained fairly constant and capacity factor increased, in line with the reductions in excess capacity. The BIE (1994b, p.29) concluded that, when

1. Reserve plant margin is defined in SCNPMGTE (1994) as $(\text{Installed plant capacity} - \text{Peak demand}) / (\text{Peak demand})$.

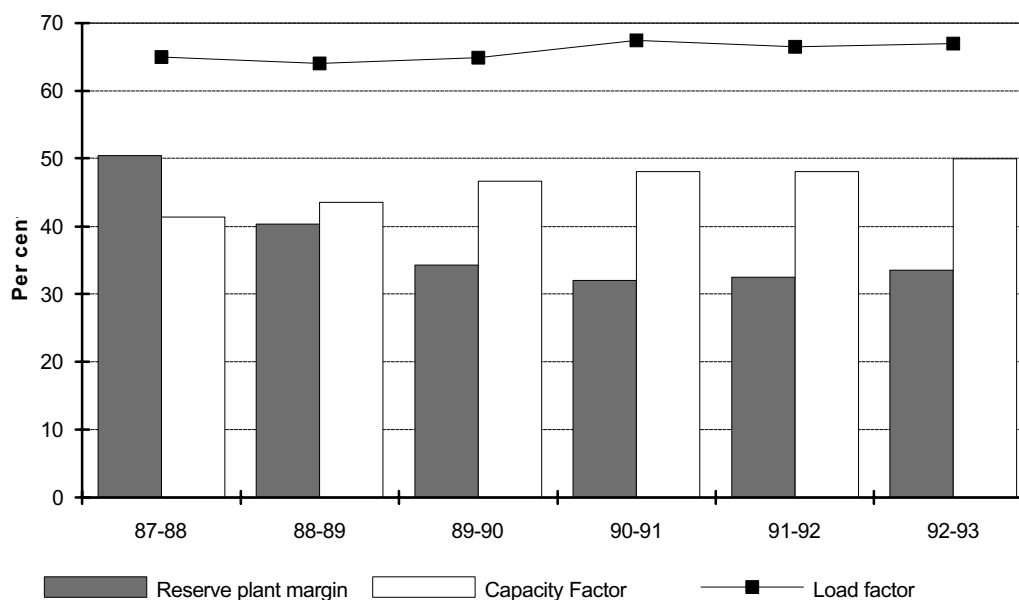
2. In SCNPMGTE (1994): Load factor is defined as $(\text{Annual generation}) / (\text{Peak generated load} * \text{Period hours})$; and Capacity factor is defined as $(\text{Annual generation}) / (\text{Installed plant capacity} * \text{Period hours})$.

comparing load factor, capacity factor and reserve plant margin for the ESIs in Australia and the United States of America, Australian generators were only deficient with respect to reserve plant margin (in 1990–91). The BIE reported a reserve plant margin of 26 per cent for the US, compared to 35 per cent for Australia. The US load factor for 1991 was 59 per cent and capacity factor was 50 per cent.

In a national market, capital productivity in electricity generation is therefore expected to increase, as reserve plant margins are reduced to levels similar to those in the US. However, little is known about the likely impacts of reform on the capital productivity of electricity transmission and distribution.

While the scope for capital productivity improvements in transmission and distribution is necessarily constrained by the need to meet peak demands for electricity, the advent of competition is still expected to produce new opportunities in this area. These may arise through the retirement of excess capacity or technological improvements.

Figure B5.2: Reserve plant margin, load factor and capacity factor, 1987–88 to 1992–93^a



- a Reserve plant margin, load factor and capacity factor measures include the following GBEs: Pacific Power (including Snowy Mountains entitlement); State Electricity Commission of Victoria (including Snowy Mountains entitlement); Queensland Electricity Commission; Electricity Trust of South Australia; State Energy Commission of Western Australia; Tasmanian Hydro-Electric Commission; and Power and Water Authority (NT).

Source: SCNPMGTE

Labour productivity

Over the five years to 1992–93, labour productivity in the ESI has steadily increased (Figure B5.3). This reflects a range of factors including heavy labour shedding, arising from the contracting out of non-core activities, and the rationalisation of labour in core activities. That portion of the improvement in labour productivity attributable to contracting out should be interpreted with caution. Although contracting out is likely to reduce costs and improve efficiency, the labour productivity measure may be overstated as labour employed by contractors is not included. However, for a selection of New South Wales GBEs, Domberger and Farago (1994) suggest that labour productivity measures are not significantly upward biased, because contracting out represents only a small percentage of operating costs (just over 4 per cent in the case of Pacific Power).

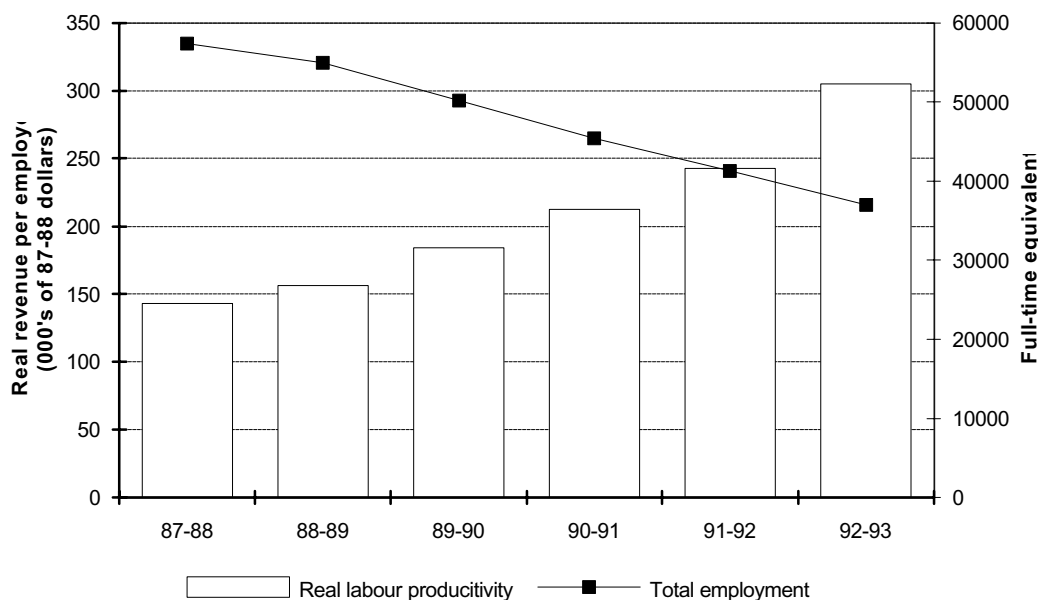
Overall, while competition may be expected to drive further improvements in labour productivity (as new ESI entrants introduce new technologies and workplace arrangements), the cost savings this may generate will be small in comparison to an equivalent percentage change in capital productivity. This is because in 1991 labour accounted for only 15 per cent of total costs in the ESI (BIE 1994b, p.31).

Productivity of other inputs (including energy)

GBE performance in the advent of competition in the ESI will be affected by differing levels of energy productivity. Several generators, employing different fuels and technologies, will be competing to sell electricity to the national grid. The resulting price competition may cause the value of generators with high thermal efficiency (on a cost basis) to rise at the expense of relatively low thermal efficiency generators. While there is scope for improvements in thermal efficiency, it is expected that these will be of a smaller magnitude than for labour and capital productivity improvements.

The contracting out of services is also expected to increase in importance in the ESI as GBEs adopt a commercial focus. As discussed above, contracting out does cause a spurious increase in the labour productivity of a GBE's remaining workforce. On balance, however, contracting out is expected to increase the overall productivity (and flexibility) of the ESI.

Figure B5.3: **Real labour productivity and total employment, 1987–88 to 1992–93^{a,b}**



- a Includes the following GBEs: Pacific Power; Prospect Electricity; Sydney Electricity; Shortland Electricity; Illawarra Electricity; State Electricity Commission of Victoria; Electricity Trust of South Australia; Tasmanian Hydro-Electric Commission; Power and Water Authority (NT); and Snowy Mountains Hydro-Electric Authority.
- b The real labour productivity measure is constructed by deflating each organisation's total revenue by its own price deflator (not the CPI). This produces an implicit quantity measure that is then divided by total employment to obtain the real labour productivity measure. An industry average is calculated as the sum of these measures across the industry, with each organisation's measure weighted by its share in total industry revenue.

Source: SCNPMGTE.

Overall productivity

When changes in the productivity of labour, capital, energy and other inputs are considered together, the resulting change in total factor productivity (TFP) can be significant. There have been several studies that provide TFP measures of the ESI.

EPAC (1994) reported that the TFP of the Australian Electricity, Gas and Water industries grew by just over 4 per cent a year over the four years to 1992–93.³

³ It should be noted that EPAC's measure of TFP only includes two inputs, capital and labour, rather than the four named earlier as the usual inputs in TFP studies of the ESI.

In contrast, the BIE (1994b) found that TFP in the ESI alone grew slightly less than one per cent over the period 1989–90 to 1991–92.

Over a longer time frame, 1979–80 to 1992–93, EPAC figures indicate that TFP grew at a rate of 3.4 per cent a year in the Electricity, Gas and Water industries. These results are consistent with those reported in studies by the BIE (1994b), GPT (1994), and London Economics and the ESAA (1993) over a similar term. The latter study concluded that most of the growth in TFP occurred after 1985–86 at an average of 4.5 per cent a year. The results of these TFP studies are summarised in Table B5.1.

While TFP growth rates are of some interest, an examination of TFP levels makes for more meaningful comparisons. However, of the studies discussed above, only BIE (1994b) provides an international comparison of TFP levels. The BIE reported that despite a slowing in productivity growth, the TFP gap between the Australian ESI and the average US investor-owned utility fell from 29.2 per cent to 26.9 per cent over the period 1989–90 to 1991–92.

These TFP estimates may be compared with estimates from international benchmarking studies by the ESAA (1994a) and GPT (1994) using the Data Envelopment Analysis (DEA) technique. The results of the ESAA study indicate that in 1990–91 the Australian generation sector was 8 per cent less efficient than international best practice, while for the transmission and distribution sectors the gap to best practice was larger, being 25 and 27 per cent respectively. This finding for the distribution industry is supported by the GPT's study which found that, after accounting for differences in operating environments, a reduction in inputs of between 20 and 60 per cent could be achieved for the four largest New South Wales distributors (Sydney, Illawarra, Prospect and Shortland).

In terms of future productivity gains, a consultancy for the GPT by London Economics reports that TFP could be expected to grow by around 5 per cent per year over the next five years for the four largest distributors of electricity in New South Wales (GPT 1994, p.A5–15). This represents a cumulative increase in TFP of around 28 per cent.

Table B5.1: A comparison of TFP growth rates from selected studies

<i>Study</i>	<i>Coverage</i>	<i>Period</i>	<i>Growth in TFP level (%)</i>	<i>Annual TFP growth rate (%)</i>
BIE (1994)	Electricity	1989-90 to 1991-92	1.9	0.95
EPAC (1994)	Electricity, Gas and Water	1989-90 to 1992-93	13.0	4.2
BIE (1994)	Electricity	1981-82 to 1991-92	37.1	3.2
EPAC (1994)	Electricity, Gas and Water	1979-80 to 1992-93	54.0	3.4
GPT (1994)	Four largest NSW distributors	1981-82 to 1992-93	5.0–66.0	0.4–4.7
London Economics (1993)	Electricity	1981-82 to 1990-91	32.2	3.1

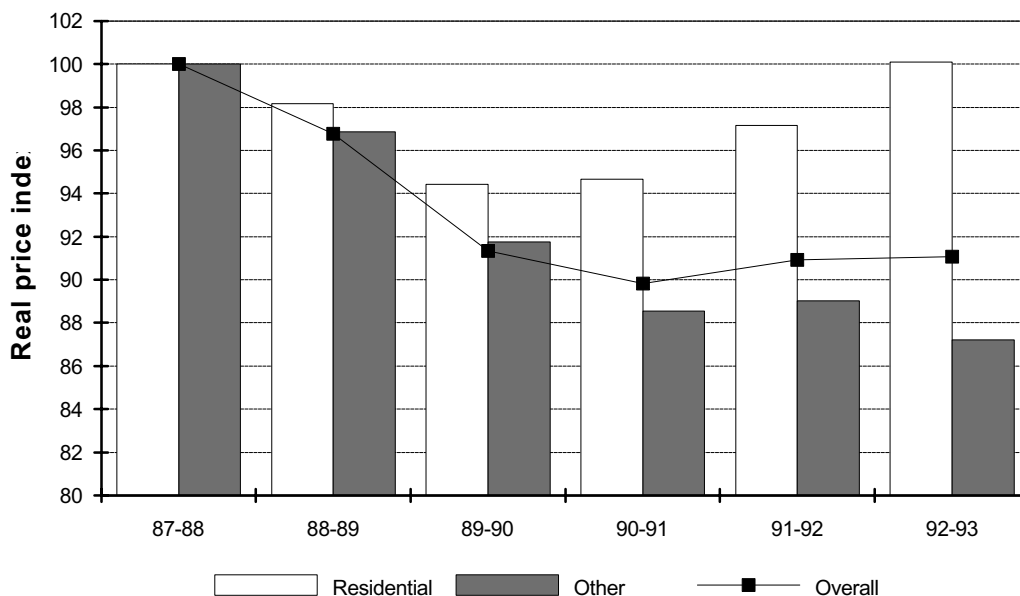
Source: Derived from EPAC (1994), BIE (1994b), GPT (1994) and London Economics and ESAA (1993)

Pricing

During the period 1987–88 to 1992–93, average electricity prices have declined by around 10 per cent, in real terms (Figure B5.4). Over the same period, there has also been a significant change in the structure of electricity prices. The majority of electricity authorities are now committed to removing the cross-subsidisation from commercial to residential customers, a reform that is consistent with cost reflective pricing. This commitment is reflected in the decline of real electricity prices to commercial (other) customers relative to residential customers. While cross-subsidisation may eventually disappear (possibly to be replaced with an explicit CSO payment from governments), the long-term effect of competition on prices to individual customer classes is unclear.

Productivity gains are expected to lower the cost of production by reducing the amount of resources it takes to generate and distribute electricity. However, competitive neutrality will require government-owned GBEs to earn a rate of return, particularly on equity, which is similar to that required by the private sector, for similar levels of market risk. Because government-owned enterprises are not traded on the stock market, there is no market assessment of the value of their businesses and their rates of return. It is possible that their current rates of return are lower than those for similar private sector firms. Some of the productivity gains, therefore, may flow into increasing the rate of return, particularly on equity. The remainder is expected to flow into lower prices. However, it is unclear that the remaining productivity gains will be sufficient to compensate residential customers for the removal of cross-subsidies.

Figure B5.4: **Real price index by customer group, 1987–88 to 1992–93a,b**



a Includes the following GBEs: Prospect Electricity, Sydney Electricity; Shortland Electricity; Illawarra Electricity; State Electricity Commission of Victoria; South-East Queensland Electricity Board; Capricornia Electricity; Electricity Trust of South Australia; State Energy Commission of Western Australia; Tasmanian Hydro-Electric Commission; Power and Water Authority.

b Note that the Residential and Other customer groups are not exhaustive for all GBEs. As a result the 1989-90 Overall real price index is below both the Residential and Other real prices indices for that year.

Source: SCNPMGTE

However, as noted above, the Governments of New South Wales, Victoria, Queensland, South Australia and Western Australia have announced details of future price strategies for their State ESIs. Some of these will be used to estimate the likely price path for the ESI as whole.

Cost of primary energy

Open competition in the electricity and gas industries may lead to changes in the relative costs of alternative primary energy sources (coal and gas). In particular, the freeing up of gas reserves for electricity generation, the removal of restrictions on the trade of gas, and interconnections of both gas and electricity transmission networks, are expected to significantly alter the optimal fuel mix for future generating capacity relative to today. This is primarily because the current fuel mix is a product of past political decisions. For example, coal fired power stations and coal mines produced more jobs, and gas

was regarded as a precious resource with a value higher than that implied in its use in electricity generation. Simulation results from ABARE's MENSA model suggest that the interconnection of the electricity and gas networks will provide commercial incentives to increase the use of gas in power generation. This occurs in response to a fall in the relative price of gas, removal of barriers to interstate trade and the use of gas in power generation (IC, 1995).

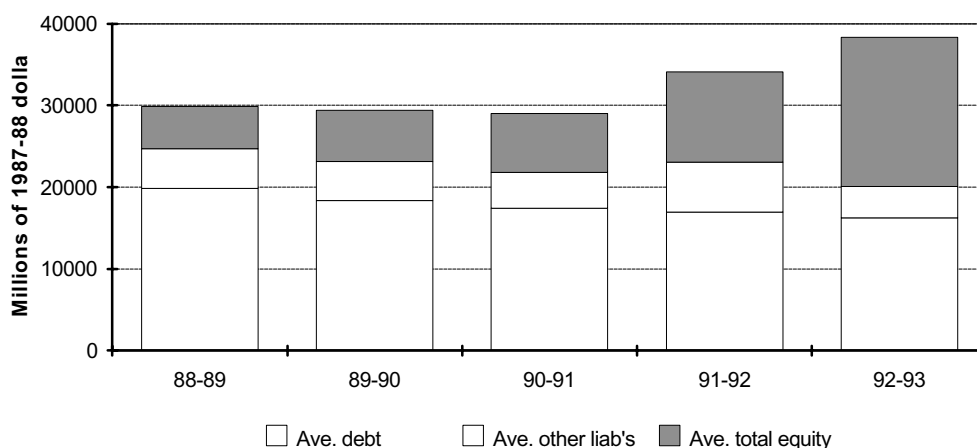
Rates of return

GBE rates of return may rise as the ESI is opened up to competition. This would mostly be due to government commitment to the principles of competitive neutrality. If private firms are to enter the ESI, owner governments must demand commercial rates of return on their equity investment in GBEs. Otherwise, exempt GBEs will have a competitive advantage over private firms which may discourage private sector participation. Therefore, GBE rates of return may be expected to rise to the extent that they are currently below the average rate of return of private firms of similar (market) risk.

During the period 1988–89 to 1992–93, the average rate of return on total assets in the ESI remained fairly constant (Figure B5.5). However, caution must be exercised when interpreting these data. They are based on accounting data and are not comparable to rates of return based on market assessment, such as the share market. The interpretation is made even more difficult because the value of total assets has increased in recent years, primarily reflecting upward asset revaluations in the Queensland Electricity Supply Industry and the Tasmanian Hydro-Electric Commission, rather than new investment.

Profits have been increasing in order to maintain rates of return as the value of total assets has been increasing (Figure B5.5). This increase in profits has, in part, been achieved by temporarily halting the downward trend in overall real electricity prices, during the last two years.

Figure B5.5: Funding of total assets, 1987–88 to 1992–93,^{a,b}



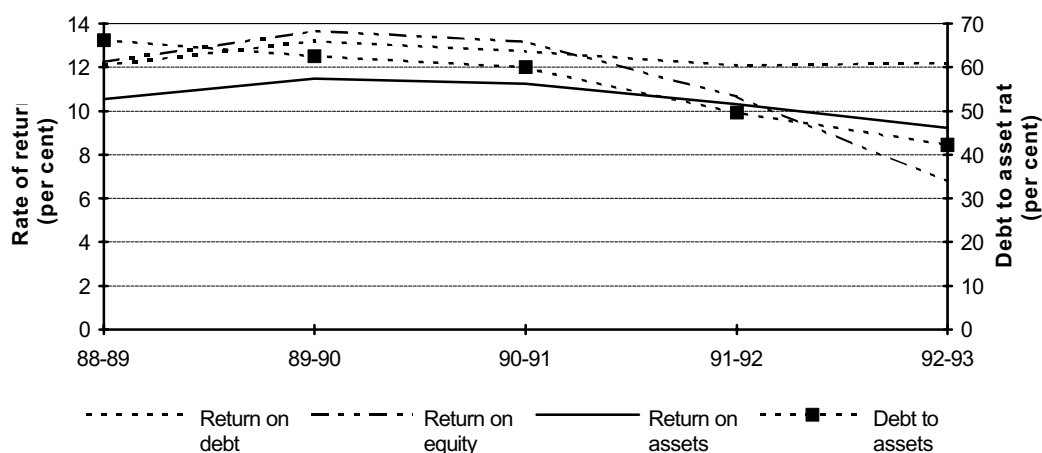
- a Includes the following GBEs: Pacific Power; Prospect Electricity; Sydney Electricity; Shortland Electricity; Illawarra Electricity; State Electricity Commission of Victoria; Queensland Electricity Supply Industry; Electricity Trust of South Australia; Tasmanian Hydro-Electric Commission; Power and Water Authority; and Snowy Mountains Hydro-Electric Authority.
- b The stacked bars indicate how total assets are funded, that is total equity plus debt plus other liabilities. Note that these are aggregates representing the average level of debt, equity and other liabilities for the ESI as a whole, during the given financial year. They do not represent the capital structure of the 'average' enterprise in the industry.

Source: SCNPMGTE

It is also important to distinguish between the return accruing to debt and the return accruing to equity. Given the historically high debt to assets ratios in the industry (Figure B5.6), a high percentage of the return on assets was directed towards debt-servicing (Figure B5.7). With the recent asset revaluations, the debt to total asset ratio has fallen from over 60 to below 50 per cent. In addition, the average interest rate paid on industry debt (the return on debt) has not changed significantly over the period 1987–88 to 1992–93 (Figure B5.6).⁴ As the debt to total assets ratio decreases, the rate of return on equity will need to fall in order to maintain the overall rates of return on total assets constant.

⁴ Calculated as Gross interest expense divided by Debt (defined in SCNPMGTE (1994) to include all repayable borrowings, both interest bearing and non-interest bearing, all interest bearing non-repayable borrowings, redeemable preference shares and finance leases; but excludes creditors or provisions; while offsetting assets such as contributions to sinking funds should not be deducted).

Figure B5.6: **Return on assets and related measures 1987–88 to 1992–93^{a,b}**



a Includes the following GBEs: Pacific Power; Prospect Electricity; Sydney Electricity; Shortland Electricity; Illawarra Electricity; State Electricity Commission of Victoria; Queensland Electricity Supply Industry; Electricity Trust of South Australia; Tasmanian Hydro-Electric Commission; Power and Water Authority; and Snowy Mountains Hydro-Electric Authority.

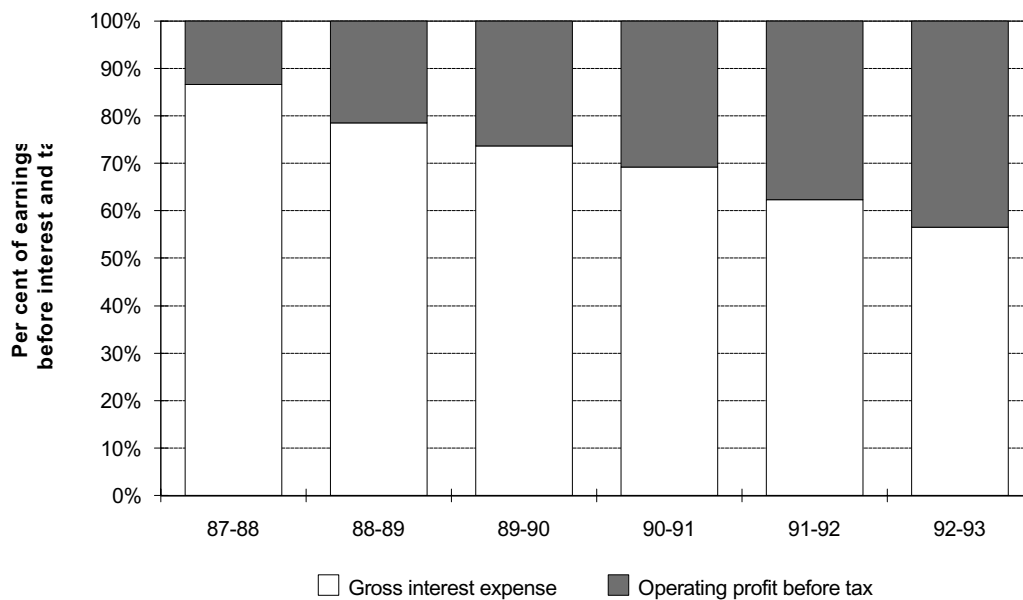
b The return on debt and the return on equity are often greater than the return on assets because of the influence of average other liabilities in the return on assets measure.

Source: SCNPMGTE

Dividends and other payments to government

The implementation of competitive neutrality principles will ensure that GBEs are subject to tax equivalent payments similar to those faced by private firms, and the payment of dividends at commercial rates. Currently, not all State governments request tax equivalent payments (TEPs) from their GBEs. Consequently, the comprehensive application of TEPs would increase total payments to governments from their GBEs. Similarly, the payment of dividends by GBEs does not occur in all States. Dividend payout ratios (expressed as dividends as a proportion of operating profit after tax) are typically below the 70 to 80 per cent average for firms listed on the Australian Stock Exchange (IC 1993 p.190). In recent years, however, the levels of real dividends, income tax payments (or TEPs) and dividend payout ratios have all increased (Figure B5.8). It needs to be kept in mind that the appropriate dividend payout ratio is likely to vary between firms.

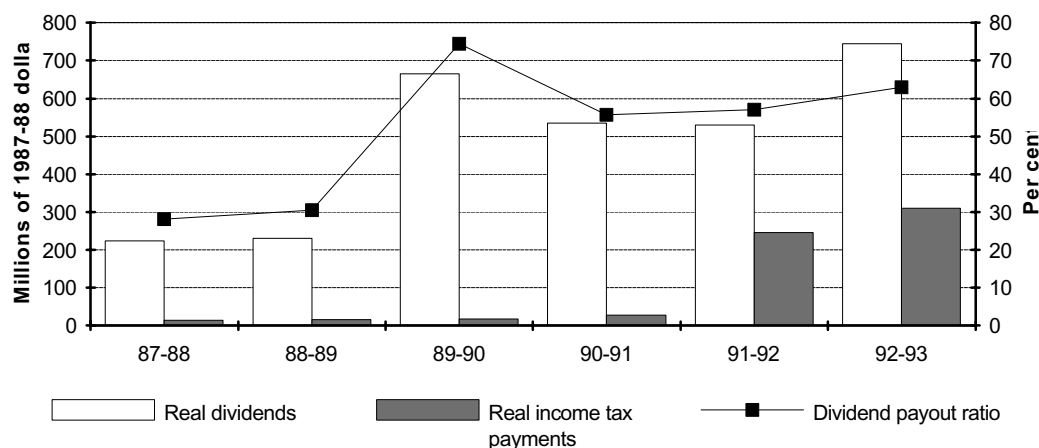
Figure B5.7: **Composition of earnings before interest and tax, 1987–88 to 1992–93^a**



a Includes the following GBEs: Pacific Power; Prospect Electricity; Sydney Electricity; Shortland Electricity; Illawarra Electricity; State Electricity Commission of Victoria; Queensland Electricity Supply Industry; Electricity Trust of South Australia; Tasmanian Hydro-Electric Commission; Power and Water Authority; and Snowy Mountains Hydro-Electric Authority.

Source: SCNPMGTE

Another part of the competitive neutrality arrangements is the imposition of fees for government guarantee of GBE debt. Therefore, the implementation of competitive neutrality arrangements across all jurisdictions should, all else being equal, increase payments to owner governments (premium on interest expense).

Figure B5.8: Payments to government, 1987–88 to 1992–93,^{a,b}

a Includes the following GBEs: Pacific Power; Prospect Electricity; Sydney Electricity; Shortland Electricity; Illawarra Electricity; State Electricity Commission of Victoria; Queensland Electricity Supply Industry; Electricity Trust of South Australia; Tasmanian Hydro-Electric Commission; Power and Water Authority; and Snowy Mountains Hydro-Electric Authority. Note that of these GBEs, 7 paid a dividend in 1992–93, while 4 paid income tax or a tax equivalent payment.

b The sharp rise in the dividend payout ratio in 1990–91 is due to Sydney Electricity's dividend paid or provided for of \$387 million (\$327 million of which was due to CSOs counted as dividends) and 90 per cent dividend payout ratio for that year. Without this observation, the average dividend payout for 1989–90 is 53 per cent.

Source: SCNPMGTE

Asset values

As discussed above, competition may result in the temporary (say 5–10 years) write down of assets in utilities with excess capacity, reflecting their temporary low earning potential. In the long run, however, asset values should realign with the replacement cost of the facilities.

With the advent of competition, capital construction costs (the long run replacement cost) in the ESI may decrease. This could happen for two reasons. First, changes in the relative prices of the various fuels, together with financial pressures to more efficiently use capital, may result in more gas fired plant (with a lower capital cost relative to coal) and smaller coal fired plant being built to meet future electricity demand. Second, commercial pressures may be expected to streamline the design, contracting, building and commissioning of new ESI capital, resulting in lower capital construction costs. For existing ESI capital then, these lower replacement costs imply lower asset values.

Summary

Taken together, the effect of competition on the various elements of performance will form the basis for determining the benefits of reform of the ESI. However, consideration must also be given as to how these likely effects can be incorporated into the ORANI model, if possible.

B5.5 Reforms considered by the Commission

In the Commission's Energy report (IC 1991a), to estimate the economy-wide effects of improved electricity production and pricing practices, the ORANI model was used to simulate the following scenario:

- other States achieve the total factor productivity (TFP) of the most efficient States, Western Australia and Queensland, in 1989–90;
- all States additionally achieve Queensland's 3 year projected TFP level;
- all States achieve international best practice in labour and capital usage; and
- cross-subsidies are eliminated.

Since ORANI is a comparative static model, it is inappropriate to include dynamic adjustment mechanisms implemented to manage excess capacity, asset revaluations or the transition to the National Grid. Accordingly, a similar approach to that of the Energy report is followed, except that:

- TFP benchmarks are not used;
- information on the extent of cross-subsidies is drawn from the New South Wales Government Pricing Tribunal's report into electricity pricing;
- information on recent and future price paths of electricity are based on recent data from the SCNPMGTE and suggested time paths for New South Wales and Victoria;
- changes to the construction cost of ESI capital are explicitly modelled;
- competitive neutrality arrangements are imposed; and
- the changes since the end of June 1991 are assumed to be attributable to Hilmer and related reforms.

While most of these changes represent an improvement, the decision not to investigate increased TFP warrants explanation. TFP is a useful indicator of an enterprise's overall performance over time, or relative to a best practice benchmark. However, when deciding how to achieve best practice, a TFP gap of, say, 10 per cent does not normally indicate that the productivity of every

input needs to increase by 10 per cent. This is because the scope for productivity improvement usually differs between inputs. To avoid assuming that the scope for productivity improvements is the same for all inputs, achieving best practice in labour and capital usage is modelled separately.

Achieving best practice productivity levels for inputs other than capital and labour is also not investigated. This is because of a lack of information on the scope for productivity improvements in this area. The predicted effects of reaching best practice labour and capital usage may therefore understate the overall benefit.

Best practice labour and capital usage

In Table B5.2, the excess capital stock associated with reserve plant margins is estimated using an assumed best practice of 25 per cent (close to the US average of 26 per cent), rather than the 20 per cent assumed in IC (1991). By assuming that the level of excess capacity in the generation sector, as indicated by reserve plant margin, is representative of the transmission and distribution sectors, the average excess capital stock in 1989–90 is estimated to have been 8 per cent, using the 1989–90 annual user charges to weight each State.

However, an examination of Figure B5.2 reveals that over the period 1990–91 to 1992–93 reserve plant margins had fallen, on average, from their 1989–90 levels. Given that the reserve plant margin for a particular generator can vary year by year for a variety of reasons (for example commissioning of new plant), a three year average over this later period is used to re-calculate the cost of excess reserve plant margins. Applied to the data in Table B5.2, this implies a decrease in the excess reserve plant margins from 8 to 4 per cent.

For the purpose of this modelling exercise, it is assumed that competition is likely to lead to an improvement in capital productivity of around 4 per cent, relative to levels prevailing in 1990–91.

Table B5.2: Estimated excess capital stock associated with reserve plant margins, 1989–90^a and 1990–91 to 1992–93^b

	<i>NSW</i>	<i>VIC</i>	<i>Qld</i>	<i>SA</i>	<i>WA</i>	<i>Total</i>
Reserve plant margin 1989–90 (per cent)	46	27	37	45	25	na
Assumed best practice (per cent) ^b	25	25	25	25	25	na
Excess capital stock (per cent) ^c	14	2	9	14	0	8
Capital annual user charge (8% real return) (\$m) 1989–90 ^c	2487	1978	1272	452	440	6629
Reserve plant margin average over 1990–91 to 1992–93 (per cent)	39	24	25	18	33	na
Excess capital stock (per cent) ^d	10	0	0	0	6	4

na Not applicable.

a Totals may not add due to rounding.

b This is different from the best practice of 20 per cent assumed in IC (1991).

c The capital annual user charges together with the assumption of an 8 per cent real return are drawn from IC (1991) p.38. As a higher real return may be appropriate for some GBEs, the 8 per cent real return may be considered to be conservative.

d Calculated as: $100 \times (\text{Existing RPM} - \text{Optimal RPM}) / (100 + \text{Existing RPM})$.

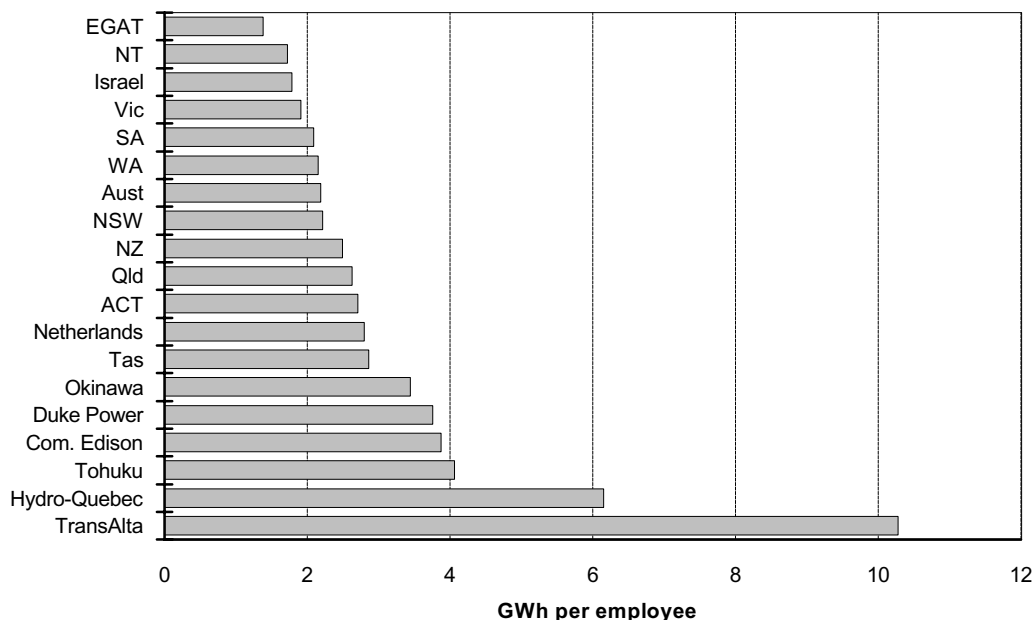
Sources: IC (1991, p.38) and SCNPMGTE

Figure B5.8 presents an international comparison of electricity sales per employee (BIE 1994b). Although this is a commonly used labour productivity measure, it is affected by the characteristics of the local electricity market, in particular by the size of customers (MWh consumed) and their geographic concentration. In addition, differences in the extent of contracting out may also affect measured performance. Nonetheless, an examination of Figure B5.8 indicates that in 1991 Australia was well below world best practice on this measure of labour productivity. If Trans-Alta and Hydro-Quebec are discounted for their high sales per customer, then it would appear that, in the absence of load growth, the Australian ESI would need to almost halve its work force to achieve world best practice, based on the 1990–91 level. For the purpose of this exercise, it is therefore assumed that labour requirements can be improved by 50 per cent on levels prevailing in 1990–91.

A large proportion of this improvement in labour productivity (25 per cent) has already occurred. Between 1990–91 and 1992–93, labour productivity improved from around 2.05 to 2.54 GWh per employee, based on data published by the Electricity Supply Association of Australia (ESAA 1994d, p.55 and p.59). Part of the remaining increase may come from the anticipated increase in the use of gas technologies for generating electricity, as these are

generally less labour intensive, and part from ongoing labour productivity improvements induced by competition.

Figure B5.9: **Sales per employee for selected systems, 1991**



Source: Figure 4.3 BIE (1994, p.33)

Removal of cross-subsidies and overall price reductions

A major element of the necessary changes to allow a competitive electricity market to commence from 1 July 1995 is the implementation of a cost reflective and uniform approach to transmission and distribution pricing. To prepare their ESIs for competition most governments have already begun phasing out cross-subsidies. As depicted in Figure B5.4, in recent years this has resulted in the real price of electricity to residential customers increasing, and the real price to other customers decreasing, with overall prices remaining unchanged. In recent years, the productivity gains have been used to increase profits and maintain rates of return on assets as assets are revalued. In the future, it is likely that real prices to all customer classes will fall as further productivity gains are realised.

For New South Wales, estimates of the average level of under or over-recovery by distributor and type of customer are presented in GPT (1994, p.146). Table B5.3 presents estimates of the average change in true levels required to remove cross-subsidies between customer groups, based on the GPT figures. Substantial reductions in prices to small and medium business customers and

price rises to domestic and rural customers are required to eliminate cross-subsidies.

Table B5.3: Effects of price restructuring in New South Wales and Victoria, 1994–95 to 1999–2000^a

	<i>Real price changes (per cent)</i>			
	<i>Domestic</i>	<i>Small to medium businesses</i>	<i>Medium to large businesses</i>	<i>Rural</i>
New South Wales				
<i>Removing cross-subsidies</i>				
Average of all distributors ^b	16.1	-39.3	-5.9	24.1
<i>Removing cross-subsidies and 20 per cent decrease in real prices</i>				
Average of all distributors ^b	-7.1	-51.4	-24.7	-0.7
Victoria				
All distributors ^c	-10.0	-21.8	0	na

na Not available.

a An inflation rate of 2.3 per cent is assumed in all calculations.

b Average is calculated as the individual measures weighted by share in MWh sold. However, in calculating the rural average, an arithmetic average is used as the MWh weights are unrepresentative of the spread of rural customers between distributors.

c Rural customers are included in the domestic customers category.

Source: GPT (1994, p.146) and Victorian Government (1994)

As mentioned previously, GPT (1994) also recommended establishing individual revenue paths (CPI-X) for up to five years for each distributor in New South Wales. Subject to clarification of market risks and structures, the Tribunal is considering a range of 3 to 6 per cent for the X factors to be applied to distributors' margins. Assuming an X factor of 4.5 per cent for all distributors in New South Wales with a price path of five years starting in July 1995, and an inflation rate of 2.3 per cent, overall electricity prices would decrease by 20 per cent in real terms by the end of the decade.

When considered together with the elimination of cross-subsidies, the effects on electricity prices by customer group can be dramatic, as indicated in Table B5.3.⁵ Domestic customers are now estimated to receive a modest real price

⁵ Note that this overall price effect is calculated in two steps. First, cross subsidies are removed, which should be revenue neutral to the distributors concerned. Second, prices to all customers are reduced by 20 per cent in real terms. A reduction in price to small to medium businesses of 39 per cent to eliminate cross subsidies followed by a 20 per cent real price reduction does not therefore result in a 59 per cent reduction in real prices. Rather, the overall change in real prices is calculated as $(1 - 0.39) * (1 - 0.20) - 1 = -0.51$, or -51 per cent.

decrease of 7 per cent and small to medium businesses receive a 51 per cent decrease in real prices. While this last figure seems large, Table B5.3 indicates that small to medium businesses were being overcharged by close to 40 per cent, on average, in 1992–93.

It should be noted that the New South Wales price changes in Table B5.3 are for tariff customers supplied by electricity distributors. They do not cover contract customers or customers buying directly from the grid. For such customers, the price path of the bulk supply tariff (BST) is more relevant. The cumulative effect of the proposed changes to the BST is a real decrease of 26 per cent. This is comparable to the estimated decrease in the real price to medium to large businesses of 25 per cent.

These estimates for New South Wales may be compared with the electricity price path set by the Victorian government up to the year 2000, at which time all customers will be offered a choice of supplier. As presented in Table B5.3, real prices to residential and rural customers are set to decrease by 10 per cent, while those to small to medium businesses would decrease by 22 per cent. Electricity prices for medium to large customers will, at a minimum, remain constant in real terms until 2000. However, larger customers choosing to irrevocably enter the electricity market may experience real price decreases, perhaps as large as those implied by the BST price path for New South Wales.

The estimated price paths for New South Wales and Victoria are therefore broadly consistent, indicating real price decreases of the order of: 10 per cent for domestic customers; 20 to 50 per cent for small to medium businesses; zero to 25 per cent for medium to large businesses; zero to 10 per cent for rural customers; and zero to 26 per cent for large customers buying power directly from the grid.

As New South Wales and Victoria together account for close to 60 per cent of the Australian ESI, by GWh generated, and as no other jurisdiction has released such detailed electricity price paths, it is assumed that the real price changes presented in Table B5.3 are representative of those potentially available for the Australian ESI under competition. However, as many governments are committed to uniform tariffs between rural and metropolitan areas, real prices for rural customers are assumed to follow the same price path as those for domestic customers.

For the purpose of this modelling exercise, the related reforms are assumed to have commenced at the end of 1990–91, when the Special Premiers' Conference agreed to start examining the proposal for a national grid. The overall price changes since 1990–91 are combined with the proposed future

price changes to give the overall price changes attributable to Hilmer and related reforms.

In this base case, residential and rural prices are unchanged in real terms, small to large customers experience real price falls of around 29 per cent and prices to bulk supply customers fall by around 26 per cent. The price to residential customers will not have declined in real terms since 1990–91. However, during the period 1987–88 to 1990–91, real prices to residential customers decreased by 5.3 per cent.

It is possible that price changes lag the improvements in productivity and cost reduction. For example, the price reductions proposed by the GPT in New South Wales and the Victorian Government may reflect recent and further anticipated productivity improvements. That is, only proposed price reductions since 1993–94 are attributable to Hilmer and related reforms. To model this, an alternative set of price changes are provided.

Changes in the construction cost of ESI capital

As previously discussed, there are two reasons why the construction cost of ESI capital may decrease in the advent of competition. First, changes in the relative prices of the various fuels, together with financial pressures to limit capital costs, may result in more gas fired plant (with a lower capital cost relative to coal), and smaller coal fired plant being built to meet future electricity demand. Second, commercial pressures may be expected to streamline the design, contracting, building and commissioning of new ESI capital (in all sectors of the ESI, generation, transmission and distribution included), resulting in lower capital construction costs. This is supported by US evidence, cited by the New South Wales GPT (1994, p.20), that provides estimated cost reductions from improved capital investments for independent power producers of the order of 10 to 15 per cent compared with regulated utilities. Given that the switch to smaller coal and gas fired plant would also decrease construction costs, the combined effects of competition on construction costs is modelled as a decrease in the replacement cost of ESI capital of 20 per cent.

Changes in the fuel mix

As outlined in the next chapter on Gas, reforms to the gas industry are likely to facilitate an increase in the use of gas for electricity generation. Table B6.2, in the next chapter, shows that on average, gas prices are likely to fall by around 4 per cent from related reforms to the gas industry.

Table B6.4, in the next chapter, also shows that the overall use of gas in power generation may increase by around 95 per cent, at the expense of brown coal,

which is shown to decrease by 36 per cent. Since gas is more expensive than coal, part of the capital savings through improvements in capital productivity, labour productivity and the construction cost of capital will be offset by higher energy prices. However, the overall outcome is a reduction in costs and lower overall electricity prices.

Competitive neutrality arrangements

As part of the Hilmer reforms under consideration by COAG, all governments will agree to apply competitive neutrality arrangements that seek to equalise net competitive advantages of government agencies arising from their public ownership. This involves imposing commercial capital structures, debt guarantee fees, commercial dividend payout ratios and tax equivalent regimes. Although much progress has already been made, these arrangements are still far from being universal in coverage or consistent in approach.

The stylised competitive neutrality arrangements modelled involve:

- a commercial capital structure as represented by a debt to assets ratio of 50 per cent;
- a dividend payout ratio of 75 per cent; and
- a tax equivalent regime that charges income tax at 33 cents in the dollar.

The imposition of debt guarantee fees is not modelled. Although the appropriate target for debt to asset ratios and dividend ratios may vary between firms, given the time available and difficulty in identifying the appropriate targets, the stylised levels are chosen.

Summary

To model the effects of introducing competition into the ESI, and all other related reforms, a range of specific changes has been discussed. The two scenarios implied by these changes are summarised in Box B5.1. The electricity scenarios should be considered in conjunction with the gas scenario in the next chapter because the industries are interdependent.

Box B5.1: Summary of electricity scenarios

Achieving best practice capital and labour usage

	Base	Alternative
Change per unit labour requirements by (per cent):	-50	-50
Change per unit capital requirements by (per cent):	-4	-4

Removing cross-subsidies and decreasing overall prices

Change real electricity prices by (per cent):		
Domestic and rural customers	0	-8
Small to large business	-29	-27
Bulk supply tariff	-26	-26

Changing the construction cost of ESI capital

Change in construction cost of ESI capital (per cent):	-20	-20
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Imposing competitive neutrality arrangements

Target debt to assets ratio (per cent):	50	50
Target dividend payout ratio (per cent):	75	75
Target income tax (or TEP) rate (per cent):	33	33

Source: Commission estimates

B6 GAS

This chapter explores the implications of Hilmer and related reforms for the gas industry. It suggests possible outcomes of implementation of reforms for prices, the share of electricity generated using gas and the return on assets and other financial obligations of public enterprises. The scenario presented for those key factors of interest in this chapter underlies the direct impacts summarised in Chapter A2.

B6.1 Hilmer and related reforms

As presented in Attachment A to the terms of reference (Appendix D1), the reforms to enable free and fair trade in natural gas by 1 July 1996 are:

- (i) removal of any legislative or regulatory barrier to both inter- and intra-jurisdictional trade in gas by 1 July 1996;
- (ii) implementation of a uniform framework for third party access rights to both inter- and intra-jurisdictional supply networks by 1 July 1996;
- (iii) uniform national pipeline construction standards;
- (iv) increased commercialisation of the operations of publicly-owned gas utilities, through corporatisation, by 1 July 1996;
- (v) no restrictions on the use of natural gas (eg for electricity generation);
- (vi) gas franchise arrangements consistent with free and fair competition in gas markets and third party access; and
- (vii) structural separation of publicly owned transmission and distribution activities and legislation to 'ring fence' transmission and distribution activities in the private sector by 1 July 1996.

As well, an important part of the Hilmer reforms is that all governments agree to apply competitive neutrality arrangements that 'seek to equalise net competitive advantages of government agencies arising from their public sector ownership'. This relates to the removal of advantages over commercial firms by way of capital structures, dividend policy, debt guarantees and target rates of return.

It is extremely difficult to distinguish strictly between the effects of Hilmer reforms, Hilmer-related reforms and, indeed, government reforms that may proceed independently of national approaches. In the case of the gas industry, some of the States are introducing policies that are consistent with Hilmer and related reforms or are likely to generate outcomes similar to those under Hilmer. The terms of reference allow consideration of current and prospective reforms in this industry.

B6.2 Recent developments in the natural gas industry

Given the high cost of transporting natural gas over long distances, existing long term contracts and States' desires to reserve gas for their own use, the Australian gas industry has developed largely on a State or regional basis.

B6.2.1 Victoria

Victoria is the largest of all State gas markets in Australia. The major source of gas reserves in Victoria is the Gippsland Basin, located in Bass Strait. Gas from the Gippsland Basin is produced by BHP Petroleum and ESSO and accounts for 98 per cent of the natural gas consumed in Victoria. The Gas and Fuel Corporation of Victoria (GFCV) is the statutory authority responsible for all the State's transmission and distribution of natural gas. It also has a minor interest in the production of gas. The State currently owns 70 per cent of the corporation. The Corporation has two wholly owned subsidiaries: GFE Resources Ltd (with joint venture interests) and the Albury Gas Company Limited.

The supply of gas by ESSO and BHP from Bass Strait to the GFCV is administered under a series of contracts. The first contract was negotiated in 1969 and renegotiated in 1975, at which time fixed dedications were set down for two distinct markets — large industrial customers and domestic customers. GFCV has contracted supplies from ESSO and BHP to meet its expected sales until the year 2000.

The Commonwealth Government introduced the Petroleum Resource Rent Tax (PRRT) in 1990. There is a long running dispute between gas producers (ESSO and BHP) and their customers as to whether the PRRT is part of the contract price or in addition to it. The GFCV estimates that gas produced from the Bass Strait now generates almost \$100 million a year in PRRT revenue.

Recent reforms

Production

The 1993–94 Victorian Budget Papers outline plans for a more competitive gas industry in Victoria. In production, these plans include:

- using a number of producers to supply Victoria, on a competitive basis, from both within Victoria and interstate;
- renegotiating the gas supply contracts between the GFCV and the Bass Strait producers (ESSO/BHP); and
- allowing producers, distributors and retailers direct access to large customers.

These changes should allow gas producers, transporters, retailers and consumers to respond to the opportunities provided by a more ‘open’ and competitive market.

Transmission and distribution

The recent key elements of reform in the Victorian gas transmission and distribution industries include:

- the December 20, 1994 disaggregation of GFCV into separate transmission (Gas Transmission Corporation) and distribution (Gascor) businesses;
- the transfer of technical and regulatory functions from the GFCV to a separate agency responsible to the Minister for Energy and Minerals;
- the transfer of ownership of GFE Resources Ltd (the exploration and production subsidiary of GFCV) from GFCV to the State, with GFE Resources Ltd coming under the administration of the State Trust Corporation, pending privatisation; and
- the establishment of a framework for light-handed economic regulation through legislation for access rules, tariff setting and industry licensing, to be administered by the independent Office of Regulator-General in due course.

Other developments

In July 1994, the GFCV made its first tax equivalent payment.

After the GFCV’s restructure in 1991–92, the Heatane Gas Division became a separate profit centre supplying liquefied petroleum gas to over 170 thousand consumers in regional Victoria and southern New South Wales through a

network of 700 agencies. In 1993, it was sold to Elgas, a subsidiary of the Australian Gas Light Company (AGL).

B6.2.2 Western Australia

The major production of natural gas for the domestic market comes from the North West Shelf Gas Project (NWSGP), operated by Woodside Petroleum. The North West Shelf Project has two phases: the domestic phase and the liquefied natural gas (predominantly export) phase. Ownership of exploration, development and production is spread across a consortium of non-government companies.

Until 1 January 1995, the State Energy Commission of Western Australia (SECWA) was responsible for most of the transmission and distribution of natural gas in Western Australia, and owned and operated the Dampier-to-Bunbury pipeline. The natural gas is distributed to Perth, Geraldton and Bunbury. SECWA had natural gas purchase agreements with participants in the domestic phase of the NWSGP, as well as Woodada, Tubridgi and Harriet natural gas producers. The agreements expire early next century.

There are some direct sales to industrial consumers through the State owned Dampier-to-Bunbury pipeline and the Dongara-to-Perth pipeline operated by Western Australian Natural Gas Pty Ltd. For example, Alcoa can purchase gas directly from the Tubridgi field, through to the Dampier-to-Bunbury pipeline (Harman, 1994).

As a statutory authority, SECWA was required to follow the Western Australian Government's policies on pricing, profitability, State growth and development. Uniform natural gas tariffs applied throughout Western Australia for sales to domestic and small commercial and industrial users. Large users can negotiate contracts for supply at lower prices.

There are currently no restrictions in Western Australia on the use of natural gas, which is exported in the form of liquefied natural gas, used as a fuel in electricity generation and sold to industrial and residential customers.

Recent reforms

Production

Western Australia intends to phase in competition from other gas producers. The State has provided companies such as Ampolex Ltd and BHP Petroleum with unrestricted access to markets in the Pilbara and Eastern Goldfields, as of 1 January 1995.

Transmission and distribution

SECWA and the gas producers have negotiated the disaggregation of the domestic gas purchase contract as a step towards the introduction of competition in Western Australia. The Western Australian Government has undertaken a review of gas supply with the aim of introducing fair and reasonable arrangements to provide open access for various gas suppliers into Western Australian private and public pipelines. It is proposed that gas producers will be able to sell directly to five major customers (two of these customers being SECWA's new gas and electricity businesses — AlintaGas and Western Power). The Energy Board of Review recommended that large consumers should be able to make direct purchases of gas whether they are directly connected to the transmission system or not (Harman, 1994).

The gas and electricity components of SECWA were separated to facilitate competition between these two sources of energy on 1 January 1995. Each of these new business units were corporatised so that each may more clearly focus on commercial objectives and operational efficiency.

SECWA's non-commercial functions, including safety regulation, commercial regulation for the industry and community service obligations, will become the responsibility of the independent Office of Energy. These arrangements will be implemented by 1 July 1997.

Two new privately owned gas pipelines are planned in Western Australia. One will transport gas from the Burrup Peninsula to Port Hedland to supply gas for power generation. The other will transport gas from the north-west through the inland Pilbara and extend south to Kalgoorlie in the Goldfields region. The Goldfields gas pipeline will be operated by AGL Pipelines WA on behalf of the Goldfields Gas Transmission joint venture as a non-discriminatory, open access pipeline under Government approved commercial principles and negotiable terms and conditions. The owners will also be the major consumers of gas delivered by the pipeline (Harman 1994).

B6.2.3 South Australia

Natural gas consumed in South Australia (currently about 90 peta joules (PJ) per annum) comes from the Cooper Basin which lies in South Australia and Queensland. Six companies belong to the Cooper Basin producer consortium. Small amounts (about 2 PJ per annum) are also produced from the Katnook field in the Otway Basin for use in the south-east of the State. The major producer in the Katnook field is Sagasco Resources (owned by Boral Ltd) while GFE is a minor producer. In addition, gas from the South Australian

portion of the Cooper Basin (about 95 PJ per annum) is exported to New South Wales.

The Pipelines Authority of South Australia (PASA) owns and operates all gas transmission pipelines in South Australia. While there is no legislative requirement for PASA to be the sole transporter of natural gas in South Australia, it does have a legislative responsibility under the *Pipelines Authority Act 1967* for constructing and installing pipelines for conveying petroleum or derivatives within South Australia.

PASA purchases the gas from the Cooper Basin producers, transmits it to the Electricity Trust of South Australia (ETSA) and the distributor, The Gas Company (TGC), a subsidiary of SAGASCO Holdings. ETSA purchases approximately 50 per cent of the gas consumed in South Australia.

Gas is distributed in Adelaide, Whyalla, Port Pirie and Mount Gambier. A significant portion of customers are industrial, including Adelaide Brighton Cement, TOP Fertilisers, Penrice and BHP Steel.

The Minister of Mines and Energy may fix maximum prices for gas on the recommendation of the Prices Commissioner. TGC's profits are also regulated to the extent that profits above a prescribed amount must be transferred to a separate account where the authorised Minister has discretion as to its use.

Recent reforms

Production

In addition to encouraging the import of gas (evidenced by the recent commencement of the South West Queensland Gas Supply Contract) the South Australia Government has approved the sale of ethane gas to ICI Botany over the next 10 years. This development reduces the effect of the *Natural Gas (Interim Supply) Act 1985* which set conditions to 'ensure the future supply of natural gas to South Australia's industrial and domestic consumers' that restricted the supply of Cooper Basin gas to inter-state users.

Transmission and distribution

The Government has announced its intention to sell the assets of the PASA, subject to 'market conditions being appropriate'. Prior to the sale, PASA is to be corporatised. A steering committee is examining possible regulatory arrangements post sale.

A review of the *Gas Act 1988* is currently under way. It is intended to review the current pricing formula and to consider options for longer term alternatives to the current annual review of TGC tariffs. Furthermore, the

review is considering prospects for establishing more competitive gas franchise arrangements in South Australia.

Regulation 244 under the *Petroleum Act 1940*, which required Ministerial approval for the use of gas other than for heating purposes, is to be repealed.

B6.2.4 New South Wales and Australian Capital Territory

Unlike other States, the gas consumed in New South Wales and the Australian Capital Territory comes from fields outside the State. A thirty-year contract between the distribution company, the Australian Gas Light Company (AGL), and the Cooper Basin producers covers all the supplies to the State. The contract runs out in 2006.

Natural gas is piped to the Sydney and Australian Capital Territory markets from Moomba through pipelines owned by East Australian Pipelines Ltd (which in turn is 51 per cent owned by AGL). Other regional centres receive gas from Sydney through AGL pipelines. AGL distributes natural gas in most New South Wales centres. The distribution centres include Sydney, Canberra, Newcastle, Goulburn, Bathurst, Orange and Wollongong. As well, natural gas is distributed in Wagga Wagga by the Wagga Wagga City Council and in Albury by Gascor.

The *Gas Act 1986* regulates the supply of reticulated gas in New South Wales. Amendments to the Act in 1990 established an economic regulatory system for gas distribution that incorporates a price control formula for retail sales not sold under contract. The Gas Council of NSW administers this system with a view to safeguarding the interests of gas users, minimising regulatory intrusion, encouraging efficiency and innovation by gas distributors and to promoting cost effective and reasonable pricing. The price control formula only applies to AGL at present.

Recent reforms

In 1990 changes to the *Gas Act 1986* included:

- implementation of a CPI-X price control formula;
- provision for the Minister of Energy to grant each gas distributor an ongoing authorisation; and
- provision for the Minister of Energy to place conditions on authorisations enabling third party access to a distributor's pipeline system.

Other key reforms since 1990 include:

- the recent announcement by the Gas Council of New South Wales concerning the relaxation of the price control formula for domestic and commercial users; and
- an amendment passed in the New South Wales Parliament altering third party provisions to transmission pipelines;

It appears that the focus of promoting competition in the New South Wales gas industry is on the various contractual arrangements that exist in New South Wales. The competitive effects of contractual arrangements in production and transmission are being considered.

B6.2.5 Queensland

Queensland's natural gas reserves are located in the Bowen/Surat Basin, Adavale and Cooper/Eromanga Basins. The Bowen/Surat Basin producers are Bridge Oil Ltd (now owned by Parker and Parsley), Boral and Santos. Allgas Energy Ltd buys natural gas from Santos and Bridge Oil and the Queensland Gas Corporation Ltd (QGC) has a purchase contract with Bridge Oil and Boral. The producers in the Bowen/Surat Basin also deal directly with major industrial users such as Incitec.

There are several transmission pipelines operating in Queensland. The transmission network supplying gas from Roma to Brisbane is majority owned and operated by AGL Pipeline. The Ballera-to-Moomba pipeline is majority owned and operated by Santos. The pipeline from Denison Trough to Gladstone and Rockhampton is owned by the Queensland Government and operated by the Department of Minerals and Energy.

In Queensland the two major distributors — Allgas Energy Ltd and (QGC) — are privately owned. Allgas (major shareholders include Boral and AGL) has the franchise to distribute natural gas in the south east of the State (including south Brisbane and Toowoomba). QGC is owned by Boral and has the franchise to distribute gas in north Brisbane, Rockhampton and Gladstone. The Roma and Dalby Town Councils distribute gas in their respective towns.

The *Gas Act 1965* provides for the regulation and control of gas supplies for lighting, heating and other arrangements. It also regulates prices, as well as safety and quality measures. However, it does not have a significant anti-competitive effect as most users and uses are specifically exempt.

Recent reforms

There is a significant level of private involvement in all phases of the gas industry in Queensland. To the extent that the Queensland gas market is uncompetitive, it is likely to be a result of existing commercial arrangements rather than legislative and or regulatory barriers.

One area of legislative reform that Queensland is prepared to consider is the repeal, by 1 July 1996, of section 43(1) of the *Gas Act 1965* that requires Governor in Council approval on volumes that a gas supplier may contract. It will repeal this clause when there is an assurance that shortages of natural gas for existing markets will not occur.

The Queensland Government has called for tenders for the construction of the pipeline from Ballera to Roma.

B6.3 The likely impacts of reform

Removing restrictions on intrastate and interstate trade in gas and on its use in power generation could significantly affect the natural gas market. The economic gains from implementing these reforms are the result of it being less costly to meet Australia's energy demands through an open, integrated energy market. The magnitude of these gains depends upon the extent of access to interstate and intrastate pipelines, further reform in the gas market, and the impact of the changes in prices faced by each type of buyer on the demand for gas (Holmes and Mander 1994).

The reforms are expected to produce three types of benefits:

- Interconnection of State gas markets will lead to pricing/allocative efficiency benefits. Interstate trade allows gas to be used where it is most highly valued.
- Natural gas is likely to become a viable alternative fuel for electricity generation and other end uses, increasing the use of gas in the economy.
- 'Open access' to transmission pipelines will lead to 'gas-on-gas' competition as well as competition between suppliers of different fuels.

B6.3.1 Overseas experience

Recent developments and proposed reforms in the Australian gas market closely resemble those experienced overseas. The International Energy Agency (IEA) reports that the direction of reform in OECD countries has been towards a greater reliance on competitive markets (IEA 1992a cited in Holmes and Mander 1994). Specifically, reforms concerning the introduction of third

party access and the separation of transmission and sales activities have been introduced (Holmes and Mander 1994).

Gas market reform in other countries resembles Australia's proposed reforms and may provide some insights into the future evolution of the gas industry in Australia. When inferring the likely outcomes of reform in Australia from observed outcomes overseas it is important to recognise that differences in institutional settings, operating environment and size may be important. For example, in the United States, where there was originally a large number of buyers and sellers, there has been a strong and favourable response to regulatory changes. Conversely, in the United Kingdom, where a few firms dominated the original market, there has not been the same degree of success (Holmes and Mander 1994).

International experience suggests that prices paid by larger users fall when gas markets become more competitive. For example, in the United States prices paid by industry in 1991 are about 50 per cent lower than in 1984 (Energy Information Administration 1993 cited in Holmes and Mander 1994). In this case, the falling prices reflect lower cost of production and lower transportation costs largely driven by opening up the gas markets (Holmes and Mander 1994) and the reduction in oil prices over the period. The effect on smaller consumers is unclear because a larger proportion of their costs relates to distribution.

The IEA reports an increasing trend in the use of gas to produce electricity in OECD countries. The share of gas in the fuel mix for electricity generation and cogeneration is expected to increase from 6.8 per cent in 1989 to 12.5 per cent in 2000 in Europe and from 1.0 per cent to 22.5 per cent over the same period in the United Kingdom (IEA 1992b cited in Holmes and Mander 1994). The United States Department of Energy estimates that the use of natural gas by electric utilities will double between 1991 to 2000 (Energy Information Administration 1993 cited in Holmes and Mander 1994). In all instances these increases are responses to the lifting of restrictions on the use of the gas and allowing electricity producers to negotiate directly with gas producers through 'open access' arrangements for pipelines.

B6.3.2 Impacts in Australia

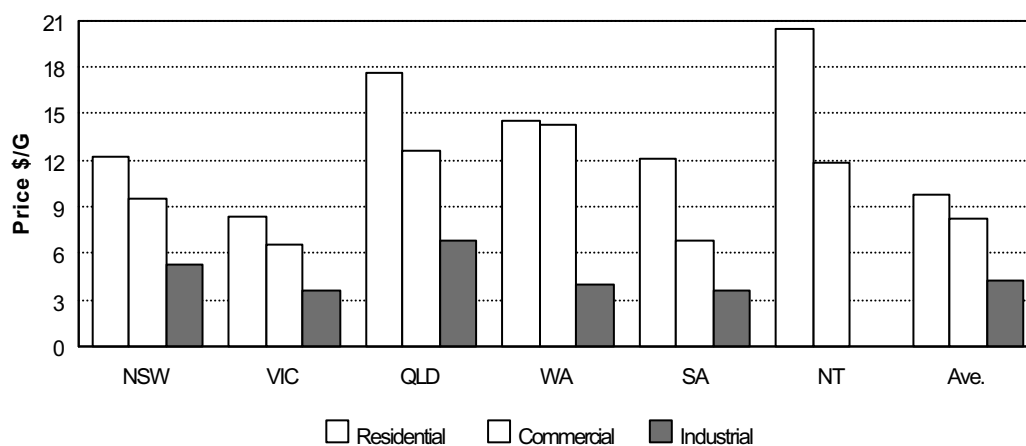
At present, the Australian gas industry is relatively underdeveloped compared to gas industries in other countries. The development of new fields and the construction of new pipelines largely depends on medium- to long-term contracts between a small number of industrial users and producers. This suggests that the short-term benefits from the proposed reforms may be

relatively small. The long-term benefits should be larger, as the infrastructure develops and the number of buyers and sellers in the market increases.

Price

When there are abundant reserves and competition, the price of natural gas is the sum of the cost of producing the gas, transmission and distribution charges and any government charges. Distribution charges — the difference between the ‘city gate’ and sale price — represent the major component of delivered gas prices in Australia (AGA 1992). Prices paid vary across consumer classes and across States (Figure B6.1).

Figure B6.1: **Average price by consumer group, 1992–93**



Source: AGA, 1994b.

For all consumer groups, prices are highest in the Northern Territory and Queensland and lowest in Victoria. This reflects the regional aspect of the gas industry in Australia. In Queensland and the Northern Territory gas is produced from small reserves and transported over long distances. If gas is in short supply, or if price discrimination occurs, the price can exceed production, transmission and distribution costs. As interstate trade allows gas to be drawn from alternative (cheaper) sources, price differentials between connected States will fall.

In all States, residential and commercial users pay more than industrial users, in part because smaller consumers face higher distribution charges. As well, it has been suggested that large industrial consumers cross-subsidise residential and commercial users (Holmes and Mander 1994) although the extent is difficult to determine.

Under the proposed reforms it can be expected that prices paid by large industrial users will fall as it becomes possible to negotiate with more than a single source of supply (Holmes and Mander 1994) and as cheaper gas from other States becomes available. This view is supported by international experience.

The effect of the proposed reforms on the prices paid by smaller consumers is unclear. Because the cost of production and transmission represent smaller shares of the cost of supplying residential and other small consumers, price decreases from reform will be smaller in percentage terms for them than for large users. It is possible that where large industrial consumers are currently cross subsidising smaller residential consumers, prices to the latter may actually rise (Holmes and Mander 1994).

Fuel mix in electricity generation

The Australian Gas Association (AGA) expects gas to become a significant source of energy for generating electricity (AGA 1992). The increase in gas consumption is expected to be at the expense of coal since gas turbines often have an economic advantage over coal fired generation for peak and intermediate load generation. Capital cost is the largest component of generation costs with the costs of shutting down and starting up also important. Low capital cost, short construction lead times, the relatively inexpensive cost of shutting down and starting up the generator, the smaller unit sizes and improved thermal efficiency provide the principal benefits of using gas turbines for power generation.

The removal of barriers to interstate trade and of restrictions on the use of natural gas allows gas to be used increasingly in electricity generation. This increased use in generation is expected to occur both in regions with large natural gas reserves (Victoria, Western Australia) and those nearby (New South Wales, Queensland, South Australia).

Competitive neutrality arrangements

The implementation of competitive neutrality arrangements will affect the natural gas industry in so far as a number of transmitters and distributors are owned by State Governments (Table B6.1).

Table B6.1: **Types of firms in each level of supply, 1994**

	<i>NSW/ACT</i>	<i>VIC</i>	<i>SA</i>	<i>QLD</i>	<i>WA</i>	<i>NT</i>
<i>Production</i>	private	private	private	private	private	private
<i>Transmission</i>	private	public	public	public/private	public/private	private
<i>Distribution^a</i>	public/private	public	private	public/private	public	private

a In New South Wales and Queensland gas is predominantly distributed by privately owned firms. In some regional centres, gas is distributed by the associated city council or Gascor.

To ensure that State and Territory government business enterprises (GBEs) have no net competitive advantage over private businesses (competitive neutrality), their tax and financial arrangements are, for analysis, set to levels similar to those expected in the private sector. GBEs that have previously been tax exempt will have to pay tax (equivalents) and government guarantees on GBE debt will be discontinued or charged at commercial rates. Dividends to owner governments will also be paid at the commercial rate. GBEs will also be required to earn rates of return similar to their private sector counterparts taking market risk into account.

That said, interstate trade, changes in the end use of gas and the introduction of competition (through ‘open access’) will have a greater impact on the gas industry than competitive neutrality arrangements because of the high proportion of private firms operating in the industry.

B6.4 Reforms considered by the Commission

A study that is helpful in quantifying the effects of two of the three benefits of the proposed reforms mentioned above — the interconnection of State gas markets and the increased use of gas for electricity generation — is presented in IC (1995). The analysis uses the Multiple Energy Systems of Australia (MENSA) model — a large scale, multiperiod mathematical programming model of the Australian energy sector — to determine the economic viability of gas and electricity interconnection.

The MENSA model determines the least cost combination of technologies, equipment and fuels to meet Australia’s energy demands.¹ A number of alternative versions of the model — each reflecting different policy options

¹ A comprehensive outline of the model and the methodology used to analyse policy questions in the energy sector is provided in Jones, Peng and Naughten (1994).

and different environmental restrictions — were available for analysis (Table B6.2).²

Table B6.2: Versions of the MENSA model

<i>Version</i>	<i>Policy Option:</i>		<i>Environmental Options:</i>	
	<i>New gas connections to interstate fields are permitted^a</i>	<i>New electricity interconnections are permitted</i>	<i>Greenhouse gas emissions are restricted to 1990 levels</i>	<i>Probable gas reserves in Cooper and Gippsland basins are doubled</i>
<i>Without interconnections</i>				
<i>1a</i>	NO	NO	NO	NO
<i>1b</i>	NO	NO	YES	NO
<i>1d</i>	NO	NO	NO	YES
<i>With interconnections</i>				
<i>2</i>	NO	YES	NO	NO
<i>3</i>	YES	NO	NO	NO
<i>4a</i>	YES	YES	NO	NO
<i>4b</i>	YES	YES	YES	NO
<i>4d</i>	YES	YES	NO	YES

a The Eromanga to Wallumbilla pipeline in Queensland is an option in all simulations.

Comparing the projected outcomes of the versions of the model without interconnection (*1a* to *1d*) with the projected outcomes of alternative versions with connection (*2*, *3* and *4a* to *4d*) indicate the benefits of interconnection under alternative environmental and gas availability scenarios. Comparing the projected outcomes of version *1a* to the projected outcomes of version *4a* indicates the effect of gas and electricity interconnection when no greenhouse gas constraint is imposed and ‘standard’ gas reserves are available at the Gippsland and Cooper Basins. In versions *1b* and *4b* an environmental restraint, restricting greenhouse gas emissions to 1990 levels, is imposed. In versions *1d* and *4d* the probable reserves in the Cooper and Gippsland basins are doubled, increasing the total reserves in the South East by 36 per cent (IC 1995).

For the purpose of the study, versions *1a* and *4a* are used to identify the benefits of interconnection because they assume known gas reserves without

² The versions of the model reported in Table B6.2 assume an 8 per cent discount rate in calculating the discounted present value of the cost of the energy system. In addition, two further versions of the model — assuming a 10 per cent discount rate — were solved to test the sensitivity of the analysis to the assumed discount rate. As the solutions of these versions of the model were not significantly different from the versions *1a* and *4a* solutions, respectively, they were not included in further analysis.

imposing a greenhouse constraint.³ Using this comparison, the estimates of the relative changes in gas price and fuel mix found are smaller in magnitude than the changes seen with different environmental conditions. The greenhouse constraint increases the demand for gas thereby increasing the benefit of gas interconnection and increased probable reserves increases the use of gas again increasing the benefit of gas interconnection. Thus the estimates presented can be thought of as a lower bound to the benefits of interconnection.

Price

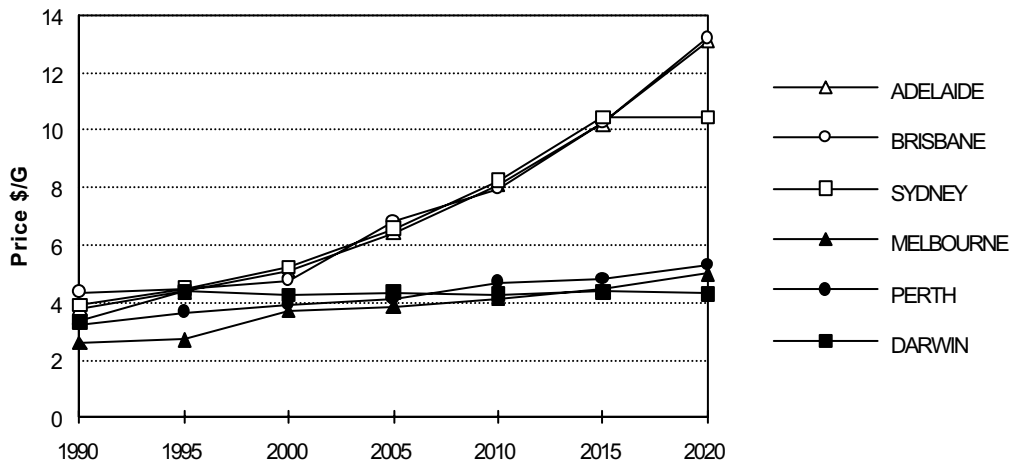
The solution to each version of the model includes the allocation of gas across uses and states over time and the ‘shadow prices’ of gas in these markets over time. The ‘shadow price’ of gas is determined by the model and reflects the interplay of the many factors within the model. The cost of extraction and transportation of gas place a lower bound on the price. When the demand for gas at cost plus prices exceeds the level of available reserves, the shadow price of gas will rise to reflect the opportunity cost of gas among its competing uses and exceed the cost of extraction and transportation.

In the absence of interconnection large price differences between States appear. Progressive depletion of some south eastern reserves will lead to significant price increases in Adelaide, Brisbane and Sydney (Figure B6.2, Panel A). This does not occur in States supplied from basins with large natural reserves. Interstate trade allows gas to be drawn from alternative sources, reducing the opportunity cost (shadow price) of gas in States with small reserves — New South Wales, South Australia and Queensland. The prices in each State will converge with interconnection (Figure B6.2, Panel B).

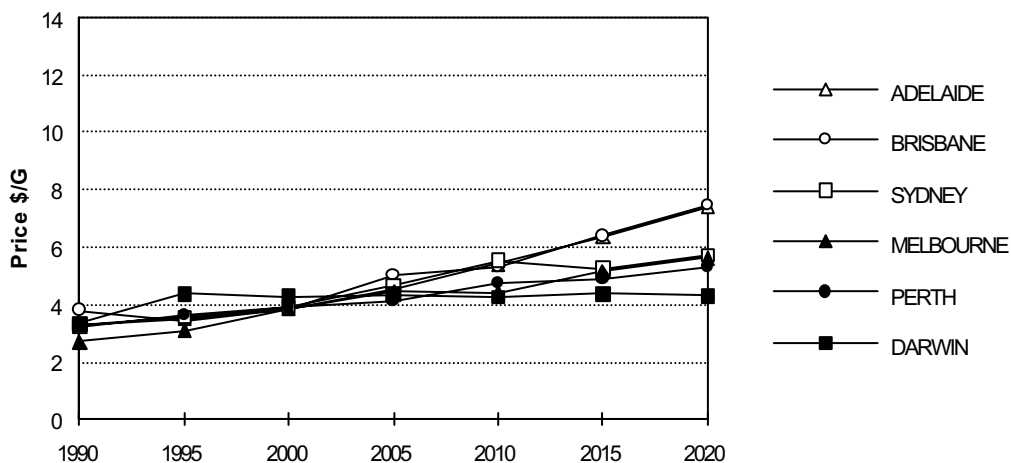
³ With different environmental conditions, the least cost solution is found with different configurations of new gas pipelines and different timing of new pipeline construction. In particular it is cost effective to build a transcontinental pipeline when the greenhouse gas constraint is enforced (IC 1995).

Figure B6.2: **Estimated average price paid in capital cities with and without interconnection, 1990 to 2020**

Panel A. *Gas prices without interconnection*



Panel B *Gas prices with interconnection*



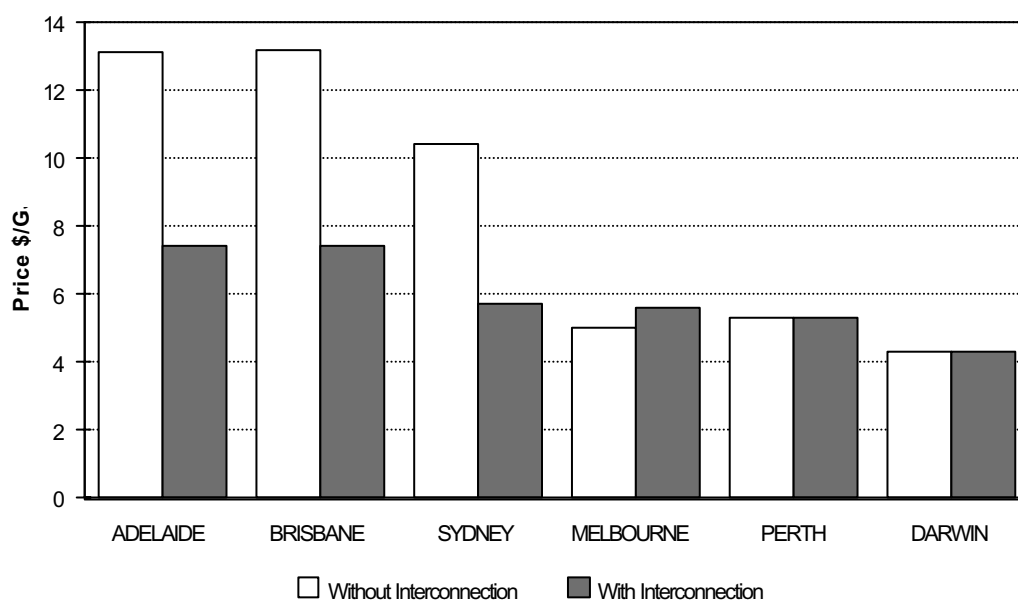
Source: Commission estimates based on ABARE MENSA simulation results.

Comparing the price of gas with and without interconnections in each year indicates the relative change in price that is associated with interconnection. Figure B6.3 illustrates the expected average prices paid for natural gas in the six capital cities in 2020 with and without interconnection.⁴ 2020 was chosen

⁴ The reference year 2020 is interpreted as the midpoint of the 5 year period 2018–2022.

as the reference year as the predicted least cost configuration of gas pipelines (with new pipelines connecting the south east States and the Minerva field in the Otway Basin with Melbourne and Adelaide) is believed to be most indicative of the future structure of the gas market when interstate trade is allowed.

Figure B6.3: **Predicted average price paid in capital cities with and without interconnection, 2020**



Source: Commission estimates based on ABARE MENSA simulation results.

With interconnection, the large relative price reductions in Adelaide, Brisbane and Sydney (all of which have small throughput) are almost offset by price increases in Melbourne (which has large throughput) resulting in an average fall in price of 4 per cent (Table B6.2).⁵ The prices of gas in Perth and Darwin are unaffected by interconnection. With or without interconnection, these markets are isolated from the south eastern markets as neither a transcontinental pipeline nor a pipeline connecting Darwin to the south are cost effective options.

⁵ The relative change in price for Australia is estimated as the weighted average of relative price changes in each city. The weights used are the modelled gas flow into each city in 2020 with interconnection (version 4a).

Table B6.2: Relative change in prices and gas flow for natural gas with interconnections compared with absence of interconnections, 2020

	<i>Relative change in price per cent</i>	<i>Gas flows into city PJ/year</i>
<i>Adelaide</i>	-43	61
<i>Brisbane</i>	-44	29
<i>Sydney</i>	-45	49
<i>Melbourne</i>	12	299
<i>Perth</i>	0	175
<i>Darwin</i>	0	61
<i>Australia</i>	-4	674

Source: Commission estimates based on ABARE MENSA simulation results.

The available MENSA data provide no indication of how interconnection will affect the prices paid by various consumer classes. As the MENSA model assumes ‘open access’ and makes no assumptions about strategic relationships between suppliers, or between suppliers and large customers, the outcomes reflect purely allocative effects (as gas flows to where it is most highly valued) not strategic interactions. Thus, the estimated 4 per cent fall in average price may be viewed as one component of the expected effect of the proposed reforms.

Increased competition is likely to place further downward pressure on prices in some regions. It has been suggested that although gas prices in Victoria are lower than in other States they do not completely reflect the significantly lower costs of supply (due to the long term contract between GFCV and Bass Strait producers) in that State. An indication of this is the significantly higher accounting rate of return on assets over the period 1988–89 to 1992–93 in Victoria compared to other States (Table B6.3). There are limitations in using this accounting ratio for the purpose of inferring monopoly rents however. Therefore comparisons of these ratios over time and between States should be treated with caution.

Table B6.3: Rate of return to assets by State, 1988–89 to 1992–93, (per cent)

	1988–89	1989–90	1990–91	1991–92	1992–93
<i>New South Wales</i> ^a	9.6	10.7	10.9	10.8	11.8
<i>Queensland</i>	na	na	na	na	na
<i>South Australia</i>	5.6	5.8	7.4	7.7	9.0
<i>Western Australia</i> ^b	na	na	8.0	8.0	8.0
<i>Victoria</i>	15.5	17.1	14.0	15.0	31.1
<i>Australia</i>^c	12.5	13.8	12.1	12.8	22.8

na Not available.

a Including the Australian Capital Territory.

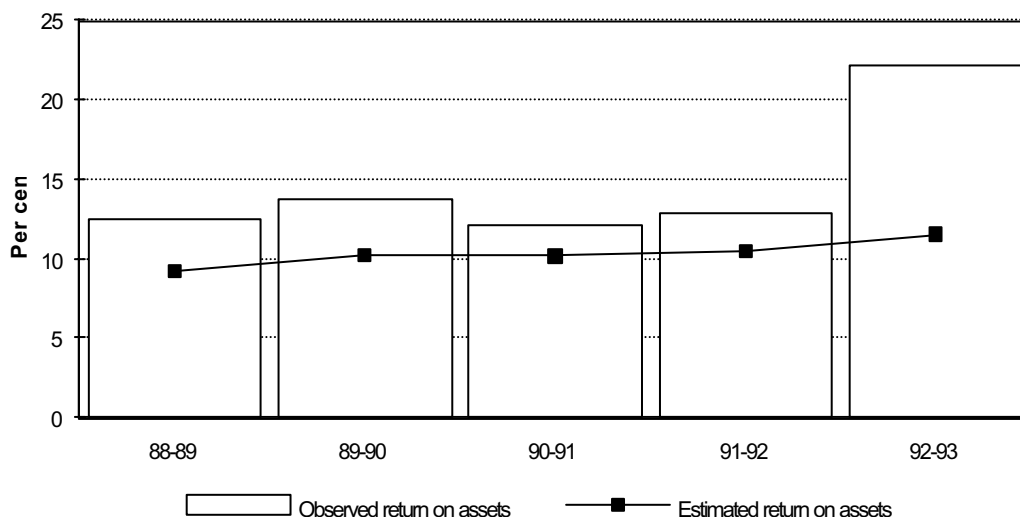
b Refers to gas and transmission operations combined.

c The national average is a revenue weighted average of the return on assets in distribution from Victoria, New South Wales and South Australia.

Sources: Commission estimates and AGA, 1994a.

As competitive pressures force prices to more truly reflect opportunity costs the rates of return on assets in Victoria may fall in line with other States. Figure B6.4 compares the observed average rate of return for the whole of the gas distribution sector with an estimated average rate of return when the Victorian utility has a rate of return comparable to other States. As the data for some States were not available, the average is calculated as the revenue weighted average of New South Wales, South Australia and Victoria.

Figure B6.4: **Observed and estimated rates of returns on assets, 1988–89 to 1992–93**



a. The national average is a revenue weighted average of the return on assets in distribution from Victoria, New South Wales and South Australia. In each year, the ‘commercial rate of return’ was chosen to be the rate of return seen in NSW.

Source: Commission estimates.

Over the period 1988–89 to 1991–92, the average difference between the estimated and observed average rate of return is 3 per cent. When rates of return in the industry fall by 3 per cent, this will be translated into further reductions in price, at least in the short term.

International evidence suggests that ‘open access’ and increased competition may lead to further reductions in prices. Differential changes in prices between consumer groups may also be expected as a result of the removal of cross subsidies or the influence of relative bargaining strengths among consumer groups. The lack of available data precludes these effects being assessed.

Fuel mix in electricity generation

The installation and use of gas fired plants for electricity generation will vary between States and across time, according to the opportunity cost of gas and the cost efficiency and initial mix of electricity generating plants in each State. Table B6.4 presents the share of electricity produced projected by MENSA by each primary energy source — black coal, brown coal, natural gas and ‘other’ — in 1990 and in 2020 both with and without interconnection.

Table B6.4: **Shares of electricity output by fuel used, 1990 and 2005**

		1990	2020	2020	Overall Effect
		(%)	No Interconnection (%)	Interconnection (%)	(%)
NSW					
	Black Coal	92	92	94	
	Gas	0	0	0	
	Other	8	8	6	
Victoria					
	Brown Coal	94	43	57	
	Gas	2	49	35	
	Other	4	8	8	
South Australia					
	Brown Coal	100	85	50	
	Gas	0	15	43	
	Other	0	0	7	
Queensland					
	Black Coal	94	98	98	
	Gas	3	0	0	
	Other	3	2	1	
Western Australia					
	Black Coal	74	0	0	
	Gas	26	82	82	
	Other	0	18	18	
Australia					
	Black Coal^b	55	54	55	..
	Brown Coal	25	15	16	-36
	Gas	9	18	18	95
	Other	11	13	11	8

a 'Other' includes Hydro-electric, petrol, wind and solar generation.

b Due to rounding the share of electricity produced by black coal is reported as 55 per cent both in 1990 and in 2020 when interstate trade takes place. The increased use of gas in electricity generation when interstate trade is allowed displaces a small amount (<1 per cent) of black coal in the fuel mix which is reported in the table as (...).

Source: Commission estimates based on ABARE MENSA simulation results.

Comparing the shares of electricity produced by each primary energy in 1990 and in 2020 in the absence of interstate trade provides an indication of the effect of the move towards gas powered electricity in isolation. With the State-based system, the substitution of gas for coal in electricity generation will be greatest in States with large gas reserves (Victoria and Western Australia). Given Victoria's and Western Australia's initial plant mix (which is heavily coal dependant) this leads to a significant reduction in the use of brown and black coal in these States over time. The optimal solution in these States is to use existing coal plants until they are retired then *replace* them with gas plants. In Western Australia, the conversion to gas fired electricity

generation is complete by 2020 whilst in Victoria the move towards gas fired generation is more moderate — increasing to 49 per cent of output by 2020. This reflects the generally greater cost competitiveness of brown coal in Victoria compared to black coal in Western Australia.

A comparison of the share of electricity produced by gas in 2020 with and without interconnections indicates the ‘redistribution’ effect of gas flows between States as trade takes place. Nationally the share of electricity produced from gas remains the same regardless of whether there are new interconnections or not. However when interstate trade is permitted, the regional use of gas in the fuel mix varies significantly. For example, in South Australia the share attributed to natural gas increases from 15 per cent to 43 per cent when interstate trade is allowed. Interconnection has no effect while in Western Australia does not change gas’s share in the fuel mix at all.

The dual effect of gas being increasingly used in electricity generation and being traded between States is seen by comparing the share of electricity produced by gas in 1990 without interconnections and the share produced in 2020 when interstate trade is allowed. The results presented suggest that gas will be increasingly used for electricity generation in Victoria, South Australia and Western Australia and that this increase will be at the expense of both brown and black coals. The observed changes in the fuel mix at the national level are largely driven by the progression toward gas fired electricity generation.

The total effect is an estimated increase in the share of gas generated electricity from 6 per cent to 18 per cent (a 95 per cent increase). Black coal will remain the predominant source of energy for electricity generation because of its cost effectiveness in New South Wales and Queensland.

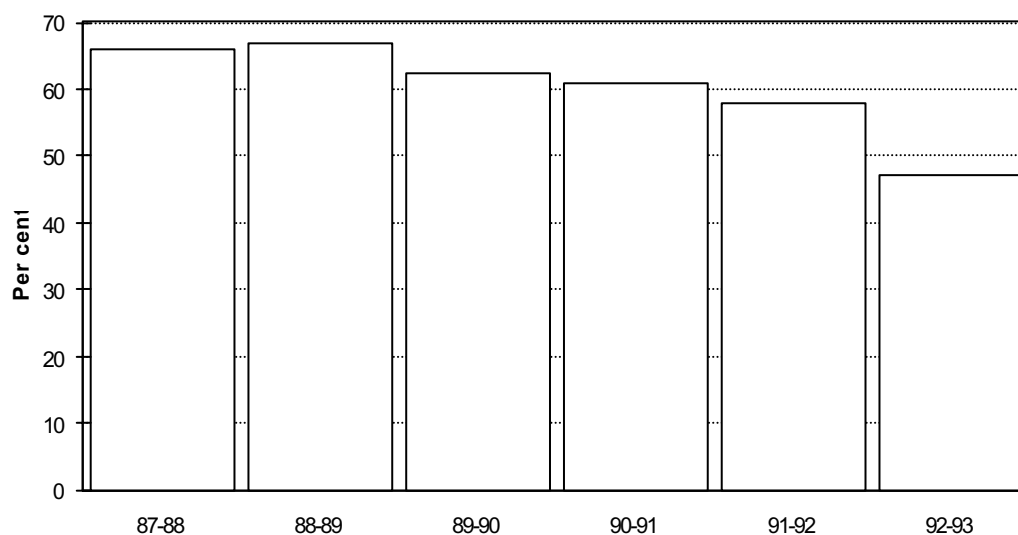
Competitive neutrality

Competitive neutrality arrangements seek to equalise the net competitive advantages of government agencies that arise from their public sector ownership. At present, publicly owned utilities generate half the revenue associated with gas transmission and distribution.

Lack of available data prevents an accurate description of the financial structure of GBEs in the gas distribution sector from being made. Some information was available regarding the financial performance of GBEs involved in transmission and distribution. It is assumed that the financial performance of GBEs involved in both levels of supply is indicative of performance of GBEs in the distribution sector.

Figure B6.5 shows the average debt to assets ratio of GBEs operating in transmission and distribution for which data were available.

Figure B6.5: Average debt to assets ratio of GBEs engaged in gas transmission and distribution, 1987–88 to 1992–93



- a The average is a revenue weighted average of the debt to assets ratio of Gas and Fuel Corporation of Victoria (GFCV) and The Pipelines Authority of South Australia (PASA). GFCV is involved in transmission and distribution and PASA is involved in transmission. The average does not include SECWA as the financial information available from SECWA concerned both gas and electricity supply.

Source: SCNPMGTE.

Over the period 1987–88 to 1992–93 the average debt to assets ratio fell from over 65 per cent to 47 per cent (Figure B6.5). In 1992–93 the average ratio of dividends plus tax to earnings before interest and tax (EBIT) was 71 per cent.

To remain consistent with the modelled effects of competitive neutrality arrangements on GBEs in other industries, the effect of competitive neutrality arrangements on the *half* of the gas industry that is publicly owned involved setting:

- a target debt to assets ratio of 50 per cent;
- a target dividend pay out ratio of 75 per cent; and
- an income tax regime that charges income tax at 33 cents in the dollar.

The imposition of debt guarantee fees is not modelled.

Summary

A range of specific price and energy share changes have been discussed to model the likely effects of introducing the associated Hilmer and related reforms to the gas industry.

The impacts on the price of gas and on the fuel mix in electricity generation when interstate trade in gas is allowed and gas is increasingly used as a fuel for electricity generation and other end uses was determined by comparing the price and fuel mix outcomes of a number of alternative versions of the MENSA model. The estimated price and fuel mix changes (Table B6.2 and Table B6.4) were determined assuming 'standard' probable reserves and having no additional greenhouse gas constraints.

As competitive pressures force prices to more truly reflect costs in some regions, further price reductions are expected resulting in a fall in the average rate of return (Figure B6.3).

To remain consistent with the modelled effects of competitive neutrality arrangements on GBEs in other industries, the stylised competitive neutrality arrangements were modelled on that half of the gas industry that is publicly owned.

The impacts on prices, quantities and other sectoral variables of reform in the gas sector are summarised in Box B4.1. These expected impacts form the basis for the direct impacts of reforms summarised in Chapter A2.

Box 4.1. Summary of the gas scenario*Interconnection of State gas markets and lifting restrictions on use of natural gas*

Change in price of natural gas (per cent)	-4
Change in share of electricity generated using black coal (per cent)	-1
Change in share of electricity generated using brown coal (per cent)	-36
Change in share of electricity generated using gas (per cent)	+95

Rates of return in public sector falling in line with 'commercial rates of return'

Change in the average return on assets (level)	-3
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*Competitive neutrality arrangements**Assuming public ownership is equal to 50% of the industry.*

Target debt to assets ratio (per cent)	50
Target dividend pay out ratio (per cent)	75
Target income tax rate (per cent)	33
Public ownership in the industry (per cent)	50

B7 WATER, SEWERAGE AND DRAINAGE

This chapter explores the implications of Hilmer and related reforms for the water, sewerage and drainage (WSD) industry. It suggests possible outcomes in terms of labour and capital productivity improvements, return on assets and financial obligations of urban and rural authorities. This discussion forms the basis for the direct impacts of reform as summarised in Chapter A2.

B7.1 Hilmer and related reforms

Attachment A of the terms of reference specifies the Hilmer-related reforms for urban and rural water suppliers to reform the WSD industry over the next 5 to 8 years (Appendix D1).

For urban water supply the main directions for reform are:

- (i) elimination of cross-subsidies and restructuring pricing on a pay for use basis;
- (ii) achieving positive economic rates of return on investment; and
- (iii) improving service delivery by separating service provision and regulatory function, identifying and paying for community service obligations and adopting international best practice.

Similarly, for rural water supply, the directions for reform are:

- (i) changing pricing regimes so that they recoup operating and maintenance costs of water supply systems;
- (ii) requiring new investment projects to demonstrate that they are economically viable and ecologically sustainable; and
- (iii) introducing a market for trading in water entitlements to allow water to flow to its highest value uses, while providing sufficient allocations for the environment.

An additional relevant reform is that all governments will be required to apply the principles of competitive neutrality to their WSD operators. As a result, GBES will have to:

- pay income and other tax equivalents;
- pay commercial rates of interest;
- pay dividends comparable to private enterprises with a similar level of market risk; and
- employ a commercial capital structure.

These issues are discussed more fully in Chapter A2

B7.2 Recent developments in the WSD supply industry

The structure of the Australian WSD industry is complex, with authorities having different legislative arrangements and financial relationships with their State governments. Many also perform a variety of functions, ranging from provision of reticulated water, sewage and drainage, to irrigation and management roles.

The pace of reform within the industry has increased significantly in recent years, especially in New South Wales and Victoria. Further considerable reforms are currently being progressed and are likely to be implemented in the near future. This has resulted in much of the published information, especially at the industry level, being outdated.¹ Indeed, much of the information contained in the latest annual reports is no longer current.

New South Wales

Market structure

The metropolitan centres of Sydney and Wollongong are served by the Sydney Water Corporation (SWC), and Newcastle by the Hunter Water Corporation (HWC). The HWC was corporatised on 1 January 1992 and the SWC on 1 January 1995.

Both organisations are State-owned, publicly unlisted companies that are regulated by the State Government through separate Operating Licences. The

¹ The main sources of information at the industry level are ARMCANZ (1993) and SCNPMGTE (1994b) and relate to the financial years 1991–92 and 1992–93 respectively. ARMCANZ has not updated their publication to incorporate data for the 1992–93 or 1993–94 financial years. The Steering Committee (SCNPMGTE) is in the process of updating its publication to include 1993–94 data.

licences define the terms, conditions and operational, environmental and customer standards of service to be met by the SWC and the HWC. The performance of the SWC and the HWC against the standards specified in their licences are subject to an annual, independent audit.

Non-metropolitan areas are serviced by 128 local councils and shires, often from locally operated storages, though some purchase bulk water from the Department of Water Resources (DWR). There are also two small water boards operating at Cobar and Broken Hill.

The provision of irrigation water in NSW is undergoing considerable change as many of the Government-owned irrigation boards that were formerly run by the DWR have, or are in the process of, being privatised.

Recent reforms

Over the past three years, the NSW Water industry has undergone considerable reform. In July 1992, the New South Wales Government established the NSW Government Pricing Tribunal (NSW GPT) to review and determine maximum prices to be charged by NSW Government Business Enterprises (GBEs), including those of the WSD authorities. The process of review involves submitting pricing proposals to the tribunal before being discussed at formal public hearings.

The establishment of the NSW GPT was the first step towards separating the service provision and regulatory functions of all GBEs. Until then, both service provision and regulatory functions rested with the WSD authorities. This was seen as undesirable for a number of reasons, not least of which is the possibility of conflicting objectives (IC 1992c).

More recently, the New South Wales Government established the Office of Water to oversee management of NSW water resources, and provide more of a focus on collective outcomes. It will function in addition to the DWR, which is the steward of NSW water. A more integrated approach to water resource management should result, as there are currently many overlapping areas of jurisdiction and conflicts of interest. The New South Wales Environment Protection Authority (NSW EPA) also provides a regulatory function with regard to environmental quality and standards.

In January 1995, the Sydney Water Board was corporatised to increase the operational efficiency of the organisation. This will enable the SWC, trading as Sydney Water, to operate free from day-to-day directions from the State

Government, whilst still maintaining accountability. Under the legal framework governing the operation of Sydney Water, there are three key documents:

- the *Statement of Corporate Intent* detailing Sydney Water's relationship to the State Government, including the dividends it is required to pay;
- the *Operating Licence* defining Sydney Water's performance standards, including their performance targets for the next five years; and
- the *Customer Contract* defining Sydney Water's relationship with their customers, including clear rights and improved levels of service that are enforceable by law.

In addition, a number of new laws will apply to the SWC. These include Corporation Law, the Trade Practices Act and the NSW Fair Trading Act.

The NSW Government envisages that the SWC will operate in a more commercial, transparent and accountable manner, providing a better service to customers and the community.

The DWR has moved towards corporatisation and privatisation of irrigation districts. In June 1993, the Gumly Gumly area, near Wagga Wagga, was handed over to local irrigators, in addition to a number of other areas already under local management. In February 1995, the Lower Murray Irrigation Area was privatised. It represents the first of the five major Irrigation Areas and Districts to move to irrigator control and autonomy. It is intended that all irrigation infrastructure will be removed progressively from direct government control and DWR management. The DWR will then become responsible for the development, use and protection of the State's water resources and act as bulk water supplier to the irrigation areas.

Temporary transfer of water entitlements has been permitted since 1983, and permanent transfers are also allowed at individually negotiated prices. The existing arrangements have so far contributed an estimated \$42.5 million to NSW irrigation output (IC 1992c). The DWR is considering transfer arrangements that might apply to unregulated streams and groundwater as well as inter-valley and inter-basin transfers of surface water, and anticipates all entitlements being tradeable in the longer term. In 1993-94 there were 318 temporary transfers totalling 95 293 ML and 91 permanent transfers totalling 29 145 ML.

Pricing

The NSW GPT recommended the pay-for-use pricing system for NSW water authorities. On 1 January 1994, common usage pricing came into effect for

customers of the SWC, with a single price of 65 cents per kL for all water. For metered customers, the non-usage component consists of a combination of a flat charge of \$20 per quarter (\$80 per annum). Unmetered customers, who account for approximately 5 per cent of residential customers, pay an annual charge of \$60 per quarter (\$240 per annum). Both sets of customers pay an additional rateable component based on the land value, if it exceeds \$33 000. The non-usage component for non-residential customers consists of an access charge based on the size of the meter and a rateable charge if the land value exceeds \$2 500 (GPT 1994a).

In May 1994, the NSW GPT announced the 1994-95 pricing schedule for the HWC. The previous practice of setting non-residential water and sewerage charges based on property valuation was replaced by an access charge, that varies with the size of the meter, and a two-tier usage charge. Unlike the access charge that differs between residential and non-residential customers with the same size meter size, the usage charges are identical. Each kilolitre of water up to and including the first 1 000 kL is charged at the rate of 75.2 cents, while the excess is charged at 70.2 cents per kilolitre. The introduction of common usage charges across all customers has all but eliminated previous cross-subsidisation in favour of domestic water customers. However, it is not clear from their latest annual report (HWC 1994), whether any cross-subsidisation occurs between water and sewerage services. The Operating Licence of the corporation limits the price changes to movements in the Consumer Price Index (CPI) and these are regulated by the NSW GPT.

The corporation proposes to remove the remaining minor distortions, such as a reduction in non-residential water service charges and changes to the structure of residential sewerage charges, over the next five years. It proposes that these refinements will be undertaken within an overall price cap of CPI-0.8% (HWC 1994).

Victoria

Market structure

Since 1 January 1995, water and sewerage services in the greater Melbourne metropolitan area has been provided by three regionally based State-owned companies. These regional retail units operate on a commercial basis in the provision of services. Headworks operations are provided by the Melbourne Water Corporation, trading as Melbourne Water (MWC).

Service provision to non-metropolitan Victoria is currently split between local councils, the Rural Water Corporation (RWC) and regional water boards, though a process of reform is currently under way.

Recent reforms

Since 1985, Victorian WSD reform has been directed at amalgamation and decentralisation. In June 1994, Melbourne Water was declared a Reorganising Body. Legislation has since been introduced which has seen the MWC broken up into three regional retail units and a headworks operation. The aim of this restructure is to increase efficiency through a greater commercial focus, thereby encouraging economic pricing and better investment decisions, and to provide competition by comparison. Melbourne Parks and Waterways has already been separated from the MWC, and from 1 July 1994 was established as a separate State Body under the State Owned Enterprises Act.

The MWC headworks operation will report directly to the Board in the first instance, and then the Minister. The three regional units will have power to run their own operation, subject to an operating licence that will define the relationship between the government and service provider. A wholesale price for water will be quoted publicly by the headworks business, to encourage large users and adjacent water companies to purchase at that price.

The MWC has contracted out many of its non-core activities, such as routine maintenance, mechanical and electrical services, printing, workshops, legal services, canteen, design services, survey and geotechnical, to improve service delivery. Their experience indicates that contractors can provide these services at about 50 per cent of the in-house costs, leading to cost savings of approximately \$25 million per annum (Knipe 1994).

The abundance of irrigation water in Victoria has led to low incentives for transfer. Temporary transfer of water entitlements was introduced in Victoria in the 1987-88 irrigation season. Permanent transfers are permitted between owners of holdings within and between prescribed irrigation districts, or to the RWC. A similar provision allows for permanent transfer between private diverters. Proposals are currently being developed to enable limited trading of water rights on an interim basis. The concept of bulk water entitlements is being extended to enable authorities to increase their bulk entitlements on a commercial basis and to establish a framework to facilitate the trading of water between authorities.

The five regional boards of the RWC are in the process of becoming separate authorities under the State Owned Enterprises Act, with each acting as a wholesaler of water to regional water authorities. They became independent bodies as of 1 July 1994. The current process of amalgamation and rationalisation is expected to reduce the number of water authorities from 120 local authorities to 17 regional authorities. Bulk water supply and distribution assets will continue to be owned and controlled by a public authority, but the RWC will cease to exist from 1 July 1995.

Pricing

In June 1994, the Victorian Government announced a domestic water charge of 65 cents per kL for all MWC customers. This will raise the user-pays component of the average residential bill to 31 per cent, an increase from the current level of 23 per cent (MWC 1994). The non-usage based component for all customers is based on the rateable value, although the rate varies between customer types.

The Victorian Government has also appointed a Regulator-General who will potentially have powers to fix both retail and bulk water prices, and monitor customer service standards as part of the restructuring of the WSD industry (Knipe 1994)

In 1993-94, the RWC held an auction of irrigation water licenses in Swan Hill. A total of 12 332 megalitres from Lake Dartmouth and the Lower Murray were sold for \$3.6 million. The new allocation from Lake Dartmouth was priced to cover the full economic costs of the irrigation water, which was a first in Australia (RWC 1994).

Queensland

Market structure

Services for the State capital are provided by the Brisbane City Council's Department of Water Supply and Sewerage (BCC), together with a number of adjoining city councils. The BCC purchases untreated water from the South East Queensland Water Board before treating it at one of its four treatment plants. The water is then distributed to households and industry within Brisbane, as well as, other local authorities. The Council actively promotes water conservation and seeks to reduce average annual domestic consumption of water from 430 to 350 kilolitres per year (BCC 1994). It is proposed that all of its 11 sewerage

treatment plants will comply with licence conditions set by the Department of Environment and Heritage within two years (BCC 1994).

Local councils and shires generally provide services to country towns, often from locally operated storages, though some purchase bulk water. The Queensland Government, through the Water Resources unit of the Department of Primary Industries (QWR), owns and operates eight irrigation areas, 17 irrigation projects, and three water supply schemes.

Recent reforms

Excluding the operations of the BCC, the WSD industry in Queensland is undergoing substantial reform that commenced in 1993 when the Queensland Government initiated a review of water pricing (DPI 1993). As many of the reforms are still being progressed, the structure of the industry after they have been implemented is not known at this stage. However, the Government has indicated that it will not be privatised. The separation of the regulatory and commercial functions of the QWR commenced in 1993 as a precursor to commercialisation (ARMCANZ 1995). In May of the same year, the Queensland Government announced that it would corporatise the water service functions of the QWR and this is currently scheduled to take effect on 1 July 1996 (DPI 1994).

Pricing

The BCC operates a fairly complicated schedule of charges for the 1993–94 financial year (BCC 1995). Customers can choose between a usage-based scheme with no free water allowance or a property-based pricing scheme. The usage-based pricing scheme for residential customers consists of a \$75 base charge and a two-tiered usage charge with the first 150 kL per six months (ie. 300 kL per annum) being charged at 35 cents per kL and the remainder at 70 cents per kL. For residential customers electing to pay property-based water charges, the charge is set at the rate of 0.5012 cents per dollar on the average rateable value with a minimum bill payable of \$251.68. For non-residential customers, the charging scheme is considerably more complicated as it varies depending on the type of customer and the charging scheme chosen. Those users choosing a usage-based pricing scheme pay a Flow Capacity Charge, an access charge based on the size of the inflow pipe, and a usage charge that varies between customer types. Residential customers face a \$166.68 flat charge for sewerage rates, while all other rateable lands are assessed at the of 0.3928 cents in the dollar (minimum assessment \$166.68).

It appears that there is considerable cross-subsidisation in the WSD operations of the BCC, especially from non-residential to residential customers (BCC 1995).

South Australia

Market structure

South Australia is serviced by the Engineering and Water Supply Department (EWS), a single State government department that is responsible for all water supply activities in the State. The department is currently responsible to the Minister for Water Resources. It also provides services to non-metropolitan areas, and is the sole operator of irrigation schemes in South Australia. EWS is required to provide and maintain facilities for supplying and distributing water within government irrigation schemes. It is also responsible for the construction, operation and maintenance of the schemes.

In South Australia, the transferability of water entitlements was introduced in 1983 for private diverters on the Murray River; in 1984 for groundwater users in the Northern Adelaide Plains groundwater basin; and in 1989 for the government irrigation areas along the Murray. Both permanent and temporary transfers are permitted and both are used.

EWS only supplies sewerage services to major urban areas. Local government authorities (LGAs) undertake metropolitan drainage and non-metropolitan sewerage and drainage, with the State government providing capital grants. Drainage in urban areas is provided mainly by local councils.

Reform

The South Australian Government is in the process of reforming the EWS. From 1 July 1995, it will be required to pay an income tax equivalent to the South Australian Government in addition to the dividend it already pays. At this stage, the South Australian Government does not explicitly cost the CSOs of the EWS. The EWS has not quantified the cost of meeting these in its annual report (EWS 1994b).

Following the recommendations contained in the Commission of Audit Report, on 30 May 1994 the Government approved 'that (the) EWS be corporatised as a tier two body under the Government Business Act' (EWS 1994b).

The South Australian Government has decided that, subject to favourable tender prices, the EWS will outsource the operation and maintenance of metropolitan water and sewerage network and treatment plants, access to and extensions of the Adelaide water and sewerage systems and the provision of logistic support services in the metropolitan area (EWS 1994a)

Pricing

EWS the only major water operator to offer a free water allowance (136 kL per annum) for residential properties. It's 1994–95 residential tariff structure consists of a \$120 Annual Supply Charge and a usage charge of 88 cents for each kilolitre of water in excess of the free water allowance (EWS 1994a). A similar approach is used for non-residential properties and those in Country Lands Water Districts, except that the Annual Supply Charge (called an Annual Base Water Rate) is assessed on the property value or the number of hectares, subject to a minimum charge of \$120, and the free water allowance is a function of the Annual Base. Sewerage rates are assessed on the basis of property value, subject to a minimum charge of \$186 per annum. However, the rate varies between metropolitan and country customers, as well as between residential and non-residential customers.

Western Australia

Market structure

The Water Authority of Western Australia (WAWA) is a statutory authority charged with responsibility for providing water related services and managing water resources throughout the State. WAWA is accountable to Parliament through the Minister for Water Resources, and operates as a monopoly. The only exceptions to its authority are water boards which supply Bunbury and Busselton, and 17 small towns where Local Government Authorities (LGAs) provide sewerage services.

WAWA has focussed on adopting a more commercial focus for its activities. Reforms have included the development of customer service charters. WAWA's free water allowance of 75 kL for metropolitan customers was abolished in the 1994–95 financial year.

Pricing

WAWA operate a usage-based pricing scheme that varies between metropolitan and country customers and by type of customer (WAWA 1995). All residential customers State-wide pay a standard base charge of \$121.45 and face a multi-tiered usage charge with the rate increasing with the volume of water consumed. For metropolitan customers, there are seven tiers starting at 19 cents per kL for the first 150 kL, increasing to 102.8 cents for that used in excess of 1 950 kL. Country customers face higher usage charges than do metropolitan customers and the number of tiers and the usage charge varies between the north and the south of the State. Metropolitan non-residential customers face a three-tiered usage system ranging from 58.5 cents per kL (first 600 kL) to 81.6 cents per kL (over 1 100 000 kL). Sewerage and drainage charges are assessed on the rateable value of the property subject to a minimum charge.

Tasmania

Market structure

State government owned water authorities comprise bulk water schemes operated by the Hobart Regional Water Board (HRWB), the North West Regional Water Authority (NWRWA) and the Rivers and Water Supply Commission, North Esk Scheme (RWSC NES). Hobart's services are provided by a number of city councils purchasing bulk water from the Hobart Regional Water Board, which is not concerned with reticulation, sewage or stormwater.

Bulk water is distributed amongst 40 municipalities that operate 68 water schemes and about 80 sewerage schemes, though local councils and shires also often operate local storages.

There are three State-owned irrigation schemes operated and maintained by the Rivers and Water Supply Commission (RWSC) in Tasmania. A small amount of irrigation comes under the control of local government. Although more than half of the area irrigated is for pasture, the value of irrigated production comes largely from horticulture. The public irrigation schemes fall well short of full cost recovery.

Recent reforms

The State government is in the process of drafting the final Government Business Enterprises (GBE) Bill that will serve as a vehicle for the corporatisation of many

State-owned authorities. The North West, Hobart and Launceston Water Boards (the Water Boards) will fall within the ambit of the GBE Bill (Tasmanian Department of Treasury and Finance 1995). The legislation provides for a more rigorous approach to the definition, costing and funding of CSOs that will be funded as explicit transfers from consolidated revenue. While the legislation requires GBEs to pay income and other tax equivalents, guarantee fees and to provide dividends, the Water Boards will retain their tax exempt status pending the outcome of a review. The matter will be resolved prior to March 1997.

Northern Territory

Market structure

The Power and Water Authority (PAWA) was established under designating legislation in 1987, and is responsible through the Minister for Lands, Water and the Environment to the Northern Territory Parliament. PAWA is a statutory authority servicing the whole of the Northern Territory, providing water and sewerage services to Darwin and Alice Springs as well as most country towns and many Aboriginal Communities. LGAs provide drainage (Johnson and Rix 1993).

PAWA's responsibilities have the potential for considerable overlap with Commonwealth agencies, because of the Commonwealth powers over aboriginal affairs and mining activities in the NT.

The pricing strategy employed by PAWA relies solely on usage pricing for water services. The authority also actively pursues a demand-side management strategy that focuses mainly on Alice Springs.

Australian Capital Territory

Market structure

The Australian Capital Territory Electricity and Water Authority (ACTEW) is the sole supplier of water and sewerage services to the ACT. It also supplies bulk water to the neighbouring NSW city of Queanbeyan. ACTEW was formed by the merger, on 1 July 1988, of the former ACT Electricity Authority with ACT Water.

Recent reforms

ACTEW has introduced a strategic framework of reform for implementation over the next 5 to 8 years (ACTEW 1994a). It has introduced a usage-based pricing regime incorporating a fixed annual charge and a usage component. To essentially eliminate cross-subsidisation, the pricing regime is the same for all consumers. ACTEW reportedly earned a negative rate of return in 1993–94 and predicts that prices would need to double in the short term to reach a 5 per cent rate of return.

ACTEW acknowledges the need for users receiving concessions to receive the full price signals and is participating in work to develop acceptable alternative mechanisms for providing concessions.

Pricing

In July 1994, ACTEW introduced a usage based water pricing regime featuring an annual fixed charge of \$130 per property per annum (charged on a quarterly basis) and a usage component incorporating a two tier price schedule. Each kilolitre of water used is charged at the rate of 28 cents per kL up to 351 kL per annum, while the remainder is charged at a rate of 64 cents per kL. By reducing it to 1 kL per annum, the free water allowance has effectively been abolished. These charges are the same for all types of users, thereby effectively eliminating any cross-subsidisation that previously occurred. Sewerage charges continue to be collected as a fixed annual charge. Following a brief transition period, these reforms became fully operational from 1 October 1994. ACTEW claims that the new pricing arrangements are revenue neutral and are expected to reduce total water consumption, helping delay construction of new dam facilities (ACTEW 1994b).

B7.3 The likely impacts of reform

The impacts on the WSD industry as a result of the reform process can be divided into the categories of:

- labour productivity;
- capital productivity;
- total factor productivity;
- pricing and the removal of cross-subsidisation;

- community service obligations;
- rates of return;
- payments to government; and
- asset values.

This section outlines the likely impacts in these areas. It should be noted that the terms of reference specifies different requirements for the urban and rural sectors. In particular, the rural sector will not be required to achieve a positive rate of return or pay a dividend to government.

In order to assess the magnitude of the benefits flowing from undertaking the Hilmer and related WSD reforms, it was necessary to establish a pre-reform benchmark. The financial year 1992–93 was chosen as the pre-reform benchmark as it coincided with the date when the Council of Australian Government (COAG) commissioned the Working Group on Water Resource Policy to outline a strategic framework for the efficient and sustainable reform of the Australian water industry. This has been interpreted as signifying the commencement of the reform process. Reforms undertaken prior to this date were deemed to have been undertaken for non-Hilmer related reasons and, hence, beyond the scope of this report.

Published data for the water industry tends to be dated and piecemeal. Through the work of ARMCANZ and the SCNPMGTE, adequate, yet imperfect, information exists about the state of the urban WSD industry. However, information on the rural WSD industry, excluding irrigation, is poor. In its coverage of the non-metropolitan WSD, ARMCANZ only includes State Government WSD operators. While this may not represent a problem in South Australia and Western Australia where local government plays little, if any, role in rural (non-metropolitan) WSD operations, it is likely to be a significant problem in New South Wales and Victoria, where these services are primarily performed by local government.

Despite the major limitations associated with rural WSD data, it is unlikely to have a significant impact on the magnitude of the benefits flowing from the reform process. The reform process for the water industry, as detailed on page 6 of the Commission's Terms of Reference, only requires rural WSD operators to charge 'pricing regimes so that they recoup operating and maintenance costs of water supply systems'. The latest evidence available from ARMCANZ (1993) indicates that they appeared to be achieving this before the reform process commenced. Given the fiscal environment within which local government have

been operating, and in the absence of detailed information on local government WSD operators, it has been assumed that their revenue covers their operating and maintenance costs.

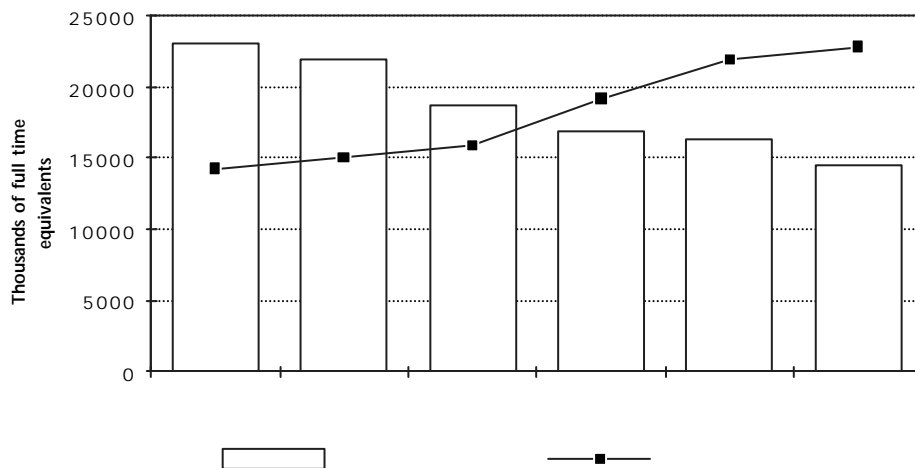
By choosing 1992–93 as the pre–reform benchmark, it coincides with the latest publicly available, consistent data for the industry. Although the operators have published annual reports for 1993–94, the information contained in them has not been standardised across authorities. The SCNPMGTE plans to publicly release its ‘standardised’ data for 1993–94 in April 1995. It is for this reason that the published statistical and graphical information contained in this chapter are dated. They give us a good idea of the state of the industry prior to the commencement of the reform process, but not how much has been achieved in the interim. In some States, this is likely to be significant.

Labour productivity

Labour productivity in the WSD industry grew by approximately 54 per cent over the six years to 1992–93 (Figure B7.1). This has been underpinned by a 25 per cent reduction in aggregate employment over the six–year period. Some authorities have reduced their employment by substantially more than this, for example the MWC has reduced employment numbers by 46 per cent over the six years, partly as a result of outsourcing (SCNPMGTE 1994).

Subsequent data for individual authorities (Table B7.1) indicate the continuation of this trend. For example, during the 1993–94 financial year, the SWC supplied the same level of water and treated the same quantity of sewerage using 9 per cent less labour. In comparison with the MWC, who supply a slightly lower level of output, further significant gains may be possible. In 1993–94, the SWC employed 7 422 people to treat 1 088 GL of water and sewerage, while the MWC supplied 811 GL using 2 742 employees. MWC envisage that further efficiency gains are possible and have set themselves a target level of employment for 1994–95 of 2 300 employees (MWC 1994).

Figure B7.1: **Total employment and real labour productivity, 1987 to 1992-93^a**



a Includes: EWS, HRWB, HWC, MWC, NWRWA PAWA, RWSC NES and SWC.

Source : SCNPMGTE.

Table B7.1: **Employment by WSD authority, 1992-93 to 1993-94**

<i>Authority</i>	<i>1992-93</i>	<i>1993-94</i>	<i>Percentage change</i>
ACTEW	334	331	-1
BCC	1 345	1 279	-5
EWS	3 059	2 707	-12
HWC	1 021	799	-22
MWC	3 996	2 742	-31
PAWA ^a	294	398	+35
SWC	8 133	7 422	-9
Total (excluding PAWA)	17 888	15 280	-15
Total (including PAWA)	18 182	15 678	-14

a Increase in staffing reflects a more accurate appointment of Common Service employees between the power and water operations. In 1992-93, no Common Service employees were allocated to water.

Sources: Annual Reports 1993-94.

Evans and Reynolds (1990) estimated that labour savings (operating and administrative costs) in the order of 15 per cent of current usage were possible in

the WSD industry in 1990. The magnitude of the reductions achieved by some of the urban WSD operators since then, especially the MWC, indicate that the labour savings for urban operators may have been higher, even considerably higher, than this. As the reform process has been under way for sometime, the remaining gains are likely to be lower than this figure.

Capital productivity

The WSD industry is an extremely capital intensive industry. However, there are few estimates of the size of the capital stock employed in the industry. In 1989–90, the Industry Commission estimated that the value of water, sewerage and irrigation assets exceeded \$80 billion (IC 1992c). A detailed breakdown of this is provided in Table B7.2 by asset type for metropolitan, non–metropolitan and irrigation operators. Of this, 54 per cent of the assets totalling \$45 billion are employed in metropolitan WSD operations, with non–metropolitan operations accounting for 34 per cent. Of this, the value of mains alone accounts for 65 per cent the total.

Capital costs are the single largest component of total industry costs, accounting for approximately 60 per cent. The NSW GPT estimated that depreciation costs alone account for approximately 25 per cent of total costs of both the SWC and the HWC (GPT 1993). Recent revaluation of WSD assets associated with the use of current replacement cost valuations, rather than historic cost valuations, would increase these estimates significantly.

Figure B7.2 indicates that capital productivity, or the real value of the total replacement cost of assets per thousand megalitres of water supplied and sewerage treated, in the WSD industry increased slightly over the period 1989–90 to 1992–93.

Table B7.2: **WSD asset values, 1989–90 (\$ million)**

<i>Assets</i>	<i>Metropolitan</i>	<i>Non-Metropolitan</i>	<i>Irrigation</i>	<i>Total</i>	<i>Share</i>
Large mains:					
water	4 953	3 415	183	8 551	(10%)
sewerage	2 756	1 230	–	3 986	(5%)
Medium mains:					
water	3 660	10 245	–	13 905	(17%)
sewerage	2 982	1 331	–	4 313	(5%)
Small mains:					
water	9 100	–	–	9 100	(11%)
sewerage	9 870	4 406	–	14 276	(17%)
Pumping stations:					
water	719	429	55	1 203	(1%)
sewerage	1 013	397	–	1 410	(2%)
Treatment plants:					
water	1 245	581	–	1 826	(2%)
sewerage	3 891	1 500	–	5 391	(7%)
Storage dams	3 208	3 195	4 596	10 999	(13%)
Reservoirs/tanks	1 212	804	–	2 016	(2%)
Irrigation channels	–	–	4 187	4 187	(5%)
Inlet/service structures	–	–	751	751	(1%)
Total	44 609 (54%)	27 533 (34%)	9 772 (12%)	81 914 (100%)	(100%)

Numbers in parentheses denote share of total asset value.

Source: IC (1992c).

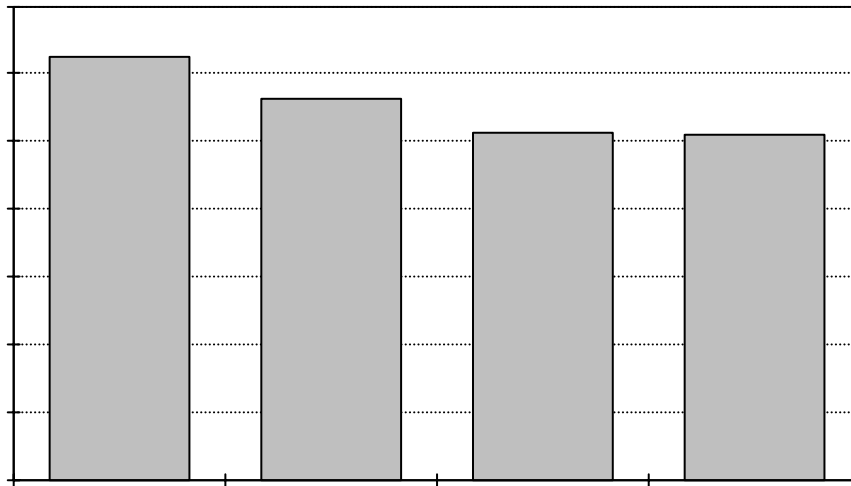
Given the significance of capital in the industry, large productivity improvements are considered possible. Swan Consultants have estimated that capital cost savings of 23 per cent are possible as a result of combining contracting out with better asset management (Swan Consultants 1992). This is marginally higher than the 18 per cent indicated by the Commission (IC 1992c) for 1989–90.

Total factor productivity

Total factor productivity (TFP) in the WSD industry will be influenced by the level of competition in the industry, price regulation that rewards increased productivity, and an increased commercial focus of the industry.

None of the WSD operators covered by the SCNPMGTE (1994) publish estimates of TFP. However, the EPAC, in their research paper on 'Profitability of Government Business Enterprises', provide combined estimates of TFP in the electricity, gas and water industries (Table B7.3).

Figure B7.2: Capital productivity 1989-90 to 1992-93^{a,b}



a Written down replacement cost of total assets per '000 megalitres of water supplied and sewerage treated.

b Includes: ACTEW, BCC, EWS, HRWB, HWC, MWC, NWRWA, QWR, RWSC NES, SWC and WAWA.

Source: SCNPMGTE 1994.

Table B7.3: TFP growth rates

<i>Coverage</i>	<i>Period</i>	<i>Growth in TFP level (per cent)</i>	<i>Annual TFP growth rate (per cent)</i>
Electricity, gas & water	1989–90 to 1992–93	13	4.2
Electricity, gas & water	1979–80 to 1992–93	54	3.4

Source : EPAC (1994a).

In the four years to 1991–92 the HWC reduced total costs per head of population served by 16 per cent in real terms. In the same period, the SWC's costs per head rose by 8 per cent. The total operating costs of the SWC rose by 23 per cent in real terms over the five years to 1991–92, with labour costs per employee increasing by 34 per cent. This suggests much scope for improvement in this area (GPT 1993).

The NSW GPT estimated that the SWC had the potential to increase its productivity by at least 25 per cent over the three years from 1992–93. They also estimated that the SWC would need to reduce costs by 40 per cent to become comparable with the MWC, who are acknowledged as perhaps the best performing WSD authority in Australia at the present time. The Tribunal also considers that the HWC may be able to achieve productivity gains in excess of the 2 per cent per annum included in its current licence agreement.

There is insufficient data at this time to comment on the gains needed to achieve international best practice.

Pricing

The issue of pricing in the WSD industry is central to the reform process, in the areas of cost recovery, conservation of water resources and reduction of the incidence of cross-subsidisation. Most pricing schemes currently are based on two-part tariffs that consist of:

- (1) a fixed charge to cover capital costs, which may or may not be based on the value of the property, and

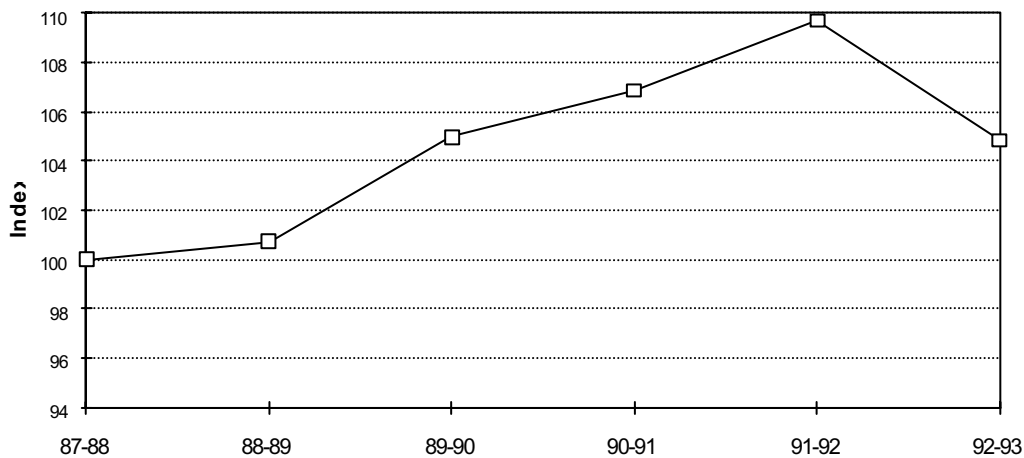
- (2) a volumetric charging component, which may be in increasing blocks, to penalise those who contribute most to peak volumes, or decreasing blocks, to recognise economies of scale.

Most authorities rely less on property-based charging than they previously did as it does not provide adequate incentives to consumers about the cost of supply. Some authorities, however, continue to use it for unmetered properties. Brisbane consumers are given a choice. Similarly, the provision of a free water allowance does not provide the right incentives to customers, as the marginal cost to the consumer of using water is zero within the free allowance.

Overall pricing

Real WSD prices increased over the four years from 1987–88 to 1991–92 (Figure B7.3), partly as a result of the move towards usage pricing. Given the size of their operation, reductions in the real price level charged by the SWC and the MWC in 1992–93 (latest year available) led to a decline in the price index.

Figure B7.3: Real WSD prices, 1987–88 to 1992–93^a



a

Includes: EWS, HRWB, HWC, MWC, NWRWA, PAWA, RW SC NES, SWC and WAWA.

Source : SCNPMGTE. (1994)

Urban pricing

Metropolitan WSD operators account for 58 per cent of all assets and 17 per cent of total water consumption (ARMCANZ 1993).

For urban water operators, the Council of Australian Government has agreed to the:

restructuring pricing on a pay for use basis. (Terms of Reference, p. 6)

Most of the urban operators have, or are in the process of moving towards, a pay for use service. Table B7.4 provides an overview of the 1994–95 residential tariff structure for the urban WSD operators. It excludes any environmental or special purpose levies. Most of the authorities employ usage-based pricing scheme consisting of a non-usage based and a variable component based on the quantity of water used. The fixed charge represents the costs of accessing the water system and is calculated in three principle ways:

- a standard charge per property (referred to here as a basic charge);
- a variable charge based on the size of the inflow pipe or meter size (access charge); and
- an assessment based on the rateable value of the property.

The usage component ranges from a flat charge or a tiered series of charges for each kilolitre of water. In some cases, the usage component is the same for residential and non-residential customers. Only the EWS provides a ‘free’ water allowance.

The ‘pay-for-use’ principle will give all customers greater ability to influence their size of their annual water bill and forms the basis of demand side management strategies employed by water authorities to delay the need for additional capital construction.

Non-metropolitan pricing

Little is known about the pricing policies employed in non-metropolitan areas served by local government. In South Australia and Western Australia, the pricing structures used are similar to those employed in Adelaide and Perth, although the rates may be higher.

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LANDSCAPE TABLE

Pricing of irrigation services

Approximately 10 per cent of the total industry assets are employed in irrigation sector, which accounts for 71 per cent of water consumption (ARMCANZ 1993). The sector substantially under-recovers total costs, with income covering operations in most cases, but only making minor inroads into capital costs. All States have a licensing system for irrigators, which is administered by the agency responsible for distributing bulk water.

Underpricing of irrigation services have contributed to over investment in inefficient usage equipment and practices, and contributes to salinity and water logging. It is widely acknowledged that the price of water would need to be increased five to ten times to cover its true marginal value (Johnson and Rix 1993). Under the Hilmer reforms, rural water supply is required only to cover operating and maintenance costs. The introduction of transferable water rights is an alternative tool to raising prices in order to increase the efficiency of the irrigation sector.

The introduction of transferable water rights can also contribute to amelioration of the environmental damage caused in the sector by including an allocation for the environment, to be managed by a relevant body.

Removal of cross-subsidisation*Across consumer groups*

Cross-subsidisation was a second significant feature of the water industry pricing structure in 1992–93. Whether by deliberate choice or as a consequence of basing water charges on the property values, significant cross-subsidisation occurred between different types of users. Many commercial and, to a lesser extent, industrial properties with low water usage were subject to higher charges than the level of usage warranted. This practice predominantly benefited residential and ‘exempt’ customers.²

To illustrate this, the GPT (1993) found that, in 1992–93, non-residential customers of the SWC were cross-subsidising residential customers by more than \$300 million (representing \$250 per residential customer) and had increased by close to 60 per cent over the previous three years. The prime beneficiaries of the subsidy were free standing households, with commercial users the major

² Including ecclesiastical buildings, hospitals and schools.

contributors. At the time, property-based rates accounted for almost one third of the total revenue of the SWC.

The process of reform has, in some cases, seen these cross-subsidies reduced to negligible levels. The 1994–95 charging schedules for the HWC and the SWC features the same usage charge for all customers. The HWC (1994) proposes to remove the remaining minor distortions, such as a reduction in non-residential water service charges and changes to the structure of residential sewerage charges, over the next five years. The usage-based pricing system recommended for the SWC by the NSW GPT, coupled with other reforms, should reduce the amount of cross-subsidisation flowing to the residential sector from \$300 million per year to zero over five years.

The introduction of a common usage-based charge does not necessarily guarantee the elimination of all cross-subsidisation between customer types. Some subsidisation may, however, continue to occur if the annual fixed charge varies between customer groups by more than is economically justified.

Eliminating cross-subsidies is a major component of the Hilmer-related reform process. Estimates of the average price changes needed to eliminate those cross-subsidies prevailing in 1992–93 are shown in Table B7.5 for those WSD authorities that publish sufficient data.

Table B7.5: Estimated price increase to eliminate cross-subsidies, selected authorities, 1992–93 (per cent)

<i>Customer group</i>	<i>SWC</i>	<i>MWC</i>	<i>EWS metropolitan</i>	<i>EWS country</i>
Residential	21.5	20.9	11.2	3.1
Commercial	-59.7	-38.5	-59.5	-39.0
Industrial	-13.3	na	6.9	9.9
Other	73.3	141.8	-1.8	-0.1

a Price increases required to equate average revenue by customer group.

Source : Commission estimates based on SCNPMGTE (1994).

Across programs

Cross-subsidisation may exist between different programs undertaken by an authority. At an industry level, sewerage activities currently subsidise those

relating to water supply. For example, the economic rate of return (ERR) on combined metropolitan water and sewerage assets in 1991–92 was 3.47 per cent. However, the corresponding figures for metropolitan water and sewerage were 2.79 and 4.10 per cent respectively (ARMCANZ 1993). Anderson (1993) estimated that the cross-subsidy from sewerage operations in 1991–92 accounted for approximately 10 per cent of water revenue in the NSW water industry (Table B7.6).

Table B7.6: Broad sectoral cross-subsidies in the New South Wales WSD industry, 1991–92 (\$ million per annum)

<i>Sector</i>	<i>Revenue</i>	<i>Costs</i>	<i>Cross-subsidy</i>
Water	508	564	–56
Sewerage	727	672	55
Drainage	26	25	1
Total	1 261	1 261	0

Source : Anderson (1993).

Community service obligations

The provision of water and related services involves more than the provision of a good, as governments often link water supply with social development, equity and public health. As such, there are various community service obligations (CSOs) which may impact on the commercial operation of GBEs.

The preferred definition of a CSO is:

A Community Service Obligation arises when a government specifically requires a public enterprise to carry out activities relating to outputs or inputs which it would not elect to do on a commercial basis, and which the government does not require other businesses in the public or private sectors to undertake, or which it would only do commercially at higher prices (SCNPMGTE 1994a)

The CSOs required of GBEs generally have been in place for decades without ever being clearly specified, hindering the measurement of the true costs involved in fulfilling these obligations (SCNPMGTE 1994a).

The major CSOs required of the WSD industry are:

- (1) subsidies to specific groups of consumers, for example pensioner rebates and exemptions (part or whole) for services to schools and government departments;
- (2) requirements to extend services to areas which would not be supplied on commercial grounds alone. For example the extension of services to remote country towns and Aboriginal communities; and
- (3) uniform pricing arrangements across areas which have differing costs of supply. For example uniform pricing across a State or large geographic region.

There are a variety of other activities currently categorised as CSOs. These include water resources management, flood mitigation, salinity reduction, recreational activities, water advisory services and research (IC 1992c).

The way in which CSOs are funded is crucial from an efficiency viewpoint. Many CSOs are funded by cross-subsidies between groups of consumers, which reduces transparency and inhibits performance monitoring (SCNPMGTE 1994a). Consistency in identification of CSOs is also required for purposes of comparison.

The Steering Committee on National Performance Monitoring of Government Trading Enterprises (SCNPMGTE) has also identified advantages of direct funding, in that this mechanism increases transparency and allows the aims of government policy to be separated from core commercial functions.

Some State Governments, most notably New South Wales, explicitly fund, either in full or in part, some or all of the costs incurred by their WSD authorities in meeting their CSOs. These authorities receive an explicit payment from the Government to cover the cost of providing these services. Some other agencies detail the cost of meeting these obligations, although an explicit payment is not received. They are funded through internal means, such as cross-subsidisation or lower dividend payments.

In practice, the definition of and the amount of funds allocated to meeting these community service obligations varies considerably between States. Table B7.7 details and values those CSOs identified in the latest Annual Report of each authority. Those authorities not included do not publish details of the CSOs, if any, that they are required to meet.

Economic rate of return

Under Hilmer, urban WSD supply operators will be required to earn positive economic rates of return on their investments. The application of the principles of competitive neutrality to WSD operators will require them to earn rates of return equivalent to those earned by other commercial bodies.

Rates of return in the WSD industry have historically been low, although the economic rate of return has generally been increasing gradually over time (Table B7.8). However, alternate measures, such as the return on equity and return on assets, have been declining (Figure B7.4).

The issue of returns earned on assets is complicated by the way authorities treat non-refundable capital contributions. Ignoring the implicit revenue component embodied in the contribution, while including the increase in equity and value of the assets, will result in an artificial depressing of the rate of return, on both assets and equity. This issue must be considered in assessing financial performance, or there would be the danger of overcharging consumers to make up for any perceived shortfall in revenue.

Table B7.7: Community Service Obligations, 1993–94 (\$ 000)

<i>Organisation</i>	<i>Community service obligations</i>	<i>How funded</i>	<i>Cost</i>
ACTEW ^b (ACT)	50 % pensioner rebate scheme	External	1 560
	50 % concession on excess water and sewerage charges to schools and ecclesiastical establishments	Internal	nsc
	50 % concession on additional flushing units within the sewerage charges, to schools, ecclesiastical establishments and hospitals	Internal	nsc
	Addition of fluoride during the water treatment process	Internal	nsc
	Maintenance of fire hydrants	Internal	nsc
	Total		>1 560
HWC (NSW)	Pensioner rebate scheme	External	6 747
	Properties exempt from payment of charges	External	194
	Chemical collections	External	20
	Catchment management assistance	External	53
	Fire hydrant maintenance	External	90
Total		7 104	
PAWA ^b (NT)	Remote community water and sewerage services	External	28 116
	Pensioner rebate scheme	External	nsc
	Water and sewerage concessions to churches, church schools and charitable organisations	Internal	nsc
	Total		>28 116
SWC (NSW)	Pensioner rebate scheme	External	41 939
	Transitional rebates	External	8 445
	Exemptions from payments of charges	External	9 750
	Total		60 134
WAWA (WA)	Pensioner rebate scheme	Internal	17 400
	Concessions to non-rated government properties, charities etc (metropolitan only)	Internal	3 300
	Apprenticeship training at a level above the needs of the Authority	Internal	700
	Water Resources Management	Internal	13 400
	Infill sewerage	Internal	11 100
	Cross-subsidies to country operations	Internal	87 500
	Total		133 400

The annual reports of the BCC, EWS and MWC do not cost their CSOs.

External denotes explicit payment from another department or from the budget for provision of CSOs.

Internal denotes funded from internal operations through cross-subsidisation, lower dividend payments or other means.

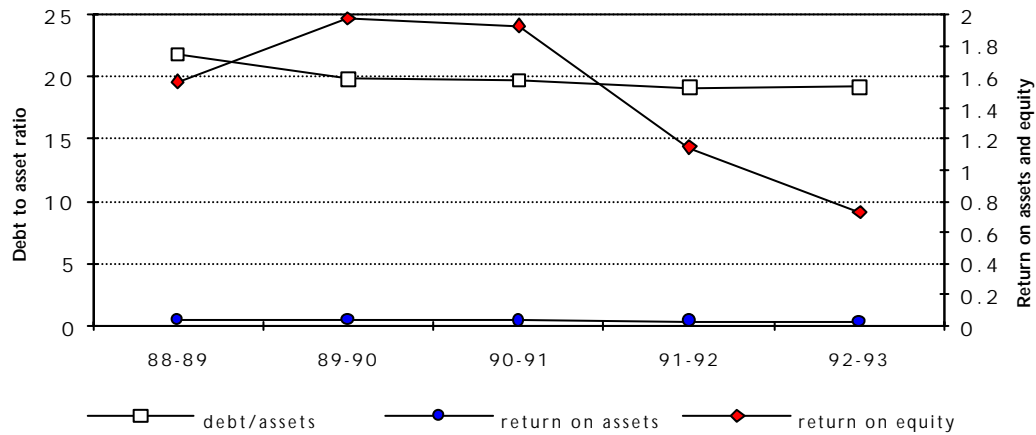
nsc Not separately costed.

a As defined in their annual reports.

b Excludes CSOs pertaining to electricity operations .

Sources: Annual Reports 1993–94.

Figure B7.4: **Return on assets and related measures, 1988 to 1992–93^a**



a

Includes: HRWB, HWC, MWC, NWRWA, PAWA, RWSC NES, SWC and WAWA.

Source: SCNPMGTE (1994)

The debt to assets ratio has fallen slightly, but remained reasonably constant over the six years to 1992–93.

While the rate of return for the WSD industry as a whole is low, the rates vary significantly between authorities, in particular between the rural sector and other sectors (Tables B7.8 and B7.9). The Hilmer-related reforms, as specified in the terms of reference, do not require the rural sector to achieve positive rates of return. They specify instead that pricing regimes be restructured to recoup operating and maintenance costs.

Table B7.8: Average economic rate of return by type of operation, 1987 88 to 1991-92 (per cent)

	1987-88	1988-89	1989-90	1990-91	1991-92
Metropolitan:					
Water	1.88	1.97	2.24	2.52	2.78
Sewerage	3.86	4.22	3.89	4.05	4.10
Combined	2.82	3.04	3.05	3.29	3.47
Non-metropolitan:					
Water	0.20	0.10	0.37	0.57	0.60
Sewerage	1.97	1.73	1.66	1.93	2.30
Combined	0.77	0.65	0.81	1.04	1.19

Averages economic rates of return were not published for gravity, pumped and private diversion irrigation systems.

Source: ARMCANZ (1993).

The composition of assets is shown in Figure B7.5. It can be seen that debt and other liabilities have remained constant over the years 1988-89 to 1992-92, while equity has increased. This increase in the equity component is being driven mainly by asset revaluations to concur with current cost accounting principles.

Payments to government

Most of the urban water authorities (ACTEW, EWS, HWC, MWC and SWC) are required to pay dividends to their respective State governments. The Water Authority of Western Australia pays five per cent of its revenue in place of a dividend, this amount was \$23.866 million in 1993-94 (WAWA 1994).

In addition to a dividend, some of the authorities pay income and other tax equivalents (ITE). Under competitive neutrality, all WSD operators will be required to make such payments to their respective State Governments. Currently only four operators, ACTEW, HWC, MWC and SWC, do so. From 1 July 1995, the EWS will commence payment of ITEs.

Governments, as shareholders, have extracted higher dividends from authorities that have been corporatised or are progressing towards corporatisation, despite returns on assets remaining low. As shown in Figure B7.6, real dividend payments to government have been increasing, from around \$100 million in 1987-88 to over \$200 million in 1992-93.

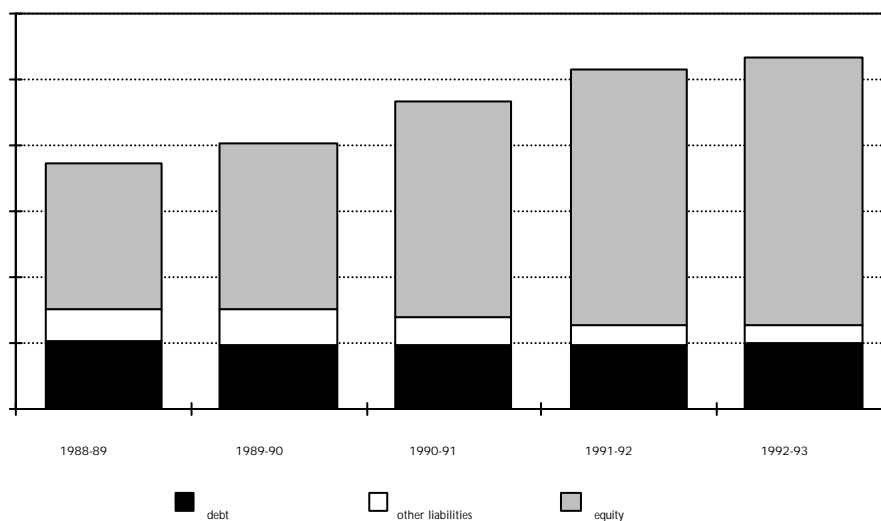
Table B7.9: Economic rates of return, 1988 to 1992-93

		1989-90	1990-91	1991-92	1992-93
<i>Urban:</i>					
ACTEW	ACT	-0.83	-0.05	0.12	0.28
BCC ^c	Qld	2.00	2.27	2.56	2.55
EWS	SA	1.80	2.10	2.10	2.10
HWC	NSW	1.59	1.75	1.90	1.98
MWC	Vic	4.20	4.40	6.40	6.30
SWC	NSW	3.06	2.94	2.48	2.40
WAWA	WA	nc	nc	nc	nc
<i>Rural:</i>					
EWS	SA	-1.70	-1.60	-1.60	-2.00
PAWA	NT	nc	nc	nc	nc
WAWA	WA	nc	nc	nc	nc
<i>Combined:</i>					
EWS	SA	0.30	0.50	0.50	0.20
WAWA	WA	nc	nc	nc	nc
<i>Bulk water & other:</i>					
DPI Qld	Qld	nc	nc	nc	nc
HRWB	Tas	3.58	3.20	4.12	4.59
NWRWA	Tas	nc	nc	nc	nc
RWSC NES	Tas	4.06	3.61	3.59	3.71

nc Not collected.

Source: SCNPMGTE (1994).

Figure B7.5: **Composition of total assets, 1988-89 to 1992-93 (\$198-88 billion)**

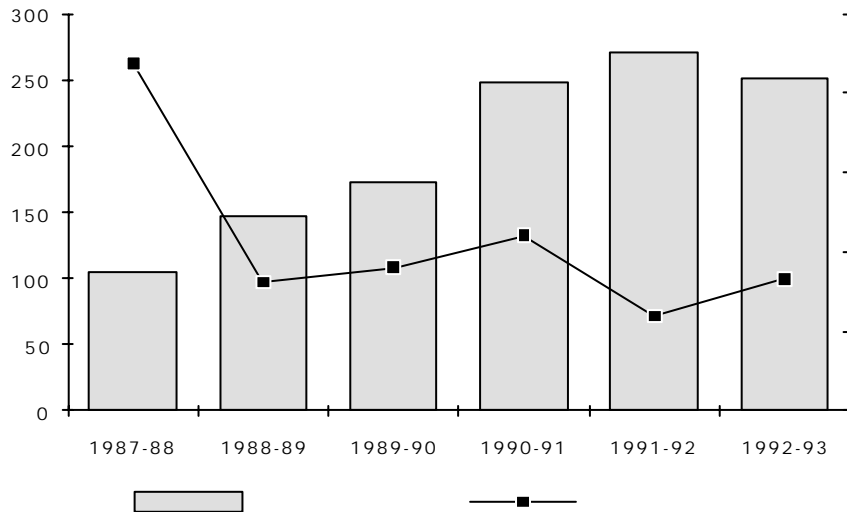


a Includes: HRWB, HWC, MWC, NWRWA, PAWA, RWSC NES, SWC and WAWA.
 Source : SCNPMGTE (1994)

The dividend payout ratio is calculated as dividends paid or provided for, divided by operating profit after tax. It has on occasion exceeded 100 per cent. This is possible if authorities are drawing on retained earnings or borrowings to pay dividends. The large industry payout ratio observed in 1987-88 arises as a result of MWC reporting a ratio of over 600 per cent.

The dividend payout ratio shown in Figure B7.6 excludes WAWA, as it pays a dividend and reports a negative operating profit figure. This results in the calculation of a negative payout ratio that is not meaningful.

Figure B7.6: **Real dividends and dividend payout ratio, 1987 to 1992-93^a**



a Payout ratio includes ACTEW, EWS, HRWB, HWC, MWC, NWRWA, PAWA, QWR, RWSC NES and SWC. It excludes WAWA. The calculation of real dividends includes all these authorities.

Source : SCNPMGTE (1994)

The calculation of payout ratios may also be influenced in part by accounting anomalies concerning the treatment of dividend and tax payments. The timing of payments will have an impact on the payout ratio. This will vary according to whether payments are reported in the year they are paid or in the year they relate to, and whether income tax equivalents are included in reporting of dividends. Some WSD authorities tend to include ITEs when reporting their dividend figures.

Asset values

Revaluation of assets on a replacement cost basis has been a feature of the WSD industry, although most of the assets contained in their annual reports are reported at historic cost. All of the major WSD authorities are already using replacement cost asset valuation, with the exception of PAWA and QWR. The QWR uses a method of factoring-up their historical asset values to approximate a replacement cost. Authorities have made a gradual shift to replacement cost

valuation over the past six years, and this will have a substantial impact on the performance of the industry as a whole over this time period.

It is therefore unlikely that reform will involve much revaluation upwards of assets for this reason. By comparison with other industries, the rate of return will also be lower because of this characteristic, as other industries have not yet made such a widespread move towards replacement cost accounting.

Further, there is not likely to be the need to write down asset values under competitive conditions, as is the case in the electricity industry. This arises from the fact that asset values will increasingly reflect their scarcity value. In turn, revenue will have to increase to earn a commercial rate of return, and therefore payments to government will also increase.

Summary

The implementation of the Hilmer-related reforms required significant changes for many of the urban WSD operators. Much reform has been undertaken and considerable scope remains. Table B7.10 provides an indication of the current state of play for the urban water authorities using data from their 1993–94 annual reports. Whilst it contains only some of the key reforms, it provides an indication of the progress made to date and some of the reforms that lie ahead.

B7.4 Reforms considered by the Commission

HILORANI is capable of modelling some, but not all, of the reforms to the WSD industry. Its primary limitations arise from the fact that it is a general equilibrium economic model, rather than a dedicated model of water demand. It treats WSD as a composite industry producing a single commodity, rather than the multi-product industry that it is. Similarly, each class of customers faces a single price for WSD, rather than a combination of property rates, access, basic and usage charges. Collectively these, and the general restrictions discussed in Appendix D3, limit the degree to which the model can realistically handle many of the Hilmer-related reforms, for example, the removal of the cross-subsidisation that occurs between water and sewerage and the move away from reliance on property rates to usage-based charges.

However, the strength of HILORANI lies in the fact that it does allow for the inter-linkages between industries.

Table B7.10: Progress in implementing Hilmer-related reforms for the urban WSD industry, 1993-94

<i>Measure</i>	<i>ACTEW</i>	<i>BCC</i>	<i>EWS</i>	<i>HWC</i>	<i>MWC</i>	<i>SWC</i>	<i>WAWA</i>
Legal status	Statutory Authority	Division within City Council	Department	Corporation	Corporation	Corporation	Statutory Authority
Other services provided	Electricity, licensing	Numerous local government services	Rural WSD, irrigation, water resources	Marketing new technology	None	Marketing new technology	Rural WSD, irrigation, water resources
Explicit funding of CSOs	Partial	No	a	Yes	a	Yes	No (cost of meeting CSOs identified)
Usage charge same for all customers	Yes	No	No	Yes	Yes	Yes	No
<i>Income tax equivalents:</i>							
paid introduced	Yes 1993-94	No na	b	Yes 1991-92	Yes 1993-94	Yes 1992-93	No na
<i>Dividends:</i>							
paid determined	Yes Board	No	c	Yes Board	Yes Set by Treasurer	Yes Board	Yes WA Govt (5% of total revenue)
<i>Financial reports:</i>							
segment accounts separate urban/rural	Yes	Yes	Yes	Yes	Yes	No	Yes
asset valuation	Historical cost	Both	Historical cost	Written down replacement cost	Historical cost	Historical cost	Historical cost

na Not applicable.

a None contained in annual report.

- b To be introduced from 1 July 1995.
- c Distribution to Government paid by way of debt reduction.

Source: Annual Reports 1993–94.

One of the main factors inhibiting the sophistication of any modelling work of the WSD industry, is the absence of detailed data. Each WSD authority prepares its annual report on an organisational basis. When the Commission commenced this process, few of the authorities published the same revenue, expense and asset information for their water, sewerage, drainage and other functions (service functions). MWC (1993) was a notable exception. The absence of such information restricts the identification of any cross-subsidisation between different service functions. Similarly, few organisations publish detailed operational statistics, especially when they relate to different customer groups (residential, commercial, industrial, government and other). For example, none of the organisations publish details of water consumption by customer group. Even the best source of publicly available information of the WSD industry, the ARMCANZ database, is incapable of answering such questions. Data on rural (including urban rural) is poor and needs to be improved considerably. The NSW GPT has proposed that:

... water suppliers develop activity-based financial information. The Water Inquiry has highlighted the fact that current information systems are not necessarily geared to providing the information that water suppliers or a regulator would require in order to set prices which reflect the cost of providing a particular service. (GPT 1993, Proposal 7.2, p. 13)

This proposal could be extended to include non-financial information as well.

Such detailed information is essential for operational efficiency. Without this information, these organisation will be incapable of achieving international best practice. It is not clear from the published reports, whether management currently has access to such information or not.

In addition, this information would be of value to other external organisations. For example, under the Hilmer reforms, these organisations would become subject to Part IV of the Trade Practises Act. Such information would aid the Trade Practises Commission (TPC) to identify whether any breaches of the Act have occurred.

Prior to the release of the draft report, the Commission attempted to build a stylised model of WSD demand to overcome some of the limitations associated with HILORANI. The model would have been used to ascertain the impacts of these reforms on the constituent industries and the composite effects would have

been fed in as shocks to HILORANI. However, there was insufficient published data to enable the model to be built within the timeframe available.

Given the limited quantity of data available on the WSD industry, the Commission has drawn heavily on the ARMCANZ database, as published by SCNPMGTE (1994), and on the annual reports of the respective organisations. The quality of the information contained in these reports varies considerably. The Commission is aware of the limitations associated with using such data, especially in the absence of uniform reporting standards, and has taken these into account where possible.

The terms of reference state that urban operators are to adopt international best practice (Terms of Reference, p. 6). The Commission has been able to locate only one international benchmarking study that is being undertaken for the SWC (GPT 1994a). International comparisons need to take account of the climatic, regulatory, institutional and other differences that exist between countries. The choice of benchmarking partners is also important. As the benchmarking partners chosen by the SWC are specialist organisations, dealing exclusively with either water supply or sewerage services, they are quite different to the SWC and other urban WSD operators. However, on the basis of one study dealing with just two overseas operators, it is not clear how large the gulf is between Australian best and international best practice is. In recognition of this, the NSW GPT has called for further benchmarking studies to be undertaken. On the basis of the limited evidence available, the Commission has examined the improvements needed to reach best Australian practice. Achieving international best practice will mean that the benefits from WSD reform will be higher, possibly even substantially higher, than those stated here.

A lack of data prevented the Commission from quantifying the benefits flowing allowing trade in water entitlements.

Labour productivity improvements

Over recent years, the industry has seen considerable improvements in labour productivity (Figure B7.1). For example, over the six years from 1987–88 to 1992–93, the MWC has increased its labour productivity by approximately 50 per cent. In 1987–88, it required 10 employees per gigalitre (1 000 megalitres) of output (combined volume of water supplied and sewerage treated). By 1992–93, it had fallen to five employees per gigalitre of output. Much of this improvement has arisen through more efficient work practices and contracting out. In 1993–94, the MWC increased its labour productivity further (Table B7.11). Other

urban WSD operators have similarly been improving productivity, although not quite as dramatically.

Despite these recent improvements, labour productivity in 1992–93 varied considerably between organisations (Table B7.11). In part, this may reflect institutional differences between organisations (eg. the water and sewerage operations of the Brisbane City Council may draw on personnel employed by other sections of the Council). Similarly, not all organisations have the same regulatory or environmental functions.

Despite these differences, it appears that there still exists considerable scope to improve labour productivity in most organisations. Institutional differences may prevent most organisations from achieving the labour productivity levels of the BCC.³ In recognition of this, the Commission has benchmarked the labour productivity improvements that each urban WSD operator needs to match those of the MWC (Table B7.12). These numbers indicate that a weighted-average 25 per cent improvement in labour productivity may be possible for all urban operators (Box B7.1).

The implications of the Hilmer-related reforms for rural WSD and irrigation is different. Instead of achieving international or Australian best practice, they are merely required to earn sufficient revenue to cover their operating and maintenance costs. Evans and Reynolds (1990) indicate that the non-metropolitan operators are achieving this, while irrigators are not. Subsequent data by ARMCANZ (1993) indicate that, while this finding still holds, substantial variations exist between States. Operators in NSW, Victoria, Queensland and Tasmania appear to be easily covering their operating costs, while those in Southern Australia are clearly failing to do so.⁴ In light of this, it appears that non-metropolitan operators have achieved the yardstick identified in the terms of reference. As irrigators have not, the Commission has adopted the capital productivity improvements that were identified in IC (1992c). These improvements are set out in Box B7.1.

³ As a local government body, the BCC may fall outside the Hilmer reform process. These reforms could be extended to cover the operations of Local Government.

⁴ On the provision of sewerage, Western Australia covers the cost of providing non-metropolitan sewerage, but fails to do so on the provision of water (ARMCANZ 1993, p. 75–77)

Table B7.11: Partial productivity indicators per gigalitre of water and sewerage, 1992/93

<i>Authority</i>	<i>State</i>	<i>Labour productivity^a</i>	<i>Capital productivity^b</i>
ACTEW	ACT	7.08	13 294
BCC	Qld	4.33	8 842
EWS	SA	8.20	14 703
HWC	NSW	8.11	15 225
MWC	Vic	5.14	14 414
SWC	NSW	7.99	13 543
WAWA ^c	WA	13.84	19 752

a Number of employees per gigalitre of water supplied and sewerage treated.

b Written down replacement cost of total assets per gigalitre of water supplied and sewerage treated.

c Includes non-metropolitan operations.

Source: Commission estimates based on SCNPMGTE (1994).

Table B7.12: Estimated productivity improvements needed to achieve Australian best practice in 1992/93 (per cent)

<i>Authority</i>	<i>State</i>	<i>Labour productivity^a</i>	<i>Capital productivity^b</i>
ACTEW	ACT	27	0
BCC ^c	Qld	0	0
EWS	SA	37	10
HWC	NSW	37	13
MWC	Vic	0	8
SWC	NSW	36	2
WAWA ^d	WA	63	32

a Based on achieving the same labour productivity as MWC.

b Based on achieving the same capital productivity as ACTEW.

c Owing to institutional differences that other authorities are unlikely to replicate, Brisbane has not been identified as best Australian operator, despite having the lowest measured capital and labour productivity measures.

d Includes non-metropolitan operations.

Source: Commission estimates based on SCNPMGTE (1994).

Capital productivity improvements

The discussion in Section B7.3 indicates that the WSD industry is an extremely large and capital intensive industry. Collectively, it employs more than \$80 billion in assets, with water and sewerage mains accounting for 65 per cent of

this. Any improvements in the way these assets are utilised could lead to considerable cost savings.

In terms of assessing capital productivity, a clear distinction needs to be made between the amount of capital employed (total capital) and the capital employed *per* unit of output (capital productivity). Increasing the price of water will lead to a reduction in the quantity of water demanded, and with it possibly the need of a new storage dam, but it will not lead to an improvement in capital productivity, relative to existing productivity. The key to improving capital productivity is to reduce the amount of capital needed to deliver a given level of output. In the WSD industry, this could be achieved through taking advantages of any economies of scale that may exist, especially in the treatment of sewerage, dam capacity and pipe size. Given that many of these assets have a considerable operating life, many in excess of 50 years (IC 1992, p. 296), it may take considerable time to achieve these productivity increases and this may only occur as assets are replaced.

Table B7.11 indicates that the amount of capital required to produce a given unit of output (combined water and sewerage) varies considerably between operators. In terms of capital productivity, the BCC is the most efficient operator requiring just over \$8 800 worth of capital per gegalitre. Institutional differences in the way the BCC operates may mean that other operators may not be capable of matching their level of capital productivity. In recognition of this, the Commission has benchmarked the productivity improvements required to match the next best capital operator — ACTEW who requires just under \$13 300 worth of capital per gegalitre. Table B7.12 shows the capital productivity improvements required if all urban operators were to match ACTEW. These numbers indicate that a weighted-average ten per cent improvement in capital productivity may be possible for all urban operators (Table B7.12).

For capital productivity improvements, the rationale for treating irrigators and rural WSD operators is the same as that described in the previous section. The ten per cent capital productivity improvement represents that identified in (IC 1992, p. 296). These improvements are set out in Box B7.1.

One difficulty associated with the use of productivity measures, whether partial or total, is incorporating quality differences. Neither water, nor sewerage, are homogeneous products. The level of treatment varies considerably between authorities and the degree of treatment is likely to affect the amount of capital used as capital costs are likely to increase with the level of treatment. For example, it requires additional capital expenditure to treat sewerage to a tertiary

standard than it does to treat it to a primary standard. In part this may reflect conscious decisions concerning the level of treatment or it may reflect the average age of the capital stock.

A range of water and sewerage quality indicators are contained in Table B7.13. They show that there is considerable difference between authorities concerning the degree of sewerage treatment. ACTEW has the highest treatment standards for both water and sewerage, with 100 per cent of its sewerage being treated to a tertiary standard. The HWC also has a relatively high level of tertiary treatment. The authorities with the highest levels of primary treatment (ie. the lowest quality) are the country operations of WAWA and the SWC. The implication of this is that the capital productivity improvements for the SWC and others to meet the processing standards of ACTEW will be considerably higher than those indicated in Table B7.12. The choice as to what level of treatment should be the appropriate level is an entirely different question.

Table B7.13: Indicators of output (service) quality, 1992

<i>Authority</i>	<i>State</i>	<i>Compliance with quality standards:</i>		<i>Sewerage treatment ratios</i>		
		<i>Water</i>	<i>Sewerage</i>	<i>Primary</i>	<i>Secondary</i>	<i>Tertiary</i>
ACTEW	ACT	99 ^a	100	0	0	100
BCC	Qld	np	90	10	90	0
EWS						
Country	SA	96	77	0	100	0
Metropolitan	SA	97	73	0	100	0
HWC	NSW	96	98	6	49	45
MWC	Vic	96	98	0	97	3
PAWA	NT	99	100	4	94	2
SWC	NSW	89	97	82	4	14
WAWA						
Country	WA	–	–	94	6	0
Metropolitan	WA	–	–	44	56	0
Total		95	88	–	–	–

– denotes not published at that level of aggregation.

np Not published.

a Health standards. ACTEW also has a 98 per cent compliance with aesthetic standards.

Source: SCNPMGTE (1994).

Increases in the real economic rate of return

As mentioned previously, the real ERR varies considerably between different types of operators (urban, rural, irrigation and bulk water supply) and between different authorities within a given area of operations (Table B7.9). Of the urban operators, all achieved positive rates of return in 1992–93 (Tables B7.8 and B7.9). The MWC earned the highest rate of return of 6.30 per cent and ACTEW the lowest at 0.28 per cent. The weighted–average economic rate of return across all urban operators for 1992–93 was 3.49 per cent (Box B7.1). This is marginally higher than the 3.47 per cent indicated by ARMCANZ (1993) for 1991–92.

For rural (non–metropolitan) operators, ARMCANZ (1993) found the economic rate of return in 1992–93 was approximately 1 per cent (combined water and sewerage), indicating that this sector has changed little since 1987–88 (Evans & Reynolds 1990). The ARMCANZ numbers indicate that slightly higher rates of return are earned on water than on sewerage, which is the converse of urban operators. As a caveat, the ARMCANZ numbers do not include services provided by local government, which are substantial in some States, especially in NSW and Victoria. In the absence of any data, the Commission has assumed that they are earning the same rate of return as those included in the ARMCANZ study.

Data on the performance of irrigators is patchy. ARMCANZ (1993, pp. 20–21) shows that substantial variation exists between States and between different types of irrigation services. For example, NSW earned an economic rate of return on its pumped irrigation systems of 2.62 per cent, while it incurred a loss of 0.21 per cent on its private diversion systems. Over the last four years, most operators appear to have been improving their performance, especially those in NSW. Although ARMCANZ does not calculate economic rates of return for gravity systems, they appear, from the ARMCANZ data, to be earning negative rates of return. The ARMCANZ publication does not provide average estimates for those categories that it calculates ERR for, and does not calculate ERR for gravity systems. The Commission has used the annual reports of the respective agencies to estimate a weighted–average across all operators. The Commission’s estimate of –2 per cent (Box B7.1) appears marginally lower than those indicated by ARMCANZ, but given the value of irrigation water in WSD, this is unlikely to influence the results significantly.

In assessing the increases in economic rates of return required for urban operators only, the Commission has assumed each urban operator will need to earn an ERR of 5 per cent (real). In 1992–93, only the MWC earned an ERR in excess of 5 per cent (real). This implies that the weighted–average increase in

ERR required for urban operators increases from 3.49 per cent to 5 per cent. As irrigators are required to cover operating costs, they were required to generate an ERR of zero. This implies that the ERR for the entire WSD industry has to increase from 2.01 per cent to 3.08 per cent (Box B7.1).

Changes to the operational structure of WSD operators

The various WSD operators currently employ very different operational structures. Most tend to have lower levels of debt, higher levels of owner's equity and lower levels of retained earnings than do most private firms. In this regard, the MWC is a notable exception. Competitive neutrality in terms of the financing structure requires the operators to adopt a 50 per cent debt to asset ratio, equal rates of return on debt and equity, 75 per cent dividend payout ratios and payments of ITEs to State governments. In calculating the changes needed, the Commission excluded the HWC because of its excessive dividend payment was atypical and the EWS as it had a negative level of earnings before interest and tax.

Elimination of existing cross-subsidies

The Commission was unable to obtain sufficient data to rigorously estimate the price changes required to eliminate cross-subsidies between different customer types (residential, commercial, industrial and other). Instead, it has used the data on average water charges presented in SCNPMGTE (1994). Table B7.5 sets out the average changes in water prices by customer group required to match the average price across all customer groups. The Commission has calculated a weighted-average price increase across all operators, assuming that the SWC, the MWC and the metropolitan operations of EWS are representative of all urban operators, and that the country operations of the EWS are representative of all rural operators.

As the provision of urban water tends to be subsidised from sewerage operations (see Table B7.6 for Sydney), these price increases do not reflect the impact of lower sewerage prices.

B8.4.3 Summary

The impact of the Hilmer-related reforms to the WSD sector are summarised in Box B7.1. The scenario outlined forms the basis of the direct impacts of reforms as summarised in Chapter A2.

Box B7.1: Summary of WSD scenario*Achieving best practice capital and labour usage*

	Urban	Rural	Irrigation	Total
Change per unit labour requirement (per cent)	-25	0	-10	-15
Change per unit capital requirement (per cent)	-10	0	-10	-7
Change per unit materials requirement (per cent)

Earning a positive rate of return

	Urban	Rural	Irrigation	Total
Real economic rate of return (per cent)				
Current	3.49	1.00	-2.00	2.01
After reforms	5.00	1.00	0.00	3.08

*Elimination of existing cross-subsidies**Change in WSD prices needed to eliminate cross-subsidisation:*

Residential	20.1	3.1	0.0	7.5
Commercial	-51.8	-39.0	0.0	-18.1
Industrial	-6.1	9.9	0.0	-2.1
Other (Government)	90.0	-1.0	0.0	31.5

Competitive neutrality arrangements

Target debt to assets ratio (per cent)	50
Target dividend payout ratio (per cent)	75
Target income tax rate (per cent)	33
Public ownership in the industry (per cent)	100

Source: Commission estimates

B8 ROAD TRANSPORT

This chapter explores the implications of Hilmer and related reforms for the road transport industry. It suggests possible outcomes in terms of operating costs and labour and capital productivity improvements. This discussion forms the basis for the direct impacts of reforms summarised in Chapter A2.

B8.1 Hilmer-related reforms

The terms of reference (Appendix D1) nominate reform of the road transport industry as a Hilmer related reform.

- (i) The main elements of this package of reform involve the introduction of uniform, national registration charges for heavy vehicles and vehicle regulations.
- (ii) Implementation requires the passage of adoptive complementary legislation by the States which will repeal, amend or modify a State's existing road transport regulation to avoid any conflict with Commonwealth legislation.
- (iii) The States would be required to abide by the decision of the Australian Transport Council as set out in the Heavy Vehicles and Light Vehicles agreement.

The Commission has evaluated those specific reforms recommended and currently being progressed by the NRTC (1992c and 1994).

Given the absence of public sector involvement in the road transport industry and the fact that the industry is already subject to the competitive conduct rules of the Trade Practices Act, the pure Hilmer reforms do not apply to this industry.

B8.2 Recent developments in road transport

In July 1991, the Commonwealth and all State and Territory governments signed the Heavy Vehicles Agreement to improve the safety and efficiency of road transport in Australia and reduce its administrative costs. This led to the establishment, in 1991, of the NRTC with the purpose of initiating and co-ordinating the development of uniform or consistent road transport laws relating to heavy vehicles over 4.5 tonnes gross mass. Subsequently in May 1992, the *National Road Transport*

Commission ACT 1991 was amended to extend aspects of the Heavy Vehicles Agreement to light vehicles.

As part of its responsibilities to develop uniform road transport laws, the NRTC has devised a series of modules dealing with different aspects of road transport regulation. The module relating to heavy vehicle charges was approved by the Ministerial Council in December 1993. Other modules currently being developed by the NRTC include:

- vehicle operations;
- dangerous goods by road;
- vehicle registration system;
- driver licensing system; and
- compliance and enforcement.

Proposed charges

In accordance with the NRTC Charter, the proposed reforms focus on those vehicles weighing in excess of 4.5 tonnes gross mass. For the purposes of its analysis, the Commission has adopted this definition by excluding, as far as possible given data limitations, vehicles weighing less than 4.5 tonnes.¹ However, some of the more aggregated forms of data used may include lighter vehicles.

The proposed heavy vehicle charges consist of two components:

- an annual fixed national registration charge; and
- a Road Use Charge.

The registration charges proposed by the NRTC are uniform across all States for a given vehicle type (NRTC 1992c, pp. 2–3). These charges are set out in the annex to this appendix (Tables B8.17 and B8.18), together with existing registration charges (Table B8.16). The proposed scheme does not include concessional arrangements for primary producers and other beneficiaries who receive them under existing registration schemes (NRTC 1992c, pp. 10–11).

The Road Use Charge merely identifies the number of cents of the existing diesel fuel excise that represents a charge for use of that vehicle on the

¹ This implies that most vehicles weighing less than 4.5 tonnes will face higher, in some cases significantly higher, registration charges than those vehicles covered by the NRTC proposals (see Tables B8.16 and B8.17), despite the fact that road damage increases with vehicle weight.

road. It does not affect the amount of the diesel fuel excise or Federal road funding. The NRTC has recommended that the Road Use Charge be set at 18 cents per kilometre (NRTC 1992c, p. 1).

Regulatory reforms

In addition to the uniform registration charges, the NRTC has proposed numerous regulatory reforms to the road transport industry. These reforms primarily cover:

- the operations of heavy vehicles;
- the introduction of a national licensing system for heavy vehicle drivers; and
- the introduction of a uniform system of charges for overweight and over-dimensioned vehicles.

These regulatory reforms are discussed in more detail in NRTC (1993b).

Legislative changes

The legislative changes agreed to require the States to pass complementary legislation to repeal, amend or modify existing road transport regulation in order to avoid any conflict with existing Commonwealth legislation.

Australian Transport Council

The Australian Transport Council (ATC) was formed in June 1993 to deal with transport issues, including those relating to road transport. Under the Hilmer related reforms, the States are required to abide by the decisions of the ATC as set out in the Heavy Vehicles and Light Vehicles Agreements. The purpose of these agreements are to improve the safety and efficiency of road transport in Australia and reduce its administrative costs

B8.3 The likely impacts of reform

The road transport industry plays a vital role in the economy. It principally deals with the movement of freight and, to a lesser extent, people. This typically involves the use of rigid and articulated trucks, buses and other forms of heavy vehicles using the road system. Tables

B8.1 to B8.3 provide an overview of the Australian road transport industry.²

Table B8.1: Type of vehicle by State of registration as at 30 September 1991 (number of vehicles)

<i>State/Territory</i>	<i>Rigid trucks</i>	<i>Articulated trucks</i>	<i>Other truck types</i>	<i>Buses^b</i>	<i>All vehicles^c</i>
NSW	98 072	14 931	2 834	9 924	125 761
Vic	84 017	14 994	3 471	11 362	113 844
Qld	59 637	8 965	3 666	8 251	80 519
SA	30 655	4 769	1 273	3 161	39 858
WA	40 289	5 516	1 548	5 772	53 125
Tas	11 993	1 727	1 025	1 827	16 572
NT	2 952	949	162	611	4 674
ACT	3 169	255	169	1 118	4 711
Australia	330 784	52 106	14 147	42 025	439 062

a Latest available Survey of Motor Vehicle Use.

b Including intra-urban buses.

c Excludes passenger vehicles, motor cycles and light commercial vehicles.

Source: ABS (1993a, p. 7).

The Senate Standing Committee on Transport, Communications and Infrastructure (1992, p. 1) found that the industry employs, both directly and indirectly, approximately 400 000 people and contributes about 8 per cent of gross domestic product. This, however, greatly exceeds the 2 to 5 per cent contribution indicated by ABS (1994a, pp. 33 & 37).³ Further, the Senate Standing Committee found that road transport accounts for approximately half of the transport component of national income.

² Tables B8.1 to B8.3 provide details on the basis of the State of registration and not vehicular movements within the State in question.

³ The difference arises depending on whether Gross Domestic Product (GDP) is calculated at factor cost or at market prices. Evaluated at factor cost and at market prices, road transport accounted for 2.3 and 5.1 per cent respectively of GDP in 1989-90.

Table B8.2: Total distance travelled by type of vehicle and State of registration, twelve months ended 30 September 1991 (million kilometres)

<i>State/Territory</i>	<i>Rigid trucks</i>	<i>Articulated trucks</i>	<i>Other truck types</i>	<i>Buses^b</i>	<i>All vehicles^c</i>
NSW	1 875.8	1 141.6	49.4	400.4	3 467
Vic	1 537.4	1 090.5	36.5	292.2	2 957
Qld	1 212.1	714.1	72.7	285.9	2 285
SA	473.4	381.7	18.6	148.0	1 022
WA	683.2	393.9	12.8	168.1	1 258
Tas	195.1	112.5	5.8	41.1	355
NT	61.5	98.2	2.4	22.8	185
ACT	75.2	26.6	2.7	42.0	147
Australia	6 113.6	3 959.1	200.9	1 400.7	11 674

a Latest available Survey of Motor Vehicle Use.

b Including intra-urban buses.

c Excludes passenger vehicles, motor cycles and light commercial vehicles.

Source: ABS (1993a, p. 9).

Table B8.3: Average distance travelled by type of vehicle and State of registration, twelve months ended 30 September 1991 (kilometres per annum)

<i>State/Territory</i>	<i>Rigid trucks</i>	<i>Articulated trucks</i>	<i>Other truck types</i>	<i>Buses^b</i>	<i>All vehicles^c</i>
NSW	19 127	76 458	17 431	40 347	27 570
Vic	18 299	72 729	10 516	25 717	25 971
Qld	20 325	79 654	19 831	34 650	28 376
SA	15 443	80 038	14 611	46 821	25 633
WA	16 957	71 410	8 269	29 123	23 680
Tas	16 268	65 142	5 659	22 496	21 392
NT	20 833	103 477	14 815	37 316	39 559
ACT	23 730	104 314	15 976	37 567	31 097
Australia	18 482	75 982	14 201	33 330	26 589

a Latest available Survey of Motor Vehicle Use.

b Including intra-urban buses.

c Excludes passenger vehicles, motor cycles and light commercial vehicles.

Source: Commission estimates based on ABS (1993a, pp. 7–9).

Uniform registration charges

Currently, heavy vehicle registration and licensing requirements vary considerably between States. Thus, the impact of moving to uniform national registration charges will not be the same across States. Operators of heavy vehicles in New South Wales and the Australian Capital Territory are likely to be the main beneficiaries as their existing registration charges exceed those proposed by the NRTC. While operators in most States will need to pay marginally more, those in Queensland and Western Australia are likely to bear the biggest increases. Overall, the substantial decline in revenue received in New South Wales is estimated to lead to a modest reduction in revenue from heavy vehicle registration nationwide. The increases in all States, except NSW and the ACT, largely reflects the abolition of existing concessional arrangements (NRTC 1992c, p. 8). Table B8.4 details the NRTC's estimate of the revenue impact from adopting uniform registration charges, while Table B8.5 indicates the relative numbers of vehicles affected. The NRTC's estimates assume that the composition of the national fleet does not change, both in terms of the numbers of each type of vehicle and the State of registration.

Table B8.4: Revenue implications from adopting the NRTC heavy vehicle registration charges by State of registration (\$1992–93 million)

<i>State/Territory</i>	<i>Current registration charges</i>	<i>Proposed NRTC registration charges</i>	<i>Difference</i>
NSW	150	94	-56
Vic	69	76	7
Qld	75	93	18
WA	35	45	10
SA	29	35	6
Tas	5	13	8
NT	1	2	1
ACT	3	1	-2
Australia	362	354	-8

Source: Derived from NRTC (1992b, Table G.12) and NRTC (1992c, Attachment A, p. 9).

Table B8.5: Impact from adopting the NRTC heavy vehicle registration charges by type of vehicle

<i>Type of vehicle</i>	<i>Number of vehicles:</i>		<i>Per cent of vehicles:</i>	
	<i>Decrease</i>	<i>Increase</i>	<i>Decrease</i>	<i>Increase</i>
Rigid trucks	202 948	89 176	69	31
Prime movers	19 018	37 653	34	66
Trailers	18 800	99 851	16	84
Buses ^a	14 433	10 188	59	41
All vehicles	255 199	236 868	52	48

a Including intra-urban buses.

Source: NRTC (1992c, Attachment A, Table 14).

However, the combination of registration and regulation changes may impact on the composition of the vehicle fleet. The proposed charging structure involves proportionately larger increases for heavier vehicles than it does for lighter vehicles. This may cause some operators to use lighter vehicles in preference to the heavier ones. Similarly, operators who previously registered their vehicles in another State, to take advantage of the differences in registration and licensing requirements, may no longer do so in response to the uniform charges. Like the NRTC, the Commission has not been able to ascertain the magnitude of the resulting changes, if any, on the composition of the vehicle fleet and the impacts that this will have on the road transport industry.

Registration is only one of a number of costs faced by road freight operators. Thoresen (1993) estimated the average operating costs for different types of freight vehicles (Table B8.6). He found that, on average, registration and insurance costs accounted for between 4 and 11 per cent of total operating costs.

Table B8.6: Estimated average freight vehicle operating costs by type of vehicle (1990-1 cents per kilometre)

<i>Type of vehicle</i>	<i>Fuel & oil</i>	<i>Tyres</i>	<i>Repairs & maint</i>	<i>Wages</i>	<i>Rego & insrnce</i>	<i>Capital costs</i>	<i>Total costs</i>
Light commercial vehicles	12.1	3.2	3.3	45.3	3.9	14.3	82.3
Rigid trucks:							
2 axle	17.4	4.7	9.1	82.7	7.0	29.7	150.6
3 axle	18.7	4.2	8.7	81.1	9.3	33.5	155.5
4 axle	27.5	9.0	23.0	109.0	14.4	25.6	209.6
Rigid trucks with trailers	26.3	7.6	12.3	65.5	11.9	30.1	154.0
Articulated trucks	30.5	6.7	13.4	59.0	8.3	27.3	145.2
Combination & over-dimensioned vehicles	42.2	14.9	17.3	47.8	8.3	30.3	161.0

Source: Thoresen (1993, p. 6).

Concessional arrangements

Unlike current registration schemes, the NRTC's proposals do not include concessional arrangements to primary producers or other parties. However in their submission to the draft report, the Commonwealth Treasury pointed out that:

The Heavy Vehicles Agreement allows the existing concessional registration arrangements (applicable in large part to primary producers' vehicles) to remain the province of the States/Territories. It is expected that these jurisdictions will continue to offer concessional registration fees to primary producers (compared to the NRTC registration charges). (Commonwealth Treasury Submission, p. 20)

In its deliberations, the NRTC considered the extension of concessional arrangements and concluded that:

It is impossible to resolve the issue of off-road use by primary producer vehicles due to a lack of data. (NRTC 1992c, Attachment B, p. 10)

For the purposes of modelling the NRTC reforms, the Commission has adopted the NRTC registration charges without any concessions. If existing concessions were to be applied in conjunction with the NRTC registration charges then it is likely that the overall impact of the registration charges would be less than that indicated here, with the primary beneficiaries being the agricultural industries. This would be accompanied by a corresponding reduction in revenue from vehicular registration charges accruing to the States.

Cost recovery

In the context of Hilmer, the degree to which the proposed charges recover the costs associated with maintaining the road system attributable to heavy vehicles imposes implications for other transport modes, most notably rail, under the competitive neutrality requirements. For example, if the level of cost recovery, after making allowances for community service obligations and externalities, are not similar for road and rail transport then one transport mode will enjoy an artificial competitive advantage over the other.

Under the terms of the Heavy Vehicles Agreement upon which the proposed charges are based (NRTC 1993a, p. 10), the NRTC is required, amongst other things, to:

- achieve full cost recovery, in aggregate, whilst minimising over-recovery from any vehicle class;
- achieve a reasonable balance between administrative simplicity, efficiency and equity; and
- improve pricing, leading to a better allocation of resources.

However, it is difficult to achieve full cost recovery in practice. As there are other uses of the road system apart from heavy vehicles, the cost of the road system needs to be allocated between users. Even amongst heavy vehicles, their impact varies with, amongst other factors, vehicular weight, length, axle configuration and load distribution. Some costs do vary in relation to these factors according to known engineering relationships (eg. road damage). However, many others do not (eg. road signs, earthworks, damage to the road system that would have occurred anyway through weathering). The NRTC defines those costs that can be allocated between different vehicle types on the basis of known engineering relationships as separable costs and those that cannot as non-separable costs (NRTC 1993a, p. 3). Table B8.7 details the relative magnitude of these costs for arterial roads and the NRTC's allocation between 'light' (here defined to be those weighing less than 4.5 tonnes gross mass) and 'heavy' vehicles (those weighing in excess of 4.5 tonnes gross mass). For a more detailed discussion of methodology employed by the NRTC, the reader is referred to NRTC (1992a, 1992b, 1992c and 1993b).

Table B8.7: Allocated expenditure on arterial roads (\$1992 million)

Type of vehicle	Separable				Non-separable VKT	Total
	VKT	PCU-km	ESA-km	AGM-km		
Light ^a	105 (4.6)	125 (5.5)	0 (-)	15 (0.6)	2 026 (89.2)	2 271 (100.0)
Heavy ^b	10 (1.2)	29 (3.3)	363 (40.4)	294 (32.7)	201 (22.4)	897 (100.0)
Total	116 (3.7)	154 (4.9)	363 (11.4)	308 (9.7)	2 228 (70.3)	3 168 (100.0)

Figures in parentheses are percentages.

VKT Denotes allocated on the basis of vehicle-kilometres travelled.

PCU-km Denotes allocated on the basis of passenger car unit-kilometres.

ESA-km Denotes allocated on the basis of equivalent standard axle-kilometres.

AGM-km Denotes allocated on the basis of average gross mass-kilometres.

a Vehicles weighing less than 4.5 tonnes gross mass.

b Vehicles weighing more than 4.5 tonnes gross mass.

Source: NRTC (1993a, p. 11).

Collectively, the registration and Road Use Charges proposed by the NRTC are designed to fully recover the actual expenditure on roads (Moore & Starrs 1993, p. 9). Their expenditure figures include all forms of actual road expenditure by the Commonwealth, State and Local Governments for the financial years 1988–89 and 1989–90 and the budgeted expenditure for 1990–91. It appears that the NRTC has taken all forms of road expenditure into account — servicing and operating expenses, road maintenance, bridge maintenance and rehabilitation, road rehabilitation, low cost safety and traffic works, minor extensions and improvements, major asset extensions and other miscellaneous activities (including corporate services) (NRTC 1992b, Table A.1). However, they do not include costs associated with vehicle registration, driver licensing and loan servicing costs (NRTC 1992b, Tables A.3 & A.4). These expenditures were then converted to 1992–93 dollars and then averaged to smooth the expenditure patterns.

The use of expenditures to achieve full cost recovery will provide an accurate reflection when:

- the road system is consistent with long-run equilibrium (ie expenditures, both in levels and composition (as the allocation process used by the NRTC is not the same for different expenditure

types) reflect the current costs associated with maintaining the road system); and

- there is efficient allocation of resources.

Following discussions with the NRTC, it is not clear whether the first of these conditions actually holds. They are currently undertaking further research on the issue of cost recovery. With regard to the second point, the entire Hilmer reform process is partly about promoting more efficient resource allocation.

None of the NRTC's publications relating to the proposed heavy vehicle charges (1992a, 1992b, 1992c and 1993a) provide a detailed costing of all revenue and expenditure items to support their claim of full cost recovery. Different sections of these reports indicate that they have taken most, if not all, factors into account. In the absence of evidence to the contrary, the Commission has accepted the NRTC's claim that the proposed charges recover the full costs attributable to road transport.

Excess charges

In addition to the registration charges, the NRTC has proposed permit fees for overweight and over-dimensioned vehicles. The fees would be levied where the Gross Combination Mass of a vehicle exceeds 125 tonnes and would be set by the relevant jurisdictions, in negotiation with road users, to take into account road wear and other costs incurred (NRTC 1992c, p. 3).

As far as the Commission can ascertain, the NRTC has not assessed the likely impact these charges will have. Data restrictions have prevented the Commission from assessing their likely impact.

Vehicle regulations

Uniform national vehicle regulations will entail numerous regulatory changes. The NRTC claims that the majority of these standards, as set out in the Heavy Vehicles Agreement, will involve little or no change to current requirements (NRTC 1993b, Part B, p. 4). Fourteen of the standards have been identified as having some potential to require modification of existing vehicles. These changes are spelt out in more detail in NRTC (1993b, Part B, pp. 4–18 and Appendices A and C). Overall, the NRTC claims that the number of vehicles affected is small.

However, in relation to these reforms, the NRTC states that:

While the savings and costs identified for each standard have been considered difficult to quantify or negligible for each item, the cumulative effect of the changes to standards may not be insignificant. (NRTC 1993b, Part B, p. 5)

The NRTC identified that the savings arise from reductions in administration costs and greater operational efficiency in the road transport industry. Trucking operators will no longer need to meet different standards between States. This will give rise to ‘seamless trucking operations’, enabling inter-state operators to function more efficiently. Longer maximum allowable vehicle lengths will increase vehicular load capacity and enable more freight to be carried per trip. Collectively, these reforms are likely to enhance the operational efficiency of the road transport industry. However, there may be some loss in efficiency associated with compliance with certain of the proposed standards (eg. removal of exemptions on speed limiting).

Four of the proposed standards have been identified as involving significant impacts. They are:

- the installation of anti-lock braking systems on B-Doubles;
- the mandatory use of vehicle monitoring devices;
- the removal of some exemptions for speed limiting; and
- modifications to the maximum allowable vehicle length.

The estimated costs associated with the adoption of the first three of these standards are shown in Table B8.8. Based on this information, coupled with estimates on the number of crashes that would have been averted, the NRTC concluded that the installation of anti-lock braking systems on B-Doubles and the mandatory use of vehicle monitoring devices were unlikely to be warranted. However, they found that the removal of the exemptions on speed limiting to be justified.

The NRTC estimated that the proposed increases in vehicle lengths would result in benefits of approximately \$70 million per annum (NRTC 1993b, Part B, pp. 6–7). These benefits flow from increased productivity and lower operating costs and are shown in Table B8.9.

Table B8.8: Summary analysis of significant standards (\$1992 93 million)

<i>Vehicle standard</i>	<i>Present value of total net costs</i>	<i>Annualised value of total net costs</i>
Installation of anti-lock braking system on B-Doubles	19	2
Mandatory use of vehicle monitoring devices	744	72
Removal of exemptions on speed limiting:		
Farm vehicles	0.1	–
Travelling less than 30 000 km pa	1.9	0.2
Travelling with in 80 km of base	4.1	0.4
NT vehicles	0.2	–

– denotes zero or rounded to zero.

Source: NRTC (1993b, Part B, p. 6).

Table B8.9: Summary analysis of proposed changes to vehicle lengths (\$199293 million)

<i>Type of vehicle</i>	<i>Present value of benefits</i>	<i>Annualised benefit</i>
Rigid trucks	90 ^a	10
Articulated trucks:		
Prime movers	120 ^a	10
Semi-trailers	520 ^b	40
Conditional access buses	70 ^c	10

a Over 20 years.

b Over 25 years.

c Over 15 years.

Source: NRTC (1993b, Part B, p. 7).

Legislative changes

In relation to the heavy vehicle charges, the Commonwealth Government enacted the Road Transport Charges (Australian Capital Territory) Act in May 1993 and will come into effect in the ACT from 1 July 1995 (Hurlstone 1994, pt. 56). These regulations were subsequently approved by the Ministerial Council in December 1993. Adopting legislation is still to be passed by the States and the Northern Territory (NRTC 1994, p. 16).

With regard to vehicle operations, the Road Transport Reform (Vehicles and Traffic) Act was passed in September 1993. Of the several sets of

regulations passed, the Ministerial Council has approved those relating to Heavy Vehicle Standards and Mass and Loading. The NRTC envisages that much of the remaining work will be completed by the end of 1995 (Commonwealth Treasury Submission, p. 19). The Traffic Regulations are unlikely to be ready for consideration by the Ministerial Council until mid 1995.

Most of the remaining modules are still being drafted, before being presented to the Ministerial Council for consideration. The Dangerous Goods Bill was introduced into parliament in December 1994.

The legislation covering light vehicles is being incorporated, as far as possible, into the modules as they are being developed.

In terms of the progress of these reforms, the NRTC notes that:

... the legislative timetable remains ambitious if one considers the time elapsed and the achievements to date. As noted above, some jurisdictions have raised concerns with the modular approach because of expected difficulties in their Parliaments. The method of achieving the national road transport law remains under continuing review. (NRTC 1994, p. 17)

It should be noted that State and Territory agencies have expressed to NRTC their preference for not phasing-in the implementation of the Charging Schedule.

Flow on effects

While most industries use road transport, some industries stand to gain or lose significantly more from these reforms than do others. In most cases, those industries that are most reliant on road transport will feel the greatest impact. Table B8.10 lists the share of total costs in key industries accounted for by road freight costs. The most significant users of road freight transport are the following industries: non-metallic mineral products, construction, wood and wood products, mining, agriculture and numerous food related industries. These industries are likely to benefit or lose most from these reforms.

In addition, the impact of these reforms will depend on the mix of vehicles used in transportation and the pattern of vehicle usage between States. Those industries using heavier vehicles will tend to face proportionately higher costs, while those using lighter vehicles will face lower costs. Similarly, the impact on each commodity will vary depending on the composition of vehicles used to carry them. Table B8.11 shows the composition of vehicles used to carry different types of commodities.

Thus, the actual impacts will not be as simplistic as those present in Table B8.10.

Table B8.10: Road freight costs as a proportion of total industry costs, 19890 (per cent)

<i>Industry</i>	<i>Share</i>	<i>Industry</i>	<i>Share</i>
Agriculture	2.02	Basic metals	1.29
Forestry, fishing & hunting	1.23	Fabricated metal products	1.15
Mining	2.37	Transport equipment	0.69
Meat and milk	4.41	Machinery	0.54
Food products	2.58	Miscellaneous manufacturing	1.08
Beverages and tobacco	2.67	Electricity, gas & water	0.41
Textiles	1.39	Construction	3.15
Clothing and footwear	1.27	Wholesale & retail trade	0.44
Wood and wood products	3.03	Transport & communications	0.64
Paper and printing	1.80	Finance & business services	0.22
Chemicals	1.74	Public administration & defence	1.22
Petroleum and coal products	1.22	Community services	0.78
Non-metallic minerals products	7.18	Recreation & other services	1.22

Source: ABS (1994a, Table 2, pp. 21–37).

B8.4 Reforms considered by the Commission

The impact of the road transport reforms will vary between States because of differences in:

- current registration charges;
- fleet composition;
- types of commodities transported by road; and
- current vehicle regulations.

In evaluating the possible effect of these reforms, the Commission has taken many of these differences into account. It considers that the reforms are likely to impact on two key areas of road transport operations:

- the cost of operating heavy vehicles (trucks and buses); and
- productivity.

Within HILORANI, there are two industries and commodities covering road transport — road freight transport and road passenger transport. In order to ascertain the effects of the Hilmer-related reforms, it is necessary to look at their impacts on these industries separately.

Table B8.11: Usage of road freight transport to carry selected commodities, 1990/91 (per cent)

<i>Commodity</i>	<i>Light commercial vehicle</i>	<i>Rigid truck</i>	<i>Articulated truck</i>
Animal feed (including hay, chaff, fodder etc) and animal foods prepared or manufactured	7.4	18.8	73.7
Cement, concrete and concrete products	1.6	30.3	68.1
Coal	0.3	7.3	92.4
Crude fertiliser manures	1.7	40.2	58.1
Fertilisers, manufactured	2.6	18.5	78.9
Fresh fruit and vegetables	1.5	12.1	86.4
General freight	1.9	12.4	85.7
Household effects	5.1	36.4	58.4
Iron ore and concentrates	2.8	20.6	76.6
Livestock	2.1	18.4	79.6
Logs and sawn timber	2.5	13.0	84.6
Machinery, equipment, apparatus and appliances	8.0	21.0	71.0
Metals and metal manufactures	3.0	14.0	83.0
Motor cars	1.1	4.7	94.2
Other cereal grains, unmilled	0.6	9.3	90.1
Other chemicals and related products	6.3	22.2	71.5
Other food & preparations	1.8	23.2	75.0
Other fuel products	2.2	27.1	70.8
Other manufactured goods	8.4	26.7	64.9
Petroleum, petroleum products and related materials	1.9	16.1	82.0
Sand, stone, gravel and earth	0.6	56.4	43.0
Wheat, unmilled	0.3	14.0	85.7
Wool	1.7	13.9	84.4

Based on the number of tonne-kilometres travelled.

Source: ABS (1993a).

B8.4.1 The impact of these reforms on operating costs

The proposed changes to registration charges are likely to be the primary cause for variations in the operating costs of the road transport industry. For the purposes of modelling these reforms, the Commission has estimated the impact of these changes in registration charges only. It has not included changes in other operating costs (eg. the introduction of ABS braking) as they are likely, if implemented, to involve a once-off cost to operators and they are unlikely to result in significant revenue implications.

In estimating the possible changes in operating costs, the Commission has incorporated significant State information to reflect the State differences described above. However, to overcome certain data limitations, some simplifying assumptions are required. These primarily relate to the fact that the Commission was unable to find estimates of current operating costs for selected vehicle-type on a State-basis and that some of the data, most notably that on the number of tonne kilometres by commodity, was aggregated by major vehicle class. Given the detailed nature of some of this data and the considerable volume of data overall, the following description details the framework used by the Commission.

Road freight

Current operating costs are likely to vary between States, in line with variations in registration and other charges (eg. Table B8.16). However, as described earlier, the Commission was unable to find estimates of operating costs by vehicle-type on a State-basis. To overcome this, the Commission has calculated weighted-averages for each State based on the 1990–91 national estimates published by Thoresen (1993, p.6 and reproduced in Table B8.6) for each State. These estimates were then converted into 1992–93 prices. The changes in registration and operating costs were, however, calculated separately for each vehicle type within each State and Territory. Where these numbers have been aggregated into broad classes, the Commission has taken into account the number of vehicles involved and the number of kilometres travelled, as a proxy for the share of total industry costs accounted for by each vehicle type (Tables B8.1 and B8.2 present this data in an aggregated form).

The resulting changes in operating costs (Table B8.12) for each broad vehicle type (light commercial, rigid and articulated) were then translated into the effect on the cost of carrying each commodity within HILORANI. This involved two steps. Firstly, these changes in operating costs were translated into commodities using State data on the number of tonne-kilometres that each broad commodity was transported and broad vehicle category. This data has been aggregated up in Table B8.11. The advantage of this approach is that it enables some of the compositional differences in the way certain commodities are transported between States and fleet composition to be captured. The disadvantage with this approach is that it does not incorporate compositional differences within these broad categories, which may be important for the transportation of some commodities.

To illustrate these State differences, consider two commodities transported by heavy vehicles — coal and wheat. Under these reforms the cost of

registering heavy vehicles increases in most States. A priori, this may be expected to lead to an increase in the cost of transporting these commodities. However, this may not necessarily hold. Trucks registered in NSW carry 78 per cent of all coal transported by road. Given the high level of existing registration charges currently applying in NSW, most trucks registered in that State are likely to face a reduction in operating costs after the implementation of the NRTC charges, including very heavy vehicles. Thus, the weighted-average cost of transporting coal may well decline as a result of these reforms. On the other hand, the cost of transporting wheat may well increase, despite a fall in registration costs in NSW. NSW accounts for only 25 per cent of all wheat transported by road. The effect of the reduction in NSW may be out-weighted by the increases that occur in other States, such as Western Australia.

Table B8.13 contains estimates of the possible effects of adopting these reforms upon the cost of transporting selected commodities by road.

The second, and final, stage of this translation process was to map these broad commodity categories into HILORANI commodities. These changes were then applied to the margin commodity road freight transport.

To capture the impact of these reforms on industries using their own vehicles to transport goods, the Commission used the 'own use' share of business kilometres travelled by major vehicle class (ABS 1990a, p. 18) to split the number of kilometres travelled by 'own use' vehicles.⁴ Using Thoresen's estimates of operating costs per kilometre weighted-up into broad truck type, and the changes in operating costs resulting from the proposed NRTC charges, this gives an estimate of the change in operating costs of 'own use' vehicles. The resulting percentage increases in operating costs were applied to the intermediate usage (non-margin) and household consumption of road freight transport.

⁴ The 1988 Survey of Motor Vehicle Use (ABS 1990a) was used in preference to the 1991 survey (ABS 1993a) as it published details on the proportion of business-kilometres travelled for own use purposes. Ideally, the Commission would have liked to included a State dimension as well.

Table B8.12: Estimated impact on road freight operating costs of Hilmer-related reforms (1992-93 prices)

<i>Type of vehicle</i>	<i>NSW</i>	<i>Vic</i>	<i>Qld</i>	<i>SA</i>	<i>WA</i>	<i>Tas</i>	<i>NT</i>	<i>ACT</i>
<i>Average operating costs by broad vehicle type (cents per kilometre):</i> ^a								
Light commercial vehicle	91.7	91.7	91.7	91.7	91.7	91.7	91.7	91.7
Rigid truck	181.3	180.0	186.5	188.6	183.4	189.0	180.5	185.2
Articulated truck	176.1	170.8	177.2	177.9	178.5	170.1	177.3	173.6
<i>Change in average operating costs by broad vehicle type (per cent):</i>								
Light commercial vehicle	0	0	0	0	0	0	0	0
Rigid truck	-1.57	-0.76	-1.34	-1.00	-0.63	0.20	0.63	-4.12
Articulated truck	-0.93	-0.02	0.55	0.37	0.80	1.62	2.78	-0.35

a Based on Thoresen (1993, p. 6) converted into 1992-93 prices. State differences reflect differences in fleet composition.

Source: Commission estimates.

Table B8.13: Estimated change in freight carrying costs flowing from uniform registration charges, by selected commodities (per cent)

<i>Commodity</i>	<i>Change</i>	<i>Commodity</i>	<i>Change</i>
Animal feed	-0.13	Metals	-0.20
Cement	-0.21	Motor cars	-0.02
Clay, etc	-0.27	Other grains	-0.23
Coal	-0.65	Other chemicals	0.01
Crude fertiliser manures	-0.09	Other crude	0.15
Manufactured fertilisers.	-0.17	Other food	-0.18
Fruit/veg	-0.02	Other fuel	-0.09
Garbage	-0.95	Other manufacturing	-0.27
General freight	0.08	Other transport	0.03
Household effects	-0.05	Petroleum	-0.06
Iron ore	0.29	Sand	-0.54
Livestock	0.05	Water	-0.34
Log/timber	0.00	Wheat	0.36
Machinery, equipment apparatus and appliances	-0.05	Wool	-0.23

Source: Commission estimates.

Road passenger transport

Data relating to the operating costs of road passenger transport are limited. As a basis for its estimates, the Commission drew on the work done by Swan Consultants (1994, p. 34) for 2 axle, 6 tyre buses (Table B8.14). The Commission adjusted some of these estimates as some of them, most notably wages, appeared excessive. Most of these adjustments were minor (based on the estimates of Thoresen (1993) for trucks), with the exception of estimated wage costs. In calculating its wage cost per kilometre for 2–axle buses, the Commission assumed that each bus travels 40 000 kilometres per annum and requires 2 employees whose total employment cost (wages plus associated expenses) is \$36 000 per annum.⁵ (The corresponding figures for 3–axle buses were 2.5 employees and 100 000 kilometres per annum with the same cost per employee.) Estimates of the operating costs for other types of buses were then based on this estimate. It was assumed that lighter buses had lower operating costs and heavier buses higher costs. The changes in registration costs were calculated on the basis of current and proposed charges by type of bus and the State of registration. The changes in vehicular operating costs were then weighted to calculate an aggregated change in operating costs for buses. This, in turn, was scaled down to reflect the share of buses in road transport (Table B8.15). Following discussions with the ABS, the Commission assumed that trams, at most, accounted for \$80 million worth of production of the road passenger transport industry. It was assumed that these reductions in costs were then passed on to all users of road passenger transport (intermediate usage, household consumption and other usage).

⁵ The Commission has included a higher figure for the average annual distance travelled by 2 axle buses than that indicated by the ABS (1993a) as the ABS definition of buses includes mini–buses not covered by the NRTC proposals.

Table B8.14: Estimated bus operating costs (1990 cents per kilometre)

<i>Input</i>	<i>Swan</i>	<i>Industry Commission</i>		
	<i>Consultants</i>	<i>2 axle 6 tyre</i>	<i>2 axle 6 tyre</i>	<i>3 axle</i>
		<i>weighing < 10 tonnes</i>	<i>weighing ≥ 10 tonnes</i>	
Fuel	19.10	18.10	19.10	20.00
Oil	0.41	0.40	0.41	0.41
Tyres	9.43	4.00	4.20	4.50
Maintenance	9.85	9.48	9.85	10.00
Depreciation	19.02	18.00	19.02	20.00
Wages ^a	276.03	180.00	180.00	90.00
Registration & insurance	13.35	9.20	9.30	5.80
Total	347.19	239.18	241.88	150.71

These numbers were subsequently converted to 1992–93 dollars.

a Commission wage estimates are based on the following assumptions:

2 axle buses – 2 employees per bus each being paid \$36 000 per annum and that the bus travels 40 000 kilometres per annum.

3 axle buses – 2.5 employees per bus each being paid \$36 000 per annum and that the bus travels 100 000 kilometres per annum.

Sources: Swan Consultants (1994, p. 34) and Commission estimates based on Swan Consultants (1994) and Thoresen (1993).

Table B8.15: Contribution to road transport production (1989 90)

	<i>Value of production</i>	<i>Share</i>
	(\$ million)	(per cent)
Buses	1 491.1	61.6
Tramways ^a	80.0	3.3
Taxis and hire cars	848.0	35.1
Road passenger transport	2 419.1	100.0

a Estimate based on communication with the ABS.

Source: ABS (1994b, p. 41).

B8.4.2 Productivity increases

In an attempt to incorporate some of the benefits from the regulatory changes, the Commission has considered a notional 5 per cent improvement in capital and labour productivity. These estimates are more conservative than the 10 per cent productivity improvement in the use of all inputs considered by Swan Consultants (1992, p. 14).

B8.4.3 Summary

The impact of the Hilmer-related reforms to the road transport sector are summarised in Box B8.1. These expected impacts form the basis for direct impacts of reforms summarised in Chapter A2.

Box B8.1: Summary of road transport scenario

Uniform heavy vehicle registration charges

Change in the cost of road freight transport used:	
for margin usage in production (per cent)	various, ranging by commodity from -0.65 to +0.36 (based on mapping Table B8.13 into HILORANI industries)
for non-margin usage in production (per cent)	-0.48
by households (per cent)	-0.48
Effect on the cost of road passenger transport used:	
in production (per cent)	-0.15
by households (per cent)	-0.15
for other purposes (Government) (per cent)	-0.15
<i>Regulatory changes:</i>	
Change in capital requirement (per cent)	-5.00
Change in labour requirement (per cent)	-5.00

Source: Commission estimates

Annex

Table B8.16: Average registration charges by State and vehicle type (\$1992^a per annum)^b

Type of vehicle	NSW	Vic	Qld	SA	WA	Tas	NT	ACT
<i>Rigid trucks:</i>								
2 axle:								
2.7–3.5 tonnes	890	400	590	570	390	270	130	1 170
3.5–4.5 tonnes	890	400	590	570	390	270	130	1 170
4.5–7.0 tonnes	890	400	590	570	390	270	130	1 170
7.0–12.0 tonnes	890	400	590	570	390	270	130	1 170
over 12 tonnes	1 480	1 040	1 210	570	650	270	190	1 170
3 axle:								
up to 18 tonnes	1 520	1 200	1 230	1 300	740	590	160	2 430
over 18 tonnes	2 220	1 500	1 940	1 300	1 820	590	240	2 430
4 axle:								
up to 25 tonnes	1 730	1 600	1 730	1 230	630	780	200	1 740
over 25 tonnes	2 770	2 890	2 360	1 230	2 190	780	240	1 740
5 axle (including truck & trailer)	2 490	1 610	1 745	1 245	1 895	1 070	680	3 560
<i>Articulated trucks:</i>								
3 axle	2 730	1 480	1 860	2 680	1 650	780	210	3 360
4 axle	3 130	1 480	1 850	2 680	1 850	730	270	1 600
5 axle	4 410	2 400	3 100	2 980	2 730	1 270	360	4 090
6 axle	5 870	4 370	3 280	2 980	2 880	1 270	430	4 090
8 axle B Double	10 310	5 570	3 360	4 325	3 680		530	6 340
Double road train	9 380	12 600	3 630	4 865	4 260		680	
Triple road train	9 240		3 980	6 750	5 630		930	
<i>Buses:</i>								
2 axle								
2.7–3.5 tonnes	960	270	460	410	540	70	70	1 310
3.5–5.0 tonnes	960	270	460	410	540	70	70	1 310
5.0–10.0 tonnes	960	270	460	410	540	70	70	1 310
over 10.0 tonnes	960	420	920	410	680	120	120	1 310
3 axle:								
Rigid	1 910	840	1 210	490	910	120	90	1 770
Articulated	2 230	20	1 210	490	590	120	90	1 770

Blank cells denote not applicable.

a Excludes vehicles registered at concessional rates.

b Where registration charges are provided for sub-category totals (eg. 2-axle rigid trucks in South Australia), it has been assumed that these charges apply to all vehicles within the sub-category irrespective of weight.

Source: NRTC (1992a, p. 24 & Table G.5) and Swan Consultants (1994, p. 35).

Proposed NRTC registration charges

Table B8.17: **Charging schedule for freight and passenger carrying vehicles, annual fixed charges (\$1992 per annum)**

<i>Vehicle type</i>	<i>1-axle</i>	<i>2-axle</i>	<i>3-axle</i>	<i>4-axle</i>	<i>5-axle</i>
<i>Rigid ruck:</i>					
Light ^a		300	600	900	
Heavy		500	800	2 000	
SCV		600	2 100		
MCV			4 000	4 250	
LCV			5 250 ^b		
<i>Prime mover:</i>					
SCV		800	3 250	4 250	
MCV (B-Double)		3 250	4 250	4 500	
LCV (Double Road Train)			4 750		
LCV (triple Road Train)			5 250	5 500	
<i>Trailer:</i>					
Semi	250	500	750		
Pig	250	500	750		
Dog		500	750	1 000	1 250
Dolly	250	500			
<i>Buses:</i>					
Light ^c		300			
Heavy		500	1 250		
Articulated			500		

Blank cells denote not applicable.

SCV Short combination vehicle.

MCV Medium combination vehicle.

LCV Long combination vehicle.

a Vehicles weighing between 4.5 tonnes gross mass and 12 tonnes for 2-axle vehicles, 16.5 tonnes for 3-axle vehicles and 20 tonnes for 4-axle vehicles.

b Same charge would apply to rigid trucks with more than 3 axles and used in LCV.

c Vehicles weighing between 4.5 tonnes gross mass and 12 tonnes for 2-axle vehicles.

Source: NRTC (1992c, p. 2).

Table B8.18: Charging schedule for special purpose vehicles and low loaders (\$ 19923 per annum)

<i>Category</i>	<i>Proposed charge</i>
1 Plant which does not exceed present statutory axle loads	No charge
2 Plant which exceeds present statutory axle loads	\$250 plus \$250 per axle in excess of 2
3 Vehicles designed to carry indivisible loads (low loaders)	Prime mover as per short combination vehicles Trailer charges of \$250 per axle

Special purpose vehicles include non-freight carrying vehicles such as road plant, forklifts and cranes, while low loaders carry indivisible items.

Source: NRTC (1992c, p. 3).

B9 MUTUAL RECOGNITION AND REVIEW OF PARTIALLY REGISTERED OCCUPATIONS

B9.1 Hilmer-related reforms

The terms of reference (Appendix D1) nominate mutual recognition and the review of partially-registered occupations as Hilmer-related reforms.

The objective of the mutual recognition scheme is to assist in creating a single national market for goods and services in Australia. Mutual recognition does not require regulations to be uniform throughout Australia but rather requires jurisdictions to accept the standards, regulatory decisions and enforcement adjudications made by other jurisdictions. By helping to break down geographic and regulatory barriers, and thereby enhance competition, mutual recognition shares many of the characteristics of the Hilmer reform proposals.

B9.2 Recent developments

The formal mechanism for implementing the scheme is the *Mutual Recognition Act 1992*. This is a Commonwealth Act and there is corresponding enabling legislation in each State (except Western Australia where the government has indicated an intention to legislate) and Territory.

With regard to *goods*, the scheme allows goods complying with regulations in the jurisdiction of manufacture or importation to be sold throughout Australia without the need to comply with further regulatory requirements of other jurisdictions. There are some exemptions, mainly on the grounds of protecting public health and safety, and the environment.

With regard to *services* and *occupations*, mutual recognition allows those meeting the regulatory requirements of one jurisdiction to be entitled to provide services and/or practice in any other jurisdiction.

However, mutual recognition can be applied to occupations only in cases where registration is a pre-requisite to practice in all jurisdictions. In cases where occupations are registered only in some jurisdictions and not in others — referred to as ‘partially registered’ — mutual recognition cannot apply. This is so because persons who practise in a jurisdiction where the occupation

is not registered are still required to register if they are to practise in a jurisdiction that has regulatory requirements in place. Thus, occupations need to be either fully registered in all jurisdictions, or not registered in any, before mutual recognition can be applied.

To facilitate that process, the Vocational Education, Employment and Training Committee (VEETAC) Working Party on Mutual Recognition has examined occupations that are partially registered. It has made recommendations that many be deregistered, and that would enhance the mobility of practitioners across jurisdictional boundaries.

Finally on the scope of mutual recognition, there have been discussions between Australian and New Zealand representatives with a view to reaching a Trans-Tasman mutual recognition agreement. That has the potential to further enhance the freedom of trade in goods, services and investment flows that has been developing between Australia and New Zealand since the commencement of the CER agreement in 1983.

B9.3 The likely impacts of reforms

What has happened to date is a useful starting point in assessing the potential gains from these reforms.

With regard to goods, an example of the consequences of mutual recognition is that consumers in NSW may now purchase non-standard half loaves of bread which are produced in Queensland. And NSW egg producers claim they have captured 20 per cent of Queensland's egg market as a result of egg deregulation in NSW and the operation of mutual recognition.¹

There is an important limitation to the gains that might emerge from mutual recognition — the legislation allows only the *sale* of goods, not necessarily their *use*. Thus, for example, certain equipment might be legally sold and used in State A and accordingly can be sold in State B, but there may be specific regulations that prevent its use in State B; in such a case, mutual recognition can achieve little. This impediment, together with a very limited appreciation by regulators or the business sector of the nature of mutual recognition, may help explain why the gains in freeing up the goods markets appear to have been fairly limited to date.

¹ Roger Wilkins, speech given at the Center for Comparative Constitutional Studies: Mutual Recognition — a One Day Conference, University of Melbourne, 5 November 1993.

Nevertheless, mutual recognition does have some highly beneficial longer-term effects, in particular in that it will act as a disincentive to any jurisdiction tending to implement excessive or overly restrictive standards or regulations. If it does so, they will be rendered inoperative by the less demanding standards of other jurisdictions.

Compared with the goods market, there has been more substantial action in the labour market. For example, an indication of greater labour market mobility is that in the first six months of the scheme some 800 medical professionals, lawyers, builders and tradespeople from other jurisdictions registered in NSW as a result of mutual recognition.

VEETAC identified several hundred partially registered occupations. Many of these have been reviewed by Ministerial Councils; in the case of the Australian Health Ministers' Conference, it was decided that a wide range of health related occupations should be registered in all States. Of the 139 examined by VEETAC, it recommended retention of registration for only 18, all of which were relatively minor. Of the 121 occupations recommended for deregistration, the most substantial in terms of numbers of people employed were (in order) teachers, professional engineers, motor vehicle repair tradespersons, and real estate sales persons.

However, the Commission judges that the economic impact of deregistering teachers is likely to be relatively small. The requirement for teachers to register in some States before being allowed to take up a teaching position appears to have been mainly a low cost administrative requirement and not a significant impediment to the mobility of qualified staff. For professional engineers there is a requirement to register in Queensland, but that affects only a small proportion of the occupation nationally.

B9.4 Reforms considered by the Commission

The very nature of reforms prompted by mutual recognition is that they are broadly based and have very diffuse effects. Their importance probably lies in their contribution to further development of a national market in goods and services rather than the traditional fragmented State-based markets. Increased mobility between jurisdictions of both goods and services should result in an increase in competition and a reduction in costs, both in administering many sets of regulations and for business which must comply with disparate regulatory requirements. It also may provide an impetus for a speedier harmonisation of regulatory requirements across jurisdictions. Overall, these effects should increase the cost-competitiveness of Australian industries.

Similarly, the rationalisation of partially registered occupations should improve the mobility of skilled people between jurisdictions within Australia. While it is an important aspect of the implementation of mutual recognition, in an economy-wide context its direct impact is unlikely to be significant. The indirect benefits will be substantial — the rationalisation should, in conjunction with the development of national competency standards, help Australia establish an integrated national market in skilled occupations, thus improving economic efficiency with resultant gains for the community as a whole.

However, the nature of these reforms is such that it is not feasible to attempt simulations with the aim of quantifying the potential gains.

B10 PORT AUTHORITIES REFORM

This chapter explores the implications of Hilmer and related reforms on port authorities. It does so in the context of recent developments across the waterfront. It suggests possible outcomes of the implementation of reforms in terms of cost savings and financial obligations of public enterprises. The impact of reforms on the sector discussed in this Chapter form the basis for model experiments designed to evaluate the economy-wide and fiscal consequences of reforms. The direct impacts are summarised in Chapter A2 and the modelling experiments are summarised in Chapter A4.

B10.1 Hilmer and related reforms and port authorities

Hilmer and related reforms for port authorities, as stated in Attachment A of the terms of reference in Appendix D1, were to be specified by the individual State jurisdictions. While States have been quite helpful in providing details of proposed reforms in most areas, only Victoria and New South Wales provided detailed information of their current reform program. As a consequence, the majority of the related reforms for port authorities have had to be surmised by the Commission. All gains from past port reforms have been acknowledged and are not included in the benefits from Hilmer and related reforms.

Hilmer specific reforms will result in port authorities being exposed to greater competition in the provision of their services through competitive neutrality and the removal of TPC and PSA exemptions. Combining Hilmer specific reforms and the reforms of ports being undertaken by the States will result in:

- the removal of statutory monopolies with respect to the provision of services offered by port authorities;
- continuing corporatisation of port authorities;
- placing price structures under the surveillance of the PSA or its successor;
- placing port authorities under the Trade Practices Act; and
- imposing competitive neutrality on port authorities.

B10.2 Recent developments affecting port authorities

New South Wales

Maritime Services Board

The Maritime Services Board (MSB) is a statutory authority responsible for the management of the ports and waterways of New South Wales. Under the *Marine Administration Act 1989*, a head office and four subsidiary authorities were established. These are:

- MSB Hunter Ports Authority: Newcastle, Lord Howe Island;
- MSB Illawarra Ports Authority: Port Kembla;
- MSB Sydney Ports Authority: Sydney Harbour, Botany Bay; and
- MSB Waterways Authority.

The first three authorities are responsible for commercial port operations and the latter for recreational boating. Newcastle and Port Kembla are bulk handling ports, while Sydney comprises container operations at Botany Bay and general cargo at Sydney Harbour. The MSB Head Office is responsible for the regional ports of Yamba and Eden.

Box B10.1: Port authority models

Port authorities can be classified into various ‘models’, depending on the particular range of services and activities they carry out. The various classifications are:

- *Landlord model* — a port authority providing only core activities, such as channels, port promotion, navigation aides and information, and strategic planning of the ports.
- *Comprehensive model* — a port authority which undertakes a greater range of activities including cargo handling activities, and the management of industrial estates and airports.
- *Tool model* — provides common-user cargo handling facilities, such as cranes or bulk lifts, but does not itself operate them.

Source: IC (1993a).

The MSB had adopted a landlord model of operations to encourage the private sector involvement in providing port services. Private sector involvement has been steadily increasing since early 1990, and by June 1993, nearly

96 per cent of cargo through NSW ports was being handled through either leased or privately owned berths (MSB 1993).

The NSW Government has recently announced the abolition of the MSB, along with the corporatisation of the three subsidiary port authorities, which will operate as independent State-owned enterprises. The responsibilities of the MSB Waterways Authority will be undertaken by the new State Marine Authority. Marine safety legislation, currently governed by ten Acts of Parliament, will be condensed to a single Act. It is anticipated that legislation to enact these reforms will be passed in 1995.

Pricing

The MSB has introduced a more cost reflective pricing system for port services through the removal of cross-subsidisation. The system is designed to provide financial incentives that promote more efficient use of port facilities. To date, wharfage rates for import containers have fallen 34 per cent and export container charges have fallen 9 per cent (MSB 1993). Ship utility charges and oil inspection fees have been abolished (MSB 1994).

Victoria

Port of Melbourne Authority

The Port of Melbourne Authority (PMA) is a statutory body, operating under the *Port of Melbourne Authority Act 1958, 1988*. The PMA is empowered to regulate, manage, and improve the operations of the ports of Melbourne and Hastings, and certain portions of the Yarra and Maribyrnong rivers. The Port of Melbourne's operations consists of handling general cargo and containers. In contrast, the port of Hastings deals predominantly in bulk liquids. The Port of Melbourne is Victoria's largest port and has the highest container throughput in Australia with 44 per cent of Australia's overseas container trade passing through in 1992–93.

The Marine Act and Marine Regulations 1988 sets out the responsibilities of the PMA. These include the administration of associated ports; the maintenance and upgrading of navigational aids; oil pollution control in all Victorian coastal waters; and hydrographic surveying of Victorian ports. Other PMA activities include trade facilitation and the administration of the World Trade Centre.

In 1993 the PMA, along with the port authorities of Geelong and Portland, were declared Reorganising Bodies under the *State Owned Enterprise Act 1992*.

In January 1995, the Victorian government released its reform program for Victorian ports, continuing the reform process of the past decade. The key reforms include:

- the establishment of a new statutory authority to act as the landlord of the Port of Melbourne;
- the sale of onshore port assets in Geelong, Portland and Hastings — the underwater assets, principally the channels, will be retained as public property;
- the establishment of a new statutory authority responsible for the Melbourne, Geelong and Port Phillip channels, minimising the risk of cross-subsidisation between onshore and channel activities. Its activities will include harbour control, dredging and the provision of navigational aids; and
- establishing an economic regulatory regime to ensure that market power is not abused. The regulator's role will include periodic monitoring, setting of maximum pricing levels, investigation of pricing complaints, dealing with the abuses of market power and facilitation of third party access to the ports (Department of Treasury, 1995).

Sole or predominant users of certain berths will be offered the first right of refusal to purchase 'their' land or berth, subject to a reserve price. The disposal of dual-user berths will be considered on a case-by-case basis. Assets and activities not required for core port operations will be separated and sold or divested, for example, the World Trade Centre. However, non-port related land such as beaches and public parklands will remain in public ownership and be transferred to the relevant Government agency.

The 14 non-commercial ports along the Victorian coastline will be dealt with on a case-by-case basis with management responsibilities being transferred to an appropriate operator.

Queensland

Gladstone Port Authority

The Gladstone Port Authority (GPA) was corporatised on 30 June 1994. The GPA is principally an export-oriented bulk handling port given that 75 per cent of total throughput is exports, directed mainly to Japan and Europe.

GPA has not adopted the landlord model. The GPA's principal activities include coal and grain handling facilities, while its non-core activities involve stevedoring, equipment, storage, real estate, depot and common user facilities. In addition, land reclamation has been actively pursued as part of reforms.

Port of Brisbane

The Port of Brisbane Authority (PBA) was established in 1976, coinciding with the development of the Fisherman Island Harbour. The PBA manages Australia's third largest and most rapidly growing capital city port. The PBA was corporatised and granted full commercial autonomy on 30 June 1994.

The PBA, operating under a landlord model, has been actively involved in the reclamation of land, the creation of channels and the provision of buildings, wharves and other capital infrastructure. The PBA is not engaged in the provision of pilotage, tugging and stevedoring services, which are provided by private operators. However, it does provide non-core services which are not cross-subsidised nor classified as community service obligations (CSOs).

The port primarily handles bulk cargo (coal, grain, oil and cement) and general cargo (meat, cotton and manufactured goods), in addition to containerised cargo and Ro-Ro.¹ Japan and south-east Asia are the main export destinations. In addition to its port activities, the PBA also seeks to facilitate the growth and develop the port as a gateway port.

New port facilities have been constructed at Fisherman Island that can cater for the largest container and Ro-Ro ships in the world. Under the "Key Port of Brisbane Strategic Plan to 2005 and Beyond", the PBA is working towards the extension of the Fisherman Island's intermodal port handling facilities and the (further) linkage of road and rail with the hinterland. Consequently, the PBA is looking at major capital investments in the future.

South Australia

Marine and Harbours Agency

The Port of Adelaide and nine regional ports are managed by the Marine and Harbours Agency (MHA). The MHA's functions include the facilitation of trade through South Australian ports, and marine environment regulatory responsibilities. The MHA can be described as a comprehensive port authority, providing a number of non-core activities including pilotage, equipment, storage, and line handling. Nevertheless, container cranes and straddle carriers at the Port of Adelaide have been sold to the private sector.

The Port of Adelaide is an integrated port, handling dry and liquid bulk cargo, general cargo and containers. It is to be developed as a hub-port for South Australia and as a container-hub servicing Singapore. The nine smaller South

¹ Roll-on Roll-off. A type of vessel for which cargo is driven on and off.

A restructured pricing policy of the MHA, better reflecting underlying costs, was Australian ports handle specialised cargo.

Corporatisation of the MHA began in 1994. Most regulatory functions were transferred to the Department of Transport on 1 July 1994. The management of the State's ports was scheduled to be transferred to the newly created Ports Corporation from November 1994. The Ports Corporation will not provide CSOs, instead they will be transferred to the Department of Marine and Harbours.

Pricing

A pricing reform for MHA services was implemented in January 1994. Reductions in the Navigation Services Charge have resulted in an average reduction of 12 per cent in prices to shipping lines. Bulk handling charges from grain continued to be held at the 1985 level (MHA 1994)

Western Australia

Fremantle Port Authority

The Fremantle Port Authority (FPA) is a statutory authority established under the *Fremantle Port Authority Act 1902*. The FPA only operates the port of Fremantle, which handles general and bulk cargo and containers. Its operations are consistent with the comprehensive model of port authorities (Box B10.1). Both core and non-core activities are provided, including the provision of equipment, storage, depot, line handling and common user facilities. Towage, line boat, pilotage, and stevedoring services are all provided by the private sector.

A committee has been established to investigate the potential for corporatising the FPA. The FPA is required to combine two objectives:

- to assume the role of a strategic port manager (landlord plus trade facilitator); and
- provide non-core services on a competitive basis.

Tasmania

Marine Board of Hobart

The Marine Board of Hobart (MBH) is a statutory authority constituted under the *Tasmanian Marine Act 1976*. The MBH provides facilities and resources for the efficient operation and handling of trade through ports under its

jurisdiction — the southern coastline of the island below 41.5 degrees latitude — while meeting the requirements and expectations of the community concerning recreation and the environment.

The MBH is a regional comprehensive port, handling general, container, and bulk cargo. It is engaged in non-core activities including the design and construction of cargo handling facilities, the maintenance and service of equipment, pilotage, real estate, depots, line handling and the provision of common user facilities. Stevedoring and towage services are privately managed.

Over recent years, the MBH has steadily diversified beyond core activities into services including real estate and cruises. This diversification coincided with a decline in the average gross registered ton per vessel at the harbour during the past five years (excluding 1990–91) — a decline partially the result of a higher proportion of small ships visiting the harbour. This trend also reflects Hobart's declining importance as a source and destination for trade, with throughput falling in absolute terms over the period. This trend is expected to continue as the Australian Newsprint Mill has announced plans to shift its shipping operations to Burnie from 1996. This relocation may reduce the current number of annual cargo movements from Port of Hobart by 20 per cent.

Hobart's main trade in both exports and imports is with mainland Australia, predominantly Victoria.

Burnie Port Authority

The Burnie Port Authority (BPA) is a statutory authority constituted under the *Tasmanian Marine Act 1976*. It is responsible for the administration of the Burnie seaport and airport — the latter since March 1992. The BPA is an integrated comprehensive port, handling general, container, and bulk cargo. Its non-core activities include pilotage, equipment, storage, line handling and common user facilities, as well as the airport.

Burnie is Tasmania's fastest growing port, and has become the principal general cargo and container port of Tasmania. In contrast to the recent performance of the Port of Hobart, the size of vessels passing through the Port of Burnie has increased, while the actual number of visits has fallen.

The source and destination of trade is interstate, predominantly with Victoria.

Port of Devonport Authority

The Port of Devonport Authority (PDA) is a statutory authority under the *Tasmanian Marine Act 1976*. The PDA operates a seaport and an airport. The

port may be classified as a regional tool port (refer to Box B10.1). The authority's activities are similar to those operated at Burnie, although the PDA does not operate handling equipment. The port is the largest cold storage operator in Tasmania. Total trade has increased steadily over the past two years, with growth achieved both in bulk cargo and container handling (PDA 1994).

Port of Launceston

In common with other Tasmanian ports, the Port of Launceston Authority (PLA) is a statutory authority under the *Tasmanian Marine Act 1976*, and is controlled by a Board elected by rate payers. The PLA can be described as a regional tool port (Box B10.1). Its activities are similar to those of the Burnie Port Authority, however, the PLA is involved in real estate but does not have responsibility for line handling or airport operations.

Total cargo handling has remained static over recent years, and container trade has only grown moderately compared with its level six years ago. Nevertheless, the PLA has managed to recoup its losses from the large decrease in container throughput during 1990–91. Growth over recent years has been in container and general cargo, with both bulk cargo and ferry passenger numbers decreasing. The decrease in cargo handling is reflected in the overall decrease in total trade.

Northern Territory

The Darwin Port Authority (DPA) operates as a comprehensive port. Non-core activities operated at the DPA include pilots, equipment, real estate, and common-user facilities. The Authority participates in a joint venture stevedoring company, Darwin Port Services Pty Ltd, which employed all permanent stevedoring labour. In 1993–94 Darwin becoming the first port to renegotiate, and put in place, a second round of Enterprise Based Agreements. The significant feature of these agreements are they incorporate direct employment by the stevedoring companies. Darwin Port Services Pty Ltd will be voluntarily liquidated during 1994–95 (DPA 1994).

In 1993 the NT Government commenced a four-year program to establish new port facilities and services at East Arm in Darwin harbour close to the Darwin Trade Development Zone. The new port has been designed to incorporate the proposed Darwin to Alice Springs rail link.

B10.3 The likely impacts of the reforms on port authorities

In this section the likely impacts of greater competition resulting from Hilmer and related reforms on the elements of port authorities' performance will be assessed. Namely:

- labour and capital productivity;
- pricing;
- rates of return; and
- dividends and other payments to government.

Productivity

Over the six years, 1987–88 to 1992–93, most port authorities have contracted out non-core functions, significantly altering the activities they perform. Many ports have successfully negotiated enterprise agreements with workers to replacing existing industry awards. This increased flexibility has contributed to the 146 per cent improvement in labour productivity observed over the period 1987–88 to 1992–93 (Figure B10.1). It is also worth noting that where non-core activities have been contracted out, labour productivity improvements may be over stated.

As a result of restructuring, employment numbers have fallen drastically over the six years to 1992–93 (Figure B10.1). Total employment fell by 50 per cent over the period, with the greatest reductions in the MSB and the PMA.

However, considerable variability in performance between authorities remains.

Comparing the productivity of Australian port authorities is beset with problems. First, international comparisons are difficult because differences in fuel mixes, load densities, traffic and freight mixes affect the measured performance of each port. As a general rule, to overcome these problems, only ports of similar size and operating nature are compared.

Figure B10.1: **Real labour productivity and total employment, 1987–88 to 1992–93**



- a Analysis includes the Maritime Services Board of New South Wales, Port of Melbourne Authority, Gladstone Port Authority, Port of Brisbane Authority, Marine and Harbours Agency of the Department of Transport, Fremantle Port Authority, Burnie Port Authority, Marine Board of Hobart, Port of Devonport Authority, Port of Launceston Authority, and the Darwin Port Authority.
- b The real labour productivity measure is constructed by deflating each organisation’s total revenue by its own price deflator (not the CPI). This produces an implicit quantity measure that is then divided by total employment to obtain the real labour productivity measure. An industry average is calculated as the sum of these measures across the industry, with each organisation’s measure weighted by its share in total industry revenue.

Source: SCNPMGTE (1994).

Second, the waterfront is a chain made up of many operators, both public and private. No single organisation controls the production and distribution associated with port services. As a result, measures of port authorities’ efficiency may be a function of the efficiency in another area of the waterfront, thus poor performance may reflect factors outside port authorities’ control (BIE 1993b). For example, stevedoring activities can be undertaken by either the port authority or a private company. Any productivity measure predominantly based on stevedoring performance may capture the productivity of private companies that operate the stevedoring activities and not the port authority.

Finally, there is an interdependency between measures of labour and capital productivity and the input mix. For example, the crane rate, which is defined as the number of twenty foot equivalent units (TEUs) handled per net crane hour — net of award or unpredictable breaks — is a measure of capital

productivity.² However, the crane rate is dependent on the quantity and quality of labour used to operate the cranes.

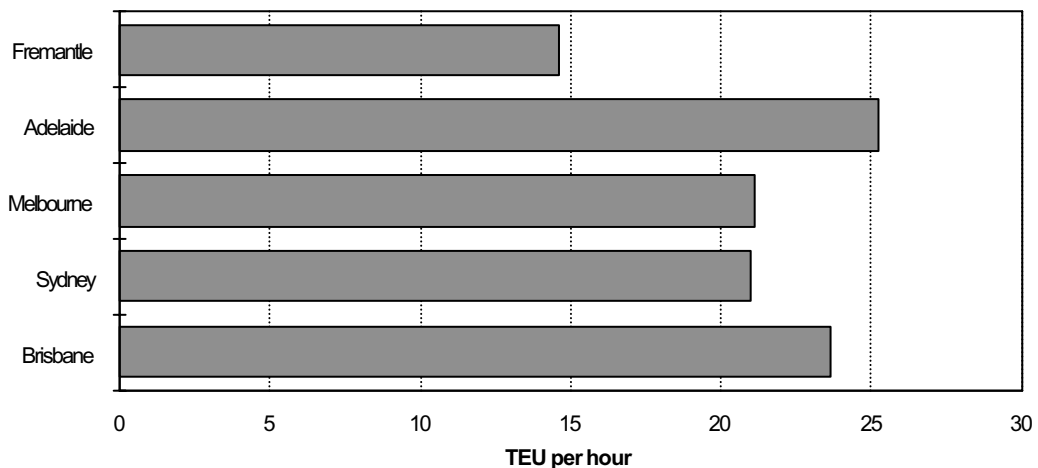
Given the above problems, international comparisons are limited to ports of similar operating systems such as Lyttleton and Zeebrugge, and Australian capital city ports are benchmarked against Australian best practice not international.

A productivity measure that encapsulates both labour and capital productivity is used to gauge the performance of Australian ports — the elapsed rate. Nevertheless, other measures of performance are discussed below for illustrative purposes.

The elapsed rate is the number of TEU moved per gross hour. The elapsed rate is determined by four factors:

- the crane rate — the number of TEUs moved per net crane hour;
- the crane intensity — the number of cranes working on a ship simultaneously;
- interruption to ship working either through award breaks or unpredictable breaks (BTCE 1994); and
- quantity and quality of labour.

Figure B10.2: **Average elapsed rate, TEUs handled per gross hour at Australian ports, 1993-94**



Source: BTCE (1994).

² Prior to September 1993, the crane rate was defined as the number of TEUs moved per *gross* crane hour.

Using the elapsed rate, Adelaide is the best performing Australian port (Figure B10.2). On average, a 21 per cent improvement in productivity is required to reach this standard.

No sole measure of labour productivity was found to be appropriate in measuring the efficiency of labour employed by port authorities for main two reasons. First, a physical labour productivity measure is usually defined as the number of units of throughput per employee. However, with the advent of the contracting-out and privatisation of stevedoring and other activities, labour employed by port authorities may not have a great influence over output and hence physical labour productivity. Second, all partial measures of productivity, including labour productivity, depends upon the input mix used.

Measures of capital productivity are easier to compare across ports, however, they are still only partial measures of performance depending on the input mix, and hence, should be interpreted with caution.

The crane rate³ is a partial measure of capital productivity. The crane rate depends on the characteristics of the cargo moved. For example, a higher crane rate can be achieved if a higher ratio of 40 to 20 foot containers are moved. Furthermore, the crane rate will in part reflect the nature of the ship — modern cellular container ships can be loaded and unloaded faster than non-cellular ships. Despite these potential differences there are only marginal differences in the crane rates across Australian ports (Table B10.1).

Brisbane has the highest crane rate (Table B10.1). Other Australian ports, on average, require a 5 per cent improvement in capital productivity to reach this standard.

Table B10.1: **Crane rates of Australian ports, 1999~~04~~**

<i>Port</i>	<i>Crane rate</i>
Fremantle	19.5
Adelaide	20.1
Melbourne	20.0
Sydney	19.6
Brisbane	20.9
Five port weighted average	19.9

Source: BTCE (1994).

A further performance indicator of capital is capital utilisation. Capital utilisations comprises of several elements including:

³ The crane rate is defined as the number of TEUs moved per net crane hour.

- the amount of time which the equipment is used;
- the availability of the equipment for use; and
- actual throughput compared with the maximum throughput of the equipment.

Interpretation of capacity utilisation figures is difficult as sufficient capacity must be available to meet peak demands, hence seasonal trade can have an important influence on utilisation.

Using capital utilisation in coal terminals, Australia is performing close to international best practice levels. The BIE concluded that:

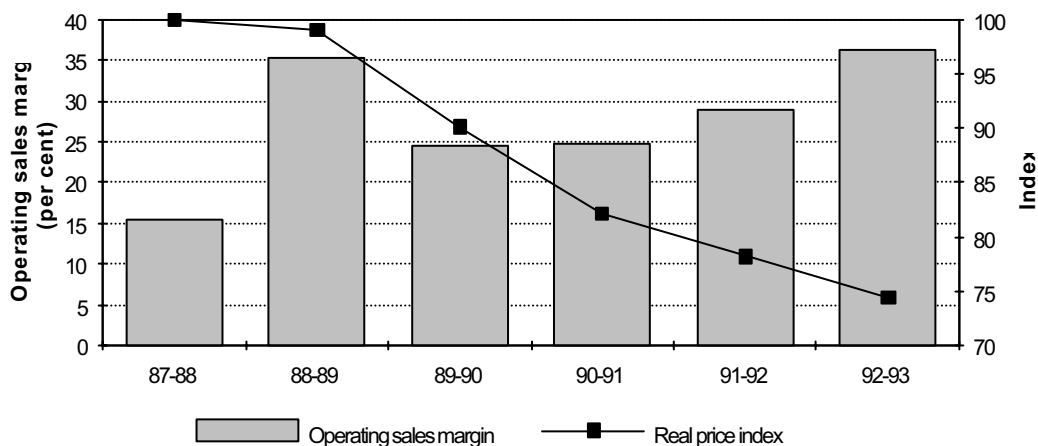
In the coal trade, many aspects of the waterfront service chain for some Australian ports appear to be near or at observed world best practice. (BIE 1993, p.xiv)

Conversely, the BIE’s estimates of container terminal capital utilisation found several Australian ports performing well below international best practice.

Pricing

According to the annual study of the performance of GBEs in the energy, water, transport and communications industries (SCNPMGTE, 1994), port authorities have consistently been ranked highly in terms of profitability. In 1992–93, the operating sales margin of port authorities increased to over 35 per cent, the highest for all the industries considered. An observable upward trend in profitability appears likely to continue in the future. Average real prices fell sharply in the six years from 1987–88 by a total of 26 per cent, and although all port authorities reported a real decline in charges, the size of the decrease varied between individual authorities (Figure B10.3).

Figure B10.3: Real price index and operating sales margin, 1987-88 to 1992-93^a



a Analysis includes the Maritime Services Board of New South Wales, Port of Melbourne Authority, Gladstone Port Authority, Port of Brisbane Authority, Marine and Harbours Agency of the Department of Transport, Fremantle Port Authority, Burnie Port Authority, Marine Board of Hobart, Port of Devonport Authority, Port of Launceston Authority, and the Darwin Port Authority.

Source: SCNPMGTE (1994).

Australian ports charges vary across a range measures. In the first three columns of Table B10.2, which predominantly represent stevedoring charges, Sydney is the lowest cost port. Adelaide is the lowest cost port of entry in relation to shore based shipping costs that include ship and cargo based charges, stevedoring, custom broker's fees, and road transport from the port. Care should be taken when interpreting these charges as a reflection of port authority performance, especially ports that have adopted the landlord model, as they have little influence over the prices charged.

Table B10.2: Port and related charges, July to December 1993

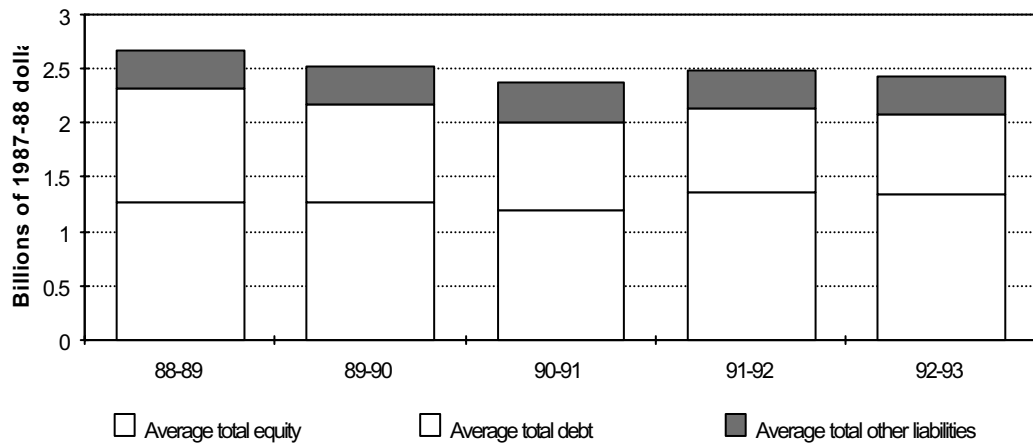
<i>Port</i>	<i>Total ship based charges (\$/TEU)</i>	<i>Total port and related charges on loaded imports (\$/TEU)</i>	<i>Total port and related charges on loaded exports (\$/TEU)</i>	<i>Shore based shipping costs on imports (\$/TEU)</i>	<i>Shore based shipping costs on exports (\$/TEU)</i>
Fremantle	60.43	124.09	124.09	555	555
Adelaide	82.70	161.70	153.24	564	556
Melbourne	49.28	104.28	104.28	695	634
Sydney	38.00	103.00	88.00	720	647
Brisbane	51.49	124.09	124.09	614	586

Source: BTCE (1994).

Financial performance

SCNPMGTE reported that the average total assets of Australian ports grew by 6.8 per cent over the six years to 1992–93. Asset growth was predominantly financed by an increase in equity, which grew 24.1 per cent over the same period (Figure B10.4). Improved profitability has facilitated reductions in port authorities' average total debt levels, which declined by 30.1 per cent over the period. The trend towards equity financing is reflected in changes in the debt to equity ratio that declined from 72 to 52 per cent. In spite of these changes, there has been no visible trend in asset and equity movements during the period. However, because of the differences in the valuation of asset valuation between port authorities, comparison of these ratios may not be reliable.

Figure B10.4: **Composition of total assets, 1988–89 to 1992–93**^{a,b}

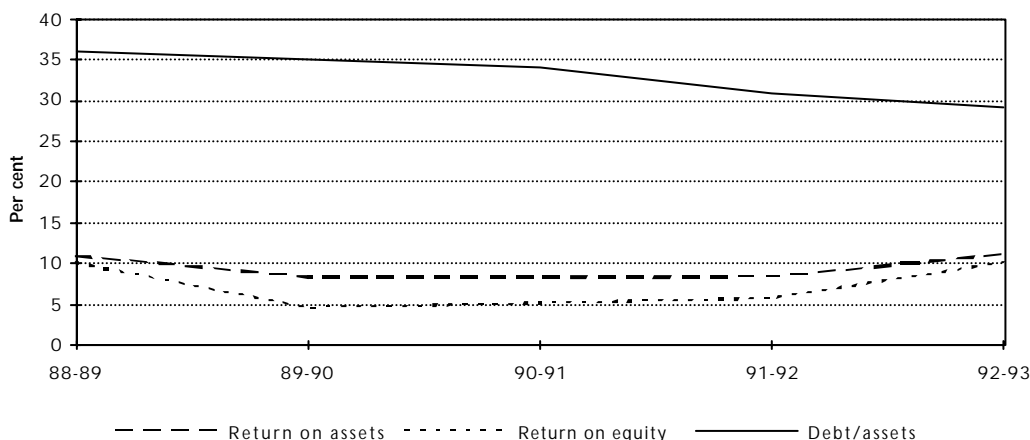


- a Analysis includes the Maritime Services Board of New South Wales, Port of Melbourne Authority, Gladstone Port Authority, Port of Brisbane Authority, Marine and Harbours Agency of the Department of Transport, Fremantle Port Authority, Burnie Port Authority, Marine Board of Hobart, Port of Devonport Authority, Port of Launceston Authority, and the Darwin Port Authority.
- b The stacked bars indicate how total assets are funded, that is total equity plus debt plus other liabilities. Note that these are aggregates representing the average level of debt, equity, and other liabilities for port authorities as a whole, during the financial year. They do not represent the capital structure of the *average* enterprise in the industry.

Source: SCNPMGTE (1994).

Return on assets and return on equity have increased slightly in recent years. The debt to asset ratio has been falling, again reflecting declining total debt levels over the period. Return on assets and related measures are illustrated in Figure B10.5.

Figure B10.5: **Return on assets and related measures, 1988–89 to 1992–93a,b**



- a Analysis includes the Maritime Services Board of New South Wales, Port of Melbourne Authority, Gladstone Port Authority, Port of Brisbane Authority, Marine and Harbours Agency of the Department of Transport, Fremantle Port Authority, Burnie Port Authority, Marine Board of Hobart, Port of Devonport Authority, Port of Launceston Authority, and the Darwin Port Authority.
- b Fixed asset related information for the Port of Melbourne Authority has been prepared in accordance with the principle of current cost accounting, whereas fixed asset related information for other port authorities has been prepared in accordance with the principle of historical cost accounting.

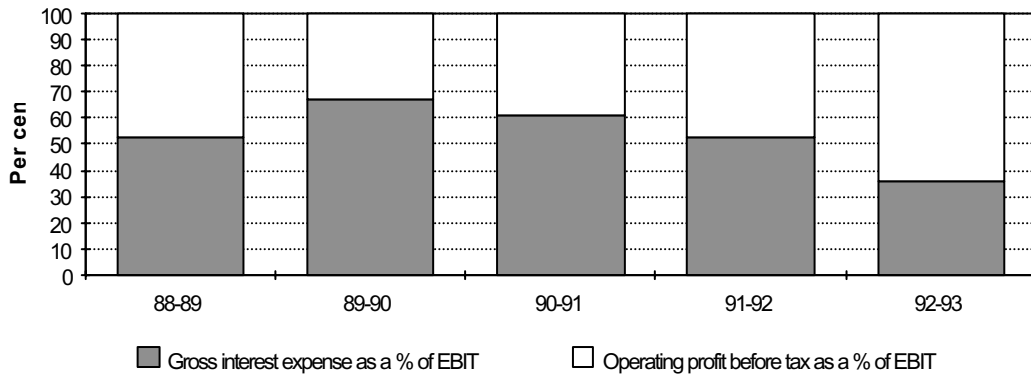
Source: SCNPMGTE (1994).

The composition of earnings before interest and tax (EBIT) illustrates the effect of sustained debt reduction throughout port authorities. Gross interest expense has declined as a proportion of EBIT since 1989–90, constituting only 36 per cent of EBIT in 1992–93 (Figure B10.6).

Payments to Government

Real dividend payments to owner governments continued to grow over the six years to 1992–93 (Figure B10.7). Although many State governments have moved towards measuring rates of return for GBEs, in several States dividend payments are a fixed levy determined by the Government each year, relatively independently of the rate of return. The dividend payout ratio, the ratio of dividends paid or provided for to operating profit after tax, was relatively high during 1989–90 to 1990–91. However, in 1991–92 and 1992–93 the payout ratio fell below 40 per cent, which is considerably short of commercial rates of approximately 75 per cent.

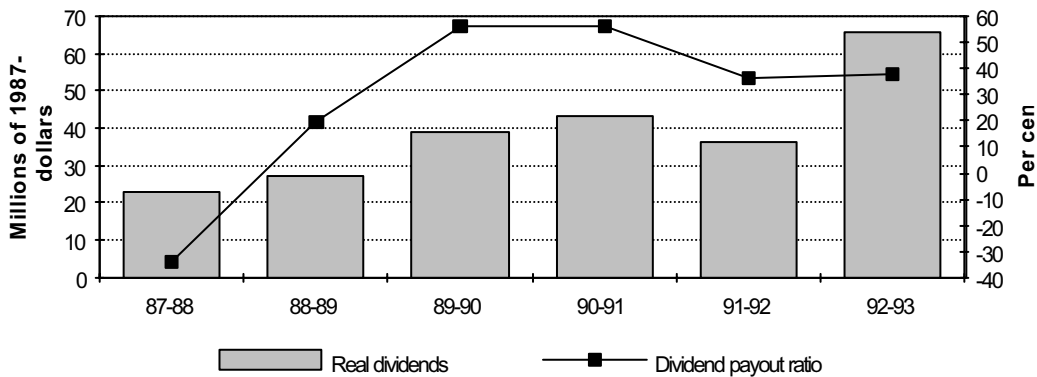
Figure B10.6: Composition of earnings before interest and tax, 1988-89 to 1992-93^{a,b}



- a Analysis includes the Maritime Services Board of New South Wales, Port of Melbourne Authority, Gladstone Port Authority, Port of Brisbane Authority, Marine and Harbours Agency of the Department of Transport, Fremantle Port Authority, Burnie Port Authority, Marine Board of Hobart, Port of Devonport Authority, Port of Launceston Authority, and the Darwin Port Authority.
- b Fixed asset related information for the Port of Melbourne Authority has been prepared in accordance with the principle of current cost accounting, whereas fixed asset related information for other port authorities has been prepared in accordance with the principle of historical cost accounting.

Source: SCNPMGTE (1994).

Figure B10.7: Real dividend and payout ratio, 1987-88 to 1992-93^a



- a Analysis includes the Maritime Services Board of New South Wales, Port of Melbourne Authority, Gladstone Port Authority, Port of Brisbane Authority, Marine and Harbours Agency of the Department of Transport, Fremantle Port Authority, Burnie Port Authority, Marine Board of Hobart, Port of Devonport Authority, Port of Launceston Authority, and the Darwin Port Authority.

Source: SCNPMGTE (1994).

The Maritime Service Board paid a dividend to the NSW Government of \$65 million in 1992–93. The level of payment is determined by the NSW Treasurer. The PMA paid \$5 million in dividends to the Victorian Government in 1992–93. This amount was subsequently increased to \$11 million in 1993–94. The *Public Authorities Dividend Act 1983* (as amended) provides for a dividend payment to the Victorian government, as determined by the Treasurer (PMA, 1994). The GPA and the PBA both pay a government levy, (\$1.9 million in 1993 for GPA, \$7.2 million for PBA in 1992–93). Under the *Public Authorities (Contributions) Act 1974*, the FPA is required to pay both a dividend and a levy of 3 per cent of total revenue. The Western Australian government has agreed, however, that dividends will not be payable until they exceed the levy payment. In Tasmania, the BPA, the PDA and the PLA all became liable for income tax equivalents from 1 July 1992. Prior to this BPA and PLA paid an average of 4 per cent of gross revenue to the State government in the form of a ‘voluntary’ port tax.

As the overall level of dividends paid to owner governments has been low, an increase of the dividend payout ratio to around 75 per cent could be expected under conditions of competitive neutrality. Port authorities are not liable for any income tax, although part of dividend payments effectively constitutes company tax.

B10.4 Port authority reforms considered by the Commission

To assess the effects of Hilmer and related reforms of port authorities and the waterfront, a variety of specific price and productivity measures have been utilised. As the current policies toward port authorities are in the spirit of Hilmer, the Commission chose to assess how these reforms will reduce prices and improve productivity from 1 July, 1994. This was achieved by determining the changes required to obtain best practice. Given the unique nature of individual ports and the difficulties in making comparisons, the Commission chose not to benchmark Australian ports against international best practice. Rather, the Commission chose to calculate the average cost reduction required by Australian ports to achieve best Australian practice.

The elapsed rate is the indicator of performance used to calculate the productivity improvements and the implied cost reduction as a result of implementing Hilmer reforms. Nevertheless, this measure still possesses limitations. First, the elapsed rate is only a partial measure of productivity. Second, elapsed rate is only a measure of container productivity, ignoring the productivity gains made in other types of cargo activities and the scope for further improvement.

In 1993–94, Australian ports required a productivity improvement of, on average, 21 per cent to achieve best practice (Figure B10.2). This converts to a 17 per cent reduction in costs. However, as the modelling exercise is of reforms from 1 July, 1994 and assuming some improvement over 1993–94, the predicted change in operating cost is reduced to 14 per cent. Prices were assumed to reflect the cost saving.

As part of the Hilmer reforms under consideration by COAG, all governments will agree to apply competitive neutrality arrangements that seek to equalise net competitive advantages of government agencies arising from their public ownership. This involves imposing commercial capital structures, debt guarantee fees, commercial dividend payout ratios and tax equivalent regimes. While much progress has already been made, these arrangements are still far from being universal in coverage or consistent in approach. While recognising that the optimal level of competitive neutrality arrangements may vary between GBEs, the stylised competitive neutrality arrangements assumed here are:

- a commercial capital structure as represented by a debt to assets ratio of 50 per cent;
- a dividend payout ratio of 75 per cent; and
- a tax equivalent regime that charges income tax at 33 cents in the dollar.

The imposition of debt guarantee fees is not modelled.

The impact on costs and other sectoral variables of reform, for port authorities, are summarised in Box B10.2. These expected impacts form the basis for the direct impacts of reforms summarised in Chapter A2.

Box B10.2 Summary of the port authorities scenario

Achieving best practice cost

Change in operating cost (per cent)	-14
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Imposing competitive neutrality arrangements

Target debt to assets ratio (per cent)	50
Target dividend payout ratio (per cent)	75
Target income tax (or TEP) rate (per cent)	33

Source: Commission estimates.

C1 MODELLING THE GROWTH AND REVENUE IMPLICATIONS

C1.1 The model framework

ORANI is a large-scale multisectoral model of the Australian economy (Dixon et al. 1982, Dee 1989, McDougall and Skene 1992). It is large in scale because it embodies considerable microeconomic detail on the nature of production and demand in the economy. It is called a multisectoral model because it treats the economy as a system of inter-related industry sectors. The model captures the interdependencies between industries that arise from the purchase of each other's output of goods and services. It also captures the industry linkages that arise from competition for available resources, such as labour and capital. Finally, it captures the dependence of Australian demands for industry outputs on prices and domestic incomes, and the dependence of foreign demands on Australian prices relative to those overseas.

Some amendments have been made to the standard version of ORANI to produce a special purpose version, HILORANI, that has been used for this exercise. Amendments have been made to the model's industry breakdown, its database and its theoretical structure.

C1.1.1 Industry breakdown

As noted in Chapter A3, disaggregation of all the activities affected by Hilmer and related reforms would have been time-consuming, and the necessary data to support the disaggregation would not always have been readily available from ABS sources. The Commission's strategy was therefore to make do with a level of industry disaggregation, the data for which was readily at hand. The resulting industry breakdown was shown in Table A3.1.

The resulting industry breakdown is reasonably well-suited to modelling the flow-on effects of reforms in electricity, water, gas, rail, post and telecommunications, at least at the national level. These industries are represented separately so that the size and structure of their sales to downstream consumers and users, and their purchases from upstream suppliers, are explicitly represented in the model. Reforms in electricity, water, gas and rail are likely to vary by State and Territory, however. The

modelling implications of this regional variation in direct impacts is discussed shortly.

HILORANI's industry structure is also well-suited to modelling the flow-on effects of the removal of uncompetitive practices by statutory marketing authorities, since the commodities affected by uncompetitive marketing arrangements are also recognised explicitly.

Although the industry structure appears less well-suited to modelling other types of reform, in some instances the theoretical structure of the model allows the flow-on effects of reforms to be better targeted than the industry breakdown alone might suggest. Two examples illustrate the point.

The FAC and CAA are two Commonwealth GBEs subsumed in a larger HILORANI industry, 'services to transport'. This industry includes a range of other activities, from stevedoring and port handling services to motor vehicle hire, parking services and the operations of travel and tourist agencies. Reforms under Hilmer may lead to changes in the operating costs of the FAC and CAA, but presumably the immediate flow-on effects would be felt only in the air transport industry, rather than across the whole range of transport and other industries that purchase 'services to transport'.

However, the model's theoretical structure allows for differential productivity improvements in the sales of 'services of transport' to each using industry. It therefore allows for cost changes to be applied only to 'services to transport' sold to the domestic and international air transport industries. This is the rationale for modelling the productivity improvements in the way outlined in Chapter A2, Table A2.2.

Similarly, newsagents and pharmacies are small components of a much larger retail trade industry, the main activity of which is to facilitate the movement of goods and services around the economy, particularly to final consumers.¹ Both newsagents and pharmacies are subject to restrictions on competition that could be lifted under Hilmer. The immediate flow-on effects of any cost changes would not be as widespread as cost changes to the entire retail industry. However, the model's theoretical structure allows the flow-on effects to be quarantined to the retail margin on the movement of

¹ In technical terms, the model treats the retail trade industry is a margins industry. Most of its 'output' is not sold directly to consumers or users, but is used to ship other goods and services from point of production to point of use. The other margins industries in HILORANI are wholesale trade, road freight transport, mining rail transport, private iron ore transport, non-bulk rail transport, grain freight transport, water transport, international air transport, domestic air transport, services to transport, insurance, and restaurants and hotels (through their retailing of food, beverages and accommodation).

pharmaceuticals or printing and publishing (both separate commodities in the model) to households.

In some instances, the industry breakdown is less well-suited to modelling the flow-on effects of Hilmer and related reforms. Again, two examples illustrate the point.

Extending Part IV of the Trade Practices Act to the unincorporated sector is likely to affect several professions, one of which is the legal profession. As discussed further in Chapter B2, the impact is likely to be felt by legal practices selling legal services on a fee-for-service basis, rather than by all persons with legal training, irrespective of which industry employs them.² The legal services industry is a small component of a much larger industry, ‘business services nec’, which also includes real estate agent services, architectural, surveying, technical, accounting, data processing, advertising, market and business consultancy, typing, copying, mailing, collection, pest control, cleaning, and contract packing services as well as plant leasing, hiring and renting. Legal services are likely to be used by as broad a range of industries and consumers as use the other professional services, but not necessarily in the same proportions. Without a disaggregated legal services industry, the model simply assumes that legal services are used by other industries in the same proportion as they use ‘business services nec’. However, the assumption seems reasonable in this case.

A more important qualification to the industry breakdown is that it does not have a regional dimension (ie. does not give a separate representation of industries in each State and Territory), even though many of the Hilmer and related reforms will have direct impacts that vary by State.

In some cases the Commission has been able legitimately to abstract from the likely regional variation in impacts by defining the ‘outer envelope’ of potential reforms as one in which all States and Territories undertake the same degree of reform, and achieve the same gains. This is the approach that has been adopted in modelling electricity reform. In other instances, the Commission has had to deal with the likely regional variation in impacts indirectly, with varying degrees of success. Three examples demonstrate the range of techniques used.

In the case of the legal services industry, the regulatory and self-imposed restrictions currently affecting conduct vary by State. As shown in Chapter B2, the Commission has used general estimates of the likely cost impact of relaxing such restrictions, along with a Population Census breakdown of

² In technical terms, the implications of Hilmer are modelled as affecting the legal services industry rather than the occupation of lawyer.

employment in the legal services industry by State and Territory, to calculate a weighted average percentage cost reduction for Australia's legal services industry as a whole as a result of relaxing the restrictions in the States and Territories in which they apply. It has then used Population Census data on the employment share of the legal services industry in the 'business services nec' industry to calculate the corresponding percentage cost reduction for business services as a whole. It has then fed this national cost impact on the business services industry into HILORANI to obtain projections of the flow-on effects.

As noted above, this procedure assumes that the sales structure of legal services is the same as the sales structure of business services as a whole. Since the cost weighting procedure should have used total cost shares rather than employment shares (though only employment shares are readily available), the procedure also assumes that employment shares are good proxies for total cost shares. This will be true if there is little variation in wage/price relativities or labour/output ratios across regions within the legal services industry, or between the legal services industry and the business services industry as a whole. Finally, the procedure will lead to reasonable projections of the national flow-on effects if the sales structure of the legal services industries in the States and Territories in which the restrictions currently apply is roughly the same as for the nation as a whole. All of these assumptions seem reasonable.

In the case of road reform, the changes in registration charges for heavy vehicles proposed by the National Road Transport Commission vary by State, as well as by type and weight of vehicle. The Commission has used data on the numbers of trucks registered in each State and Territory, and on the tonne-kilometres travelled by different kinds of commodities by broad truck type in each State and Territory, to compute a national average change in the road freight transport cost of shipping each commodity in the model. The cost changes are negative for those commodities mostly carried by those trucks in those States or Territories for which registration charges fall, and are positive elsewhere. Thus the first-round flow-on effects have been computed outside the model using explicitly regional data. These national average changes in road freight transport costs by commodity are then fed into the model, and it projects subsequent flow-on effects on a national average basis.

Gas reforms are designed to facilitate interstate trade in gas. Interconnection will increase the availability of gas for a variety of uses (including electricity generation) in Brisbane, Sydney and Adelaide, but supplies to Melbourne will be correspondingly lower than otherwise. Modelling work by ABARE, summarised in Chapter B6, suggested that with interconnection, gas prices in

Brisbane, Sydney and Adelaide would be over 40 per cent lower than otherwise by the year 2005, while Melbourne prices would be 12 per cent higher. The regional flow-on effects will depend on the uses to which gas is put in the various States. However, the best that the Commission has been able to capture is the flow-on effects of a national average 1.8 per cent price reduction for gas, assuming a national average pattern of usage.

C1.1.2 Database

As noted in Chapter A3, the database for HILORANI is a disaggregated version of the Commission's standard ORANI database, based in turn on the ABS 1986–87 input-output tables (Kenderes and Strzelecki 1992). The ABS has published a more recent input-output table for 1989–90, and the Commission has recently completed and tested a standard ORANI database derived from that table. However, the Commission decided not to use the more recent input-output database for the current exercise, primarily because of the time it would have taken to reproduce the industry disaggregation already incorporated in MR-ORANI, the starting point for this exercise.

The database used for this exercise is therefore somewhat dated. In sectors where more up-to-date cost data are available, and where Hilmer and related reforms are anticipated to lead to further cost savings, the Commission has been able to adjust the cost saving information that is fed into the model in order to correct for known changes in the cost base that have occurred between 1986–87 and currently. This technique has been used in the electricity, rail and post scenarios.

Because the HILORANI database is used here to generate revenue projections for Hilmer and related reforms, the Commission has also endeavoured to ensure that the revenue bases used as a starting point for the revenue projections wherever possible reflect the most recently available data.

This has been achieved in two ways. In some cases the disaggregated revenue data embedded in the database itself has been updated. In all cases, the projected *dollar* changes in revenues reported in the next chapter have been obtained by multiplying the *percentage* changes, obtained from the model results, by a dollar base obtained from the 1993–94 national accounts.³ Since this latter procedure is undertaken separately for each of thirteen broad revenue categories, and the dollar results then added over categories, the procedure not only gives projected revenue changes in current dollar terms, it

³ Because input-output tables are compiled on a national accounts basis, the most recent national accounts revenue data have been chosen in preference to even more recent budget data as a base for the dollar revenue projections.

also corrects for any changes in the respective shares of the different types of revenue that have occurred between 1986–87 and now. The details are given later in Section C1.3.

Input-output tables themselves incorporate a great deal of disaggregated information about the various kinds of indirect taxes and subsidies (eg. excise, sales tax, State franchise fees, payroll tax, property taxes, taxes on gambling and insurance, bounties, etc). These taxes are embedded in the input-output table because they affect the cost and sales structures of industries in one of two ways. They either add directly to industry costs, as in the case of payroll tax and property taxes, for example, or they add to the purchase price of an industry's output once it is purchased by downstream consumers or users, as in the case of excise and sales tax. In input-output terminology, the former are called Indirect taxes *nec* and the latter are called Commodity taxes. Updating this highly disaggregated revenue data would have been a major research task.

In the time available, the Commission has decided to leave this component of the HILORANI database as is, and to rely on the above method of generating the dollar revenue projections to correct for broad changes in the structure of indirect taxation since 1986–87.

In some respects this correction procedure, outlined in more detail in a later section, is adequate. For example, it successfully corrects for the fact that the coal export levy was abolished in 1993–94. As it is used in this final report, it also corrects for the major shift in the composition of excise revenue away from crude oil and LPG towards petroleum products since 1986–87. However, it does not for example correct for adjustments that have been made to the structure of sales taxes since 1986–87.

The version of the ORANI model used by the Commission incorporates additional disaggregated information about direct taxes (personal and corporate income tax), and recognises that the personal income tax schedule is progressive (Dee 1989). In the time available, it has been possible to update the direct tax revenue data so that it reflects current rather than 1986–87 personal and corporate tax rates, and so that the corresponding shares of personal and corporate income tax revenue to GDP (at 10.7 and 6.3 per cent, respectively) reasonably reflect recent trends, averaged over the business cycle. The details of the updating procedure are outlined in Appendix D3.

The Commission's standard version of ORANI has a cursory treatment of non-tax revenue. It simply assumes that aggregate nominal non-tax revenue moves in line with nominal GDP.

In a final modification to the database, the Commission has distinguished separately both the dividend and interest income earned by governments from

their trading and financial enterprises. It has incorporated 1993–94 national accounts information on the dividend income earned by different levels of government from their public trading and financial enterprises, broken down by industry. It has also incorporated provisional 1993–94 data on the interest received directly or indirectly (through central borrowing authorities) by different levels of government from their public trading enterprises, also broken down by industry. Unfortunately the national accounts section of the ABS is not able to provide an industry breakdown of this interest data on a national accounts basis. The interest data finally used in the model were obtained instead on a GFS basis from the Public Finance Section of the ABS. Again, the details are outlined in Appendix D3.

C1.1.3 Theoretical structure

The theoretical structure of the Commission’s standard version of ORANI allows projections to be made for general government revenue and expenditure, consolidated across Commonwealth, State and local levels of government. For the current exercise, the Commission is required to provide separate revenue projections for the Commonwealth government on the one hand, and for all State, Territory and local governments on the other.

This separation has not required any modification to the theoretical structure of the model. Instead it has been achieved via the way in which the dollar revenue projections are obtained. As noted, dollar revenue projections are obtained by multiplying percentage changes in broad categories of revenue, obtained from the model results, by dollar base figures, obtained from the 1993–94 national accounts. Since dollar base figures are available for the Commonwealth government and for State and local governments separately, each can be multiplied by the model’s percentage change results to obtain dollar projections for the corresponding level of government. The details of the procedure are outlined in a later section.

As noted earlier, the theoretical structure of the Commission’s standard version of ORANI had a cursory treatment of non-tax revenue. In the version of HILORANI used for the final report, the theoretical structure has been changed specifically to recognise both dividend and interest income transferred to the Commonwealth, State and local governments from their public trading and financial enterprises.

The new treatment of the distribution of non-labour income is shown in Figure C1.1. In the first stage, the non-labour income generated in each industry is subject to property taxation and direct (primarily corporate) taxation. Of the after-tax income available for distribution, a component accrues to foreigners in proportion to their debt or equity stake in that industry. The model keeps

track of the extent to which that foreign stake would change, because it keeps track of the extent to which changes in Australia's capital stocks can be financed from domestic as opposed to foreign saving. However, most industries in which GBEs operate have no foreign ownership. The treatment so far is the same as in standard ORANI. Details of the way in which foreign ownership is treated are given in Horridge (1985) and McDougall (1992).

Once foreign obligations have been met, the remaining non-labour income accruing to Australians is available for distribution to households or to governments. In an industry dominated by government business enterprises, households could still be expected to earn a share of the after-tax Australian income as a return on money they lend directly (via bond ownership) or indirectly (via the banking system) to those enterprises.⁴

In the new treatment, the shares of Australian income accruing to the Commonwealth government and to State and local governments as dividends or interest are recognised explicitly, but treated as exogenous. This means they can be held constant where appropriate, or changed by the model user in order to meet some policy target. The income accruing to Australian households is then calculated as a residual.⁵

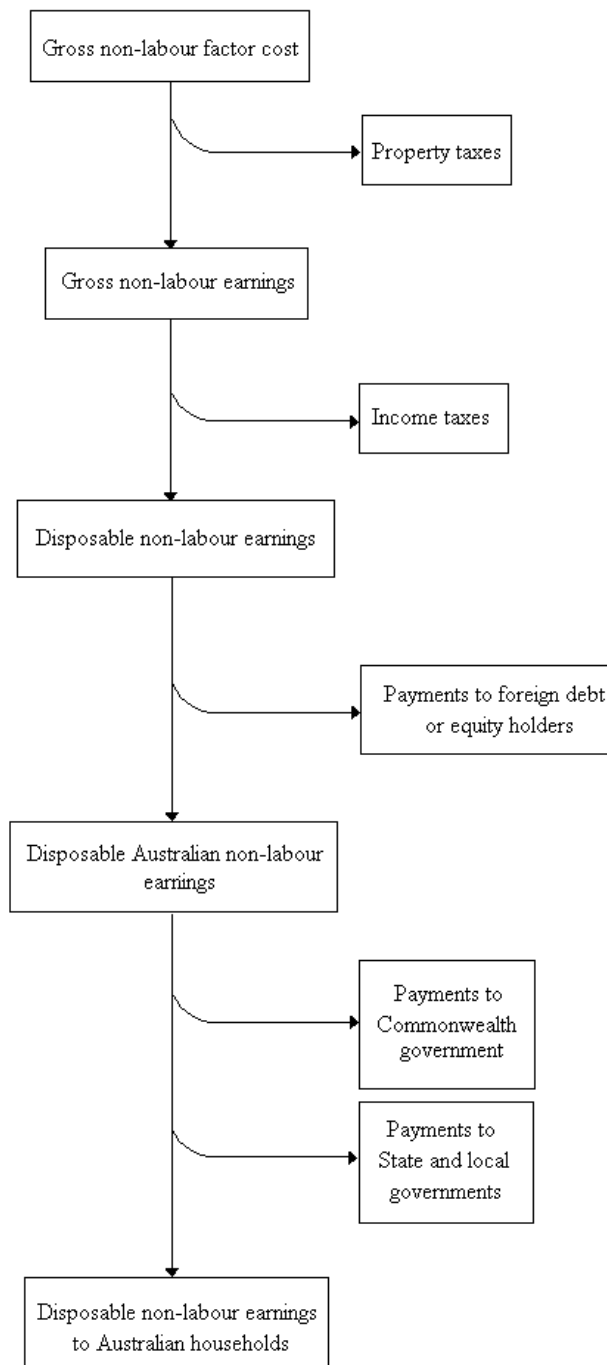
By contrast, in the standard treatment all Australian non-labour income from each industry accrued to households in the first instance. The consolidated government was recognised as earning non-tax revenue, including dividends and interest, and this revenue was assumed to come from households in a single aggregate. Thus although the consolidated government sector was recognised as earning dividends and interest, the industry sourcing of those payments was lost in the revenue aggregation process. The treatment did not, therefore, allow recognition of how the size of government dividend and interest income might vary with the fortunes of particular public trading enterprises. In the new treatment, each level of government is recognised as

⁴ Because it abstracts from financial assets, the theoretical structure of ORANI does not contain an explicit treatment of debt versus equity. The production theory is written as if each industry were run by a manager who rented the industry's assets from the household sector and bought in materials and labour to produce output to minimise costs. However, as noted by McDougall (1992), the production theory would have been the same had it been written as if each industry were operated by the asset owner who bought in materials and labour to produce output in a way that maximised profits. The model does capture debt-equity ratios implicitly, however, via the income distribution story shown in Figure C1.1.

⁵ For the results reported in this final version of the report, an error in the calculation of this residual has been corrected. The error did not directly affect the revenue projections of the draft report, but did lead to a slight understatement of the gains to households.

earning a specific stream of dividend and interest income directly from the public trading enterprises in each industry.

Figure C1.1 **Distribution of non-labour income in HILORANI**



As noted, the shares of Australian income accruing to the Commonwealth government and to State and local governments as dividends or interest are treated as exogenous, so they can be held constant where appropriate, or changed by the model user in order to meet some policy target. When the shares are held constant, the dollar value of the dividend and interest payments to governments will vary (in the absence of foreign ownership) in direct proportion to the fortunes of the industry. However, in industries in which GBEs are to be subject to the principle of competitive neutrality, the shares have been changed to capture the impact of these reforms. The rationale and method is explained in the next section.

A difficulty arises, however, in the few industries in which GBEs operate that also have a degree of foreign ownership. Banking is one example, and the services to transport industry (which includes ports) is another. The theoretical structure of ORANI assumes that in scenarios in which the aggregate foreign debt or equity stake in Australia changes, those changes are spread evenly through all industries that have some foreign debt or equity stake to start with. This in turn leads to changes in the payments made to foreigners in those industries, with offsetting changes to the payments available for distribution domestically. If the government share of that Australian revenue were held constant, it would imply that governments as well as households were potentially trading debt or equity stakes with foreigners, with implications for the dividend and interest streams of those governments.

It was judged to be unlikely that Hilmer and related reforms would lead Australian governments to trade banks or port authorities with foreigners. In these two industries, therefore, the Commonwealth and State and local *shares* of Australian revenue are allowed to adjust so as to hold constant the *amount* of revenue earned by those governments in nominal terms. The treatment ensures that only the private sector trades debt or equity stakes with foreigners in those industries. Similarly, when the port authorities are modelled as being subject to competitive neutrality, it is the dollar amount rather than the share of government dividend and interest income that is adjusted exogenously.

C1.2 Modelling competitive neutrality

C1.2.1 Income tax equivalents and capital restructuring

One of the important principles of the reforms recommended by Hilmer is that of competitive neutrality, whereby government-owned enterprises be afforded no net advantage over a private sector competitor by dint of their government

ownership. In an industry dominated by government-owned enterprises, the share of after-tax Australian income flowing to governments will typically reflect a number of factors, including the debt/equity ratios of the enterprises and their dividend payout rates (the proportion of earnings after depreciation, tax and interest paid out as dividends rather than retained).

In the current exercise it is assumed that over time, government enterprises subject to structural reform and to the principle of competitive neutrality could be expected to adopt the sort of debt/equity ratios and dividend payout rates deemed prudent in the private sector. The implications of these changes can be modelled by changing the share of after-tax Australian income accruing to governments appropriately. It is also assumed that all State-owned enterprises not paying corporate income tax to the Commonwealth would begin to pay an income tax equivalent to their State government owners (as some have recently begun to do). This can also be captured by changing the share of Australian after-tax income accruing to State governments appropriately.

Appendix D3 of this report derives how the shares of after-tax Australian income accruing to Commonwealth or to State and local governments would change in the event that government business enterprises adopted commercial debt/equity ratios and dividend payout rates and were required, where appropriate, to pay income tax equivalents.

The derivation highlights that part of the impact of an income tax equivalent payment is simply to reduce the amount of after-tax (and after-tax-equivalent) dividends paid to State government owners. But because income tax is also normally payable on the post-depreciation earnings retained within an enterprise, income tax equivalents, taken in isolation, should increase the total revenue received by State governments.

These revenue increases could be offset by moves to commercial debt/equity ratios and dividend payout rates. Such capital restructuring would also have implications for the amount of Commonwealth income tax revenue collected on the interest payments received by GBEs' non-government creditors. Appendix D3 shows how the final revenue implications have been modelled, using data on current dividend, interest and retained earnings payments obtained from SCNPMGTE (1994).

C1.2.2 Asset revaluation

The issue of competitive neutrality arises again indirectly in the way the Commission has modelled GBE pricing and productivity reforms.

There are three different situations in which Hilmer and related reforms are modelled as leading to changes in the rates of return on capital in particular industries. As noted in Chapter A3, the first is where there is currently a degree of monopoly power being manifest in excessive rates of return. Where Hilmer and related reforms succeed in introducing additional competition, the rate of return in that industry has been modelled as falling to a more normal level.

The second situation in which Hilmer and related reforms are expected to change rates of return is where GBEs are not currently earning an adequate commercial return. For example, the related reform in the water industry explicitly requires urban water supply authorities to achieve positive economic rates of return on investment, and it requires rural water operations to at least recoup operating and maintenance costs (reducing the magnitude of their negative return on assets). These reforms have been found to require an increase in the average rate of return on capital in the water supply industry across Australia, and have been modelled as such. The details are spelt out in Chapter B7.

The third situation in which Hilmer and related reforms could conceivably lead to changes in rates of return is where GBEs (or their regulatory bodies) are adopting or have adopted CPI-X pricing formulae as a strategy to guard against prices including an element of monopoly rent. The X factor is typically set at a level that takes into account expected productivity improvements in the industry. The modelling question to be addressed is ‘what gives’ if actual productivity improvements do not match those embodied in an industry’s X factor.

For those industries in which CPI-X formulae or other forms of explicit price control are relevant (electricity, telecommunications, and postal services, with the latter two being affected by ongoing reform under Hilmer’s general competition principles), the Commission’s modelling approach in Part B has been

- to apply the X factors (or their equivalents) that are either under discussion or in use, to project how prices would differ in real terms from what they would have been otherwise, and to feed those price changes into the model; and
- to assess independently what improvements in the productivity of resources used for current production might be achievable under Hilmer and related reforms, and to feed those into the model.

In the event that the productivity improvements did not yield sufficient cost savings to match the required price reductions, the Commission initially investigated two alternative versions of ‘what gives’, one involving finding

additional productivity improvements and one involving declines in rates of return.

The information provided to the Commission by various State Treasuries, some of it on a confidential basis, and discussions with the electricity authorities themselves assisted the Commission greatly in identifying the X factors under consideration in that industry, as well as the productivity improvements being planned for in the future.

One option under consideration by the electricity supply industry in the event that known productivity improvements did not yield the required real price reductions is the option of writing down the book value of the industry's assets. This would produce a once-off capital loss but would preserve the apparent rate of return in the industry.

The Commission has not made general provision for this as a long term strategy because it does not appear to be consistent with managing a GBE so as to maximise the discounted present value of the stream of future dividends to shareholders, and so may be seen to violate the principle of competitive neutrality.⁶ Writing down the value of assets might be a reasonable transition strategy. But in the long term, earning a reasonable rate of return by arbitrary asset devaluation should be viewed as just as unsustainable a strategy as not earning a reasonable rate of return on assets valued at replacement cost. Where GBEs might fail to meet their price targets, the Commission's first option was therefore to model the implications as being a failure to meet a required return on assets valued at replacement cost. In any event, either of these approaches would be associated with a smaller dividend stream.

The other option considered by the Commission was that of finding more productivity improvements, in most cases by eventually replacing existing assets by those with a lower replacement cost. For industries such as electricity and telecommunications there is anecdotal evidence that such improvements could occur — gas-fired power stations will be cheaper to build than coal-fired, and in telecommunications, fibre optic and microwave technology is replacing copper wire. In the alternative economic environment, the Commission generally assumed that sufficient productivity

⁶ The objective of maximising the discounted present value of the stream of future dividends is equivalent to the objective of earning a rate of return on assets equal to the subjective discount rate of shareholders, but only when the assets are valued at replacement cost. This point can be seen from the discussion in McDougall (1992) surrounding the derivation of the rate of return variable currently in use in the Commission's version of ORANI. Were GBEs arbitrarily to revalue or devalue their capital away from its replacement cost, the equivalence of the two objectives would break down.

improvements of this type could be found where required in order to preserve rates of return. In the case of electricity, the Commission was able to specifically quantify potential savings in capital replacement costs, so these were targeted while it was the productivity of capital already in use that was assumed to 'give'.

A final option not considered by the Commission in the event that Hilmer and related reforms would make it difficult to maintain rates of return in GBEs was divestiture. For some government business enterprises this may be their ultimate fate. Selling a GBE to the private sector would yield the government owner a once-off capital realisation followed by a zero dividend stream. To the extent that the selling price realistically reflected the GBE's future earning potential, then by investing the proceeds of the asset sale the government would earn a stream of revenue similar to the dividend stream it would have earned had it not sold the GBE. In this case, the revenue implications of the divestiture option would have been similar to those projected under a decline in rates of return.

To summarise, where reforms imposed both price restraint and productivity improvements on GBEs, the flow-on effects were initially examined under two alternative assumptions of what might 'give' to ensure that cost savings matched the price reductions — that rates of return on assets valued at replacement cost declined, and that sufficient additional productivity improvements were found. In results generated for the draft version of this report, the implied variations in rates of return or in productivity affecting the replacement cost of capital were minor, essentially because the pricing and productivity scenarios summarised in Chapter A2, Table A2.2 did (to a close approximation) add up.

The Commission has not therefore maintained both options as a source of sensitivity analysis. Instead, the results summarised in Chapter A4 and reported in more detail in Chapter C2 assume rate of return adjustment for electricity and post and productivity adjustment for telecommunications.

On this basis, the model results incorporated in the final report suggest that additional productivity improvements in the replacement cost of telecommunications capital of about 0.4 per cent would be required. The size of the rate of return adjustments generated by the model for post and electricity need to be corrected for known changes in the cost structures of these industries, as indeed were the original capital and labour productivity improvements that were fed into the model.⁷ When corrected in this manner,

⁷ A rate of return can be defined as profit divided by the value of an industry's capital stock. It could be argued that if the cost structure of the model's database is wrong, it affects the numerator and denominator of the rate of return equally, so that the

post is projected to require about a 0.1 percentage point reduction in its rate of return.⁸ Electricity is projected to require about a 1.5 percentage point increase.

The increase for electricity is not trivial. However, the pricing and productivity reforms being modelled are reforms that started in 1991, and it is known that shortly thereafter assets in the electricity supply industry were revalued upwards by up to 30 per cent to bring them into line with replacement cost. At the same time, prices to some users were adjusted upwards to help maintain apparent rates of return. This sequence of events is equivalent to rates of return on assets already valued at replacement cost being higher than otherwise. The Commission has calculated that the size of the model's projected increase in rate of return is broadly consistent with this known transitional behaviour.

C1.3 Making revenue projections

As noted in Section C1.1, the projected *dollar* changes in revenues presented in this report have been obtained by multiplying the *percentage* changes, obtained from the model results, by a dollar base obtained from the 1993–94 national accounts. Since this procedure is undertaken separately for each of thirteen broad revenue categories, and the dollar results then added over categories, the procedure corrects for any changes in the respective shares of the different types of revenue that have occurred between 1986–87 and now. Since dollar base figures are available for the Commonwealth government and for State and local governments separately, each can be multiplied by the model's percentage change results to obtain dollar projections for the corresponding level of government. Dollar projections are also derived in either real or nominal terms, the difference being that for real projections, the models' projected percentage change in price deflator is subtracted from the

model's projected changes in rates of return do not need adjustment. However, it is only the numerator of the rate of return that needs to change to ensure that the price and productivity improvements add up. For this reason, the projected *change* in the rate of return is affected by errors in cost structure, even if its starting level is not. Hence the rate of return changes reported in the text have been corrected for known changes in cost structure. Under the new cost structure for electricity, labour accounts for 15 per cent and capital for 51 per cent of total costs. Under the new cost structure for post, labour accounts for 56 per cent and capital for 6 per cent of total costs. In both cases, the remaining costs are primarily material input costs.

⁸ Rate of return adjustment was chosen in preference to productivity adjustment for post because the model's capital share is sufficiently undervalued, being based on outdated historic cost data, that productivity adjustment led to computational problems.

model's percentage changes in nominal revenues before being applied to the 1993–94 dollar base figures.

This procedure ignores compositional changes within each broad revenue category. In particular, it assumes that the Commonwealth and State and local shares of any given revenue category would change in the same proportion as the model projects for the consolidated general government as a whole. However, for revenue categories such as direct tax revenue, which accrues only to the Commonwealth government, or payroll and property tax revenue, which accrues only to State and local governments, the assumption is irrelevant and the model's projected dollar changes are unaffected by compositional problems.

A potential problem arises with the original model's two other broad revenue categories, Other indirect taxes nec and Commodity taxes (where the former is what remains once payroll and property taxes are taken out of the input-output revenue category Indirect taxes nec). It is possible, for example, that a reform could benefit a part of the economy generating Other indirect tax revenue for the Commonwealth government more than it benefited parts of the economy generating Other indirect tax revenue for State and local governments. In this case the assumption of equal proportional changes, embodied in the above procedure, would not have been appropriate. However, to do significantly better would have required a Commonwealth/State and local breakdown of revenue at the very disaggregated level at which the data is incorporated into the input-output table.

For the current exercise, the Commission has adopted several strategies to minimise the impact of such compositional problems where they are thought to occur. It has firstly supplemented the model's percentage change results with data retrieved from the updated, post-simulation database for each scenario. From each updated database it has been able to split the original model's projected change for the Commodity tax category into five — export tax revenue, import duty revenue, Commonwealth excise revenue, State franchise fees, and all other commodity tax revenue. It was felt that this extent of disaggregation would significantly reduce the extent of compositional change problems in many instances. Secondly, it has for some scenarios (such as the road and rail scenarios) made specific additional adjustments to the allocation of revenue changes between levels of government to deal with specific additional compositional problems.

The basic procedure for making projections of the dollar revenue changes associated with Hilmer and related reforms is shown in detail in Table C1.1. The table shows the initial 1993–94 breakdown of Commonwealth, State and local revenues to which the model's percentage change results are applied. It

also shows the model variables or database concepts, the percentage changes in which are applied to each of the initial dollar values.

The 1993–94 revenue bases were derived as follows. A broad breakdown of 1993–94 revenue for the Commonwealth, for State and local governments and for the consolidated general government was obtained from ABS (1994, Tables 37–39). A further breakdown of indirect taxes, fees and fines, not broken down by level of government, was obtained from ABS (1994, Table 40). A proportionate split of this latter data across levels of government was obtained using proportions from ABS (1993).

A further split of the data on some categories of indirect taxes, fees and fines, as well as for subsidies, was then obtained as follows. As noted earlier, the HILORANI database includes data on indirect taxes, fees and fines allocated to one of two categories — Commodity taxes (net of commodity subsidies), or Other indirect taxes nec (net of subsidies).

Where a single national accounts revenue item was split across these two model categories, the associated revenue item in Table C1.1 has also been split into two, so that the appropriate model variable can be applied to each component in turn. The way in which national accounts revenue categories were split between the input-output categories Commodity taxes and Other indirect taxes nec in the 1986–87 input-output table is shown in Table C1.2, reproduced from Kenderes (1992).

Table C1.1: Base for revenue projections

Revenue	1993-94 revenue (\$m)			Variable used to make projection
	Commonwealth	State and local	Consolidated general	
Direct taxes				
Individuals - net tax instalments	42 674		42 674	ryl
- other	7 649		7 649	ryk
Enterprises	14 810		14 810	ryk
Nonresidents	811		811	ryk
<i>Total direct taxes</i>	<i>65 944</i>		<i>65 944</i>	
Payroll taxes	0	6 130	6 130	rpl
Fringe benefits taxes	1 411	0	1 411	rni
Land taxes	0	1 384	1 384	rpk
Municipal & metropolitan improvement rates	0	5 023	5 023	rpk
Taxes on financial and capital transactions - FID	1	1 804	1 805	nonexcise
- stamp duty and other (commodity tax)	1	172	173	nonexcise
- stamp duty and other (indirect tax)	22	3 962	3 983	rni
Sales tax	10 310	0	10 310	nonexcise
Excise and levies - excise	10 632	0	10 632	excise
Excise and levies - primary products taxes	679	530	1 209	non excise
Taxes on international trade - imports	2 766	0	2 766	taxrevm
- excise equivalent on imports	428	0	428	excise
- exports	5	0	5	taxrev4
Taxes on gambling - indirect tax	0	612	612	rni
Taxes on gambling - commodity tax	0	1 865	1 865	nonexcise
Taxes on insurance	0	1 540	1 540	rni
Motor vehicles taxes	23	3 063	3 086	rni
Franchise taxes - on gas and petrol	0	1 362	1 362	franchise
-on tobacco and liquor	0	2 657	2 657	franchise
Other taxes - commodity	212	56	268	nonexcise
Other taxes - indirect	446	117	563	rni
Fees and fines	1 111	1 675	2 786	nonexcise
<i>Total indirect taxes, fees and fines</i>	<i>28 046</i>	<i>31 952</i>	<i>59 998</i>	
Income from public trading enterprises	1 362	4 700	6 062	
Income from public financial enterprises	3 345	569	3 914	
<i>Total income from public enterprises</i>	<i>4 707</i>	<i>5 269</i>	<i>9 976</i>	rgbef and rgbesl
Interest received - from States and local - other (not PTEs)	1 576 454	5 988	some nets out 6 397	gdpexp gdpexp
Intergovernment transfers	36	28 415	nets out	xigdp
<i>Total non-tax revenue</i>	<i>100 763</i>	<i>71 624</i>	<i>142 315</i>	
Less subsidies - from commodity tax	1 393	1 803	3 196	nonexcise
Less subsidies - from indirect tax	1 358	1 957	3 315	rni
<i>Total subsidies</i>	<i>2 751</i>	<i>3 760</i>	<i>6 511</i>	
<i>Total revenue net of subsidies</i>	<i>98 012</i>	<i>67 864</i>	<i>135 804</i>	

The disaggregated data for revenue from indirect taxes, fees and fines and for subsidies so obtained has then been rescaled so as to match the reported totals from ABS (1994). The need for rescaling arises because the breakdown of taxes, fees and fines taken from Table 40 of ABS (1994) is reported on a different basis from the revenue totals appearing in Tables 37, 38 and 39 of that publication.

Several final adjustments are also made to the data. The national accounts figures for income received from public trading enterprises are for dividend income only, and then only for income net of receipts by public trading enterprises of contributions from government to offset non-recurring losses (see Table D3.6 in Appendix D). In the HILORANI database, transfers from government to cover losses incurred in the rail industries have been included as a negative component of Other indirect taxes nec, and are therefore treated as an indirect subsidy rather than a negative item of non-tax revenue. Accordingly, the amount shown in Table C1.1 for income received by State and local governments from public trading enterprises includes a gross amount, while the sum of the negative transfers shown in Table D3.6 has been added to the State subsidies (indirect tax) component of Table C1.1.

Secondly, the interest received directly or indirectly by governments from their public trading enterprises has been removed from the 'Interest received — other' category and added into the line item representing income from public trading enterprises. The amounts of interest involved have been calculated as follows.

The ABS provided a breakdown of its 'Interest received — other' category into different types of interest. This breakdown is reproduced in Table C1.3, which also shows the so-called Economic Transactions Framework or ETF code for each of the items mentioned. This breakdown confirmed that the ABS national accounts interest item included net interest received by governments from their Central Borrowing Authorities (ETF 1219), some if not all of which would have been net interest on the net borrowings of GBEs from Central Borrowing Authorities. The breakdown also confirmed that the national accounts interest item included gross interest on intra-sector advances (ETF 3335), most of which would have been on advances to GBEs (which in ABS terminology are counted as being intra-sector essentially because they are not foreign).

The Commission then obtained from the Public Finance section of ABS a provisional breakdown of interest paid by public trading enterprises, coded to identify only those payments corresponding to the receipts ETF items 3335

and 1219 on the general government receipt side.⁹ The corresponding ETF payment items were 1211 (interest paid on intra-sector advances) and 1219 (interest paid on loans from CBAs).

Table C1.2 Reconciliation between national accounts and input-output indirect taxes less subsidies 1986 (\$ million)

<i>Groupings of taxes in I-O documentation</i>	<i>Commodity taxes (net)</i>	<i>Type of tax</i>		<i>Total</i>
		<i>Indirect taxes nec (net)</i>	<i>Customs duty</i>	
Sales tax	6 348.2	-		6 348.2
Excise duty	9 327.4	-		9 327.4
Primary production taxes	473.2	-		473.2
Commonwealth and state subsidies	-1 964.5	-1 915.3		-3 879.8
Motor vehicles taxes	7.5	854.2		861.7
Fringe benefits tax	-	511.7		511.7
Stamp duties	93.6	2 152.9		2 246.5
Payroll tax	-	3 703.1		3 703.1
Taxes on immovable property	-	3 701.3		3 701.3
Financial institution duty	615.3	-		615.3
Taxes on insurances nec	-	493.8		493.8
Liquor franchise taxes	400.0	16.2		416.2
Other franchise taxes				
- Petroleum	621.5	-		621.5
- Gas	8.8	-		8.8
- Tobacco	410.3	-		410.3
Racing taxes	413.4	40.9		454.3
Lottery taxes	350.0	174.6		524.6
Poker machine taxes	152.5	42.2		194.7
Other gambling taxes	13.4	47.5		60.9
Fees from regulatory services	273.1	-		273.1
Other taxes	341.5	718.7		1 060.2
Customs duty:				
- on exports	54.6	-		54.6
- on imports of excisable commodities	424.1	-		424.1
- other (including primage)	-	-	2 740.6	2 740.6
I-O total	18 363.9	10 541.8	2 740.6	31 646.3
Reclassification of customs duty on imports of excisable commodities	- 424.1		424.1	

⁹ The advantage of obtaining the data in this way was that the Public Finance section was also able to provide a breakdown by industry, as detailed in Appendix D3.

Table C1.3: Breakdown of National Accounts other interest received by governments 1993-94

General government		1993-94 \$m		
Description	ETF	Commonwealth	State & Local	Commonwealth, State & Local
Interest received				
- on advances to PFEs	3331	0	229	229
- on advances to building societies	3332	0	3	3
- on other advances to the private sector	3333	33	70	103
- on advances to foreign governments & organisations	3334	6	2	8
- on intra-sector advances	3335	1 818	607	848
- from banks	3336	216	451	666
- on securities of other NFPS authorities	3337	4	185	146
- on intra-sector deposits	3338	0	0	0
Interest received nec	3339	10	2 366	2 376
Interest received by CBAs	1219	0	3 409	3 409
Other property income	3340	186	1 216	1 402
Total		2 273	8 538	9 190

The data showed that Commonwealth public enterprises paid \$243 million in interest on intra-sector advances in 1993–94. State and local public trading enterprises paid \$633 million in interest on intra-sector advances and \$1,933 million in interest on loans from CBAs in the same year, totalling \$2,565 million. These amounts were relatively consistent with the corresponding receipts items in Table C1.3, given that they are not on a national accounts basis. The industry breakdown of interest payments showed that of the States’ \$2,565 million, \$14 million was paid by public trading enterprises within the public administration industry. This industry classification did not match with the industry classification of corresponding dividend data, so the \$14 million was ignored. Allowing for rounding, \$2,550 million was therefore taken as interest payments from State and local GBEs to their respective governments. This \$2,550 million by State GBEs and the \$243 million by Commonwealth GBEs were the amounts transferred from the interest to the public enterprise income line in Table C1.1.

Table C1.1 also shows the model variables or database concepts used to make the revenue projections. The reader is referred to Dee (1989) for documentation on how the variables are defined, but a brief description of them is as follows:

ryl aggregate nominal income tax revenue on labour

ryk inputs	aggregate nominal revenue from direct taxes on nonlabour
rpl	aggregate nominal payroll tax revenue
rpk	aggregate nominal property tax revenue
rni	aggregate nominal revenue from Other indirect taxes nec (net)
taxrev4	aggregate nominal revenue from commodity taxes on exports
taxrevm	aggregate nominal revenue from duties on imports
excise	calculated from initial and updated databases as a share-weighted sum of the percentage changes in commodity tax revenue on intermediate usage, investment usage, household and government consumption of the following individual commodities: oil, gas and brown coal; beer; other alcohol; tobacco; and petroleum and coal products. The weights used to aggregate the changes in revenue from the individual commodities are not those from the database, but are calculated from 1992–93 data on excise collections from ABS (1993) and Commonwealth Budget Paper No. 1, Statement No. 4. They therefore take account of changes in the composition of excise revenue since 1986–87.
franchise	calculated from initial and updated databases as a share-weighted sum of the percentage changes in commodity tax revenue on intermediate usage, investment usage, household and government consumption of the following individual commodities: beer; other alcohol; tobacco; petroleum and coal products; and gas. The weights used to aggregate the changes in revenue from the individual commodities are not those from the database, but are calculated from 1992–93 data on franchise fee collections from ABS (1993). A notional breakdown of liquor franchise collections into those on beer and other alcohol was provided by the Commission’s wine inquiry. The resulting revenue shares therefore take account of changes in the composition of franchise fees since 1986–87.
nonexcise	calculated from initial and updated databases as the percentage change in commodity tax revenue on intermediate usage, investment usage, household and government consumption of all commodities except those used to calculate the percentage changes in revenue on excise and franchise fees. Also excludes the percentage change in the negative tax on sales of domestic ‘other construction’ to the road freight transport industry, since although this ‘subsidy’ is used to model the effects of nonrecovery of road damage costs, in budgetary terms it represents an expenditure item. In some scenarios the

	percentage change in revenue from certain ‘shadow tax’ items are also excluded.
rgbef	a new model variable representing aggregate nominal revenue accruing to the Commonwealth from dividend and interest income transferred from Commonwealth public trading and financial enterprises
rgbesl	a new model variable representing aggregate nominal revenue accruing to State and Local governments from dividend and interest income transferred from their public trading and financial enterprises
gdpexp	nominal GDP
xigdp	the GDP deflator.

In some instances the rni variable in Table C1.1 is also replaced by a database concept calculated to exclude the percentage change in certain ‘shadow tax’ elements of Other indirect taxes nec.

Note that the dollar revenue projections for intragovernment transfers are made by assuming that they move in line with prices, but not in line with real income growth. This represents a major difference between this and the draft version of this report. With one major caveat, the current treatment is more in line with the way that Commonwealth grants to the States are actually determined. An agreement was reached at the 1994 Premiers’ Conference that financial assistance grants to the States would be maintained in real per capita terms over the next three years. Previous to that the grants were only guaranteed in real terms. In neither case is there any provision for adjustment for price movements.

However, the provision of the real per capita guarantee in 1995–96 and 1996–97 reflects the expectation that the States and Territories will make credible progress in microeconomic reform including the implementation of the Hilmer Report. To the extent that the additional population-based funding would not be available without implementation of Hilmer and related reforms, the additional population-based funding should be added to the estimates given in this report to give the full impact of Hilmer on intergovernment transfers.

Note that the dollar revenue projections for interest from non-GBE sources continue to be made assuming that interest receipts move in line with nominal GDP. Thus they are adjusted for both price and real income movements, although in cases where the two offset, they are obviously constant in nominal terms. The indexation of non-GBE interest for both price and real income movements is consistent with the now more detailed (long-term) treatment of interest from GBEs.

Finally, it is important to appreciate that although some model variables are held against more than one revenue line item in Table C1.1, it is not necessarily the case that the model variables will provide a good projection for each of the component line items separately. For example, the model's rni variable is calculated as the percentage change in aggregate revenue from a wide range of different taxes collected at different rates across a wide range of different industries. The model keeps track of the total revenue across all types of tax collected in each industry, but not the corresponding total revenue for a given type of tax across all industries. The latter concept would be what would be required in order to make good projections for each of the component taxes in Other indirect taxes nec separately. The rni variable can nevertheless give a good projection for the total of all taxes (net of subsidies) included in Other indirect taxes (net) nec, so long as the ABS has allocated the component taxes across industries within the input-output table appropriately.

Note that the Commission has nevertheless used both rni and its nonexcise variable to project separately two important sub-components of Other indirect taxes (net) nec and Commodity taxes (net), namely, the gross tax and gross subsidy components of each. As noted, the procedure is not necessarily legitimate, but has been undertaken in order to give at least some indication of what might happen to revenue alone, as required by the terms of reference.

In the case of the rail scenario (where the procedure clearly matters), additional information has been extracted from the model's updated databases to enable the Commission to distinguish changes in rail subsidies from changes in other non-commodity subsidies, and to be able to attribute the latter primarily to the States. To assist in this allocation in the final version of this report, it has obtained additional information from ABS on the breakdown of the Subsidies to public trading enterprises (PTEs) by state and by industry of operation of the public trading enterprises. The data show that in 1993–94, NSW paid \$396 million to PTEs in the rail industry, while Victoria paid \$742 million, Queensland paid \$196 million and WA paid \$5 million. The \$1,339 million in total paid by the States is the base from which the model's projected changes in rail subsidies are applied in the State revenue projections.

As noted above, the rni variable can nevertheless give a good projection for the total of all taxes (net of subsidies) included in Other indirect taxes (net) nec, so long as the ABS has allocated the component taxes across industries within the input-output table appropriately. The allocation of the component

taxes across individual industries in the 1986–87 input-output table is shown in Table C1.4.¹⁰

The model's theoretical structure then assumes that the nominal revenue from the sum of these taxes in each industry varies in response to variations in real industry output and the consumer price index. Whether this constitutes an appropriate treatment of the way in which the component tax bases would actually vary depends on the particular taxes in question.

For example, Table C1.4 shows that liquor and gambling taxes have been attributed primarily to the entertainment and restaurant industries. Since these industries in turn sell 84 and 96 per cent of their output to households in the HILORANI database, respectively, the real growth in liquor and gambling tax revenue projected (implicitly) by the model will depend primarily on what is projected to happen to real household disposable income, and the prices of entertainment and restaurant services relative to the prices of other goods purchased by consumers.

Similarly, taxes on insurance are attributed by the ABS solely to the insurance industry. In the ORANI database, this industry in turn sells 29 per cent of its output to households and a further 10 per cent to the Ownership of dwelling industry, and 28 per cent to government. The remaining sales are spread relatively thinly across other industries. The real growth in insurance tax revenue projected by the model would therefore depend on household disposable income and relative prices, on government demand (assumed to be constant in real terms in these scenarios), and on the fortunes of the private industries to which the insurance industry sells insurance contracts. To the extent that the value of insurance contracts depends on capital values while HILORANI links other indirect tax revenue to the consumer price index, and given that Hilmer and related reforms are generally projected reduce the investment price index relative to the consumer price index (see Chapter C2), the model may implicitly be overly generous in projecting the nominal change in revenue from this source.

Motor vehicle taxes are attributed by the ABS to a range of industries, but the road transport industry accounts for 27 per cent of the total. The main

¹⁰ Note that the tax totals shown in Table C1.4 are the same as those shown in Table C1.2, except in the case of stamp duty. The \$1,415 million in stamp duty not included in Table C1.4 is treated in the ABS input-output tables as an indirect tax on investment expenditure rather than on current production by industry. The ORANI model's theoretical structure makes no provision for non-commodity indirect taxes on investment, so that the amount is omitted when the standard ORANI model database is constructed. Nevertheless, in the current exercise, the model's resulting projected change for rni is applied to a revenue base that includes the additional \$1,415 million in stamp duty revenue.

component of this tax is registration and transfer fees and weight tax. To the extent that revenue from this source depends on the stock of outstanding vehicles, which may differ with and without Hilmer, but in a way that is likely to be more sluggish than the variation in industry output,¹¹ the model is again likely to be implicitly generous in projecting changes in revenue from this source.

D1: landscape tables (4)

¹¹ Econometric results provided to the Commission by the New South Wales Treasury suggest that a one percentage change in real GDP per capita from one year to the next would generate only an additional 0.4 per cent increase in the vehicle stock per capita. The Commission was not provided with enough information to assess the sensitivity of that result to econometric problems such as nonstationarity or omitted variable bias.

D1: landscape tables

D1: landscape tables

Most stamp duty revenue is paid on contracts and conveyances, primarily the latter. Of the stamp duties included in the database, two-thirds are attributed by the ABS to the non-bank finance and investment industries. These industries in turn sell 13 and 24 per cent of their output to households, respectively, while non-bank finance sells a further 11 per cent to the Ownership of dwelling industry. The remaining sales of these two industries are spread across a range of other industries. The number of buildings changing hands may move in line with the economic activity of the industries to which the non-bank finance and investment industries are assumed to sell in the model's database, but to the extent that the value of the transactions depends on capital costs rather than the consumer price index, the model may again be implicitly generous in projecting revenue from this source.

Thus it appears that the model may be overly generous in projected changes in some of the indirect tax revenue items of importance in State budgets.¹² But it should be equally clear that appropriate remedial action would involve not just a change to the model's theoretical structure, but certainly an updating of the indirect tax data in the database and possibly even an overhaul in the way that the ABS allocates particular indirect tax items within the input-output table. As noted in Chapter A3, such an overhaul has not been possible in the time available.

In its comments on the draft version of this report, the New South Wales Treasury suggested that some of the non-commodity indirect tax items might be better projected using the same macroeconomic proxies used by that Treasury in its forecasting work. But to the extent that the tax bases for these indirect taxes are truly microeconomic in nature, it is highly unlikely that macroeconomic proxies that may work well in a balanced growth, forecasting context would also perform well in the current unbalanced growth, comparative policy context. It is certainly not clear that they would perform better than the dated but microeconomic treatment in HILORANI. In an exercise such as this, compositional effects are likely to have an important role to play. It would be inappropriate to suppress them by using macroeconomic proxies. This argument was also made strongly in Chapter A3. The advantage of maintaining a microeconomic treatment is that there is at least some basis for assessing the extent of bias.

The Commission has not therefore adopted the New South Wales Treasury's suggestions. Instead, it has provided in Table C1.5 below the full industry breakdown of the sources of all the indirect taxes paid by industry in the

¹² Most of the other indirect taxes listed in Table C1.4 accrue to the Commonwealth government.

HILORANI database.¹³ This information can be used in conjunction with the model's projections for industry output in the next chapter, to assess the sources of the compositional effects embodied in the model's projections, and to allow readers to make their own judgments as to the seriousness of any bias. Of course, it needs to be remembered that not all of the taxes shown in Table C1.5 are modelled as being levied on industry output. For example, payroll taxes are levied on wage bills. But short of reporting results for every variable in the model, using industry output judiciously should give readers a reasonable guide.

¹³ Commodity taxes (net) are paid on commodities rather than being paid by industries. The commodity tax data reported in Table C1.5 have been converted from a commodity to an industry basis using the make matrix in the HILORANI database. The distinction only matters for joint production industries in the agricultural sector.

Table C1.5: **HILORANI's tax data by industry, 1986-87** (million)

Code	Description	Taxes			Other		Total	
		Taxes on labour income	on non labour income	Payroll taxes	Property taxes	Indirect taxes nec (net)		Commodity taxes (net)
1	Pastoral zone	97	18	1	8	2	4	130
2	Wheat sheep zone	346	130	5	69	16	-16	551
3	High rainfall zone	168	48	2	24	5	12	259
4	Northern beef	54	16	0	0	0	5	75
5	Milk cattle	82	30	1	22	2	1	138
6	Pigs	45	0	0	4	2	3	54
7	Sugar cane	49	7	1	7	2	-7	58
8	Other farming export	122	16	3	25	2	9	177
9	Potatoes	20	1	1	4	0	1	27
10	Other farming import competing	144	10	4	29	3	11	202
11	Poultry	13	9	7	42	-3	-5	63
12	Services to agriculture	120	10	5	16	2	0	154
13	Forestry and logging	80	5	8	17	9	0	119
14	Fishing and hunting	44	11	1	16	16	4	93
15	Ferrous metal ores	78	166	17	5	6	0	274
16	Nonferrous metal ores	223	299	37	9	14	0	583
17	Black coal	468	448	67	19	13	128	1 143
18	Oil, gas and brown coal	96	616	20	4	11	1 811	2 557
19	Minerals nec	70	128	11	6	8	-1	222
20	Services to mining nec	40	16	12	4	13	0	84
21	Meat products	190	56	40	7	-1	4	297
22	Pasteurised milk	17	10	3	1	1	41	73
23	Milk products	49	29	9	4	3	53	148
24	Fruit and vegetables products	49	15	7	3	1	12	87
25	Margarine and oils and fats nec	18	19	2	1	1	0	41
26	Flour mill and cereal food products	35	34	7	3	1	2	82
27	Bread, cakes and biscuits	91	32	20	8	5	47	203
28	Confectionery products	27	22	6	2	1	87	145
29	Raw sugar	4	9	1	0	0	0	14
30	Food products nec	117	70	20	5	3	119	334
31	Soft drinks, cordials and syrups	31	29	6	2	2	168	238
32	Beer and malt	58	50	11	5	2	1 621	1 746
33	Alcoholic beverages	18	14	3	1	1	686	723
34	Tobacco products	27	23	5	0	1	1 464	1 520
35	Cotton ginning	5	7	1	2	0	0	14
36	Wool scouring	7	1	2	0	0	0	10
37	Man made fibres	22	9	6	2	1	-49	-9
38	Cotton fabrics	23	5	5	1	1	-11	25
39	Wool, worsted fabrics	13	3	3	0	0	-18	1
40	Textile finishing	17	2	3	1	1	-1	22

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41	Floor coverings etc	20	8	5	1	1	15	50
42	Textile products nec	21	13	5	1	1	9	50
43	Knitting mills	47	17	11	2	2	0	79
44	Clothing	103	51	26	5	5	3	192
45	Footwear	36	12	9	1	1	0	59
46	Woodchips	12	6	2	1	0	0	20
47	Sawmill products	53	27	10	3	-1	2	94
48	Veneers and manufactured wood boards	24	4	3	1	-1	-1	29

Table C1.5 (continued)

Code	Description	Taxes			Other			Total taxes
		Taxes on labour income	on non labour income	Payroll taxes	Property taxes	Other indirect taxes (net)	Commodity taxes (net)	
49	Joinery and wood products nec	70	12	11	3	-2	31	126
50	Furniture and mattresses	90	20	17	4	-4	42	170
51	Pulp, paper and paperboard	68	53	6	2	2	109	239
52	Bags and containers	53	25	10	2	2	0	93
53	Paper products nec	20	9	5	1	1	44	80
54	Publishing and printing	194	57	35	5	4	-18	277
55	Printing, stationery	208	57	36	8	6	584	899
56	Chemical fertilisers	19	0	3	1	-6	-40	-23
57	Basic chemicals	112	83	21	9	3	51	279
58	Paints	31	16	7	2	2	0	58
59	Pharmaceuticals	63	27	14	4	2	38	148
60	Soap and detergents	33	28	7	2	2	122	195
61	Cosmetics	20	11	5	1	1	156	193
62	Chemical products nec	38	28	5	2	2	91	165
63	Petroleum and coal products	55	0	9	6	4	5 262	5 335
64	Glass and glass products	42	23	7	3	0	54	130
65	Clay products and refractories	55	15	11	8	2	18	109
66	Cement	27	29	5	2	1	-2	62
67	Ready mixed concrete	19	8	3	2	3	0	35
68	Concrete products	53	15	11	5	2	0	85
69	Nonmetallic mineral products nec	27	20	5	2	1	0	55
70	Basic iron and steel	312	45	54	8	-1	-37	381
71	Nonferrous metals and products	215	243	37	9	2	0	507
72	Structural metal products	145	67	23	7	3	0	245
73	Sheet metal products	105	65	19	5	1	2	198
74	Metal products nec	166	58	27	7	0	244	503
75	Motor vehicles	322	3	66	18	-9	2 022	2 422
76	Ships and boats	67	19	7	1	1	31	126
77	Locomotive rolling stock	86	29	4	1	2	0	122
78	Aircraft	86	9	5	0	-2	0	99
79	Scientific equipment etc	39	22	8	4	-2	364	434

80	Electronic equipment	97	48	16	2	-3	572	733
81	Household appliances	69	33	14	2	-1	127	244
82	Electrical equipment	126	45	24	6	-2	45	244
83	Agricultural machinery	21	0	3	1	0	-10	16
84	Construction machinery etc	29	3	5	1	1	2	40
85	Machinery and equipment nec	208	62	38	7	6	16	338
86	Leather products	15	7	3	1	0	20	46
87	Rubber products	49	23	7	3	1	263	346
88	Plastic and related products	144	68	28	9	5	68	321
89	Signs, writing equipment	20	7	3	1	1	95	127
90	Manufacturing nec	26	12	5	1	0	267	312
91	Electricity	510	51	118	10	32	18	740
92	Gas	63	8	17	2	4	225	319
93	Water, sewerage and drainage	276	25	71	10	7	-47	340
94	Residential building construction	754	154	35	43	83	-16	1 054
95	Other construction	3 081	0	144	84	95	-1 911	1 492
96	Wholesale trade	1 807	806	326	226	132	0	3 296
97	Retail trade	1 570	331	303	204	132	0	2 539
98	Mechanical repairs	334	68	69	39	7	0	517

Table C1.5 (continued)

Code	Description	Taxes			Other			Total taxes
		Taxes on labour income	on non labour income	Payroll taxes	Propert y taxes	taxe nec (net)	Commodity taxes (net)	
99	Repairs nec	159	0	26	16	6	0	207
100	Road freight transport	875	247	67	20	166	-36	1 338
101	Road passenger transport	224	62	17	5	42	-173	177
102	Mining rail transport	5	9	1	37	129	0	182
103	Private iron ore rail transport	0	1	0	5	53	0	60
104	Non bulk rail transport	193	25	18	114	-821	-48	-518
105	Grain freight rail transport	70	9	7	41	-303	0	-176
106	Rail passenger transport	163	16	19	19	-335	-764	-882
107	Railway fixed costs	99	23	12	12	-242	0	-96
108	Water transport	135	21	10	5	-6	-10	155
109	International air transport	116	73	11	5	14	0	219
110	Domestic air transport	179	112	17	7	21	0	337
111	Services to transport	631	147	61	11	32	0	882
112	Postal services	85	4	18	0	1	0	107
113	Telecommunications	399	362	48	21	16	0	845
114	Banking	722	409	226	30	4	555	1 946
115	Nonbank finance	378	330	95	21	286	123	1 233
116	Investment nec	134	91	50	6	270	26	576
117	Insurance nec	398	0	112	6	527	229	1 272
118	Business services nec	1 740	633	469	80	147	0	3 068
119	Ownership of dwellings	0	4 327	0	1 884	-70	0	6 141
120	Public administration	1 169	0	0	0	0	0	1 169
121	Defence	770	0	0	0	0	0	770

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122	Health	2 509	231	46	102	-18	0	2 870
123	Education, libraries	2 432	107	47	80	25	0	2 691
124	Welfare etc services nec	1 215	74	23	58	-2	-2	1 366
125	Entertainment and recreational services	180	112	40	35	354	1 009	1 729
126	Restaurants, hotels and clubs	343	186	80	40	62	0	711
127	Personal services	70	73	27	10	4	0	185
128	Non competing imports	0	0	0	0	0	0	0
	Totals	30	13	3 694	3 849	1 036	16 020	68
		925	095					619

C2 REVENUE AND SECTORAL RESULTS IN DETAIL

As noted in the previous chapter, the key to understanding the model's aggregate revenue projections for Hilmer and related reforms is to appreciate that the tax revenue projections are obtained from a model that keeps track of revenue flows at a highly disaggregated industry or commodity level, and then aggregates the industry or commodity results to give associated aggregate percentage changes for each type of tax.

The first step in understanding the model results is therefore to appreciate which industries or commodities are generating how much of each type of tax revenue initially, and then by how much the output of those industries or commodities is projected to change in the face of Hilmer and related reforms.

This is not to imply that the model's theoretical structure assumes industry output to be the tax base for each of these taxes. Instead, the theory recognises that payroll taxes are levied on payrolls, that direct taxes on labour income are then levied on gross labour earnings (ie. net of payroll taxes), that taxes on non-labour income are levied on gross non-labour earnings (ie. net of property taxes), and so on. Only Other indirect taxes nec (net) are modelled as being directly related to output levels. However, to report the results for all the respective tax bases would have been unmanageable. The industry output results have therefore been provided to give a broad indication only of the projected changes in tax bases across industries.

The first set of information required was provided in the previous chapter, in Table C1.5. This gave 1986–87 dollar values for the different types of tax generated initially, at the highly disaggregated industry level embodied in the HILORANI model's database. This chapter provides the corresponding information on the projected changes in industry output.

This chapter also provides additional information to show how the revenue projections reported in Chapter A4 have been built up. For each scenario, it reports the model's projected percentage changes in the thirteen broad kinds of revenue mentioned in the previous chapter. These percentage changes are generally applied directly to the 1993–94 base figures shown in Table C1.1 of the previous chapter, to give nominal dollar changes in each kind of revenue. For real projections, the percentage change in the GDP deflator is first subtracted from the percentage changes in nominal revenue. The projected percentage changes in a range of deflators, including the GDP deflator, are

therefore also included in the tables that report the percentage changes in nominal revenues.

Tables are then presented that show the corresponding real (and in most cases also the nominal) dollar projections, once the percentage changes have been applied to the respective 1993–94 dollar bases. The results across the five broad (net) revenue categories reported in Chapter A4 are obtained by aggregating the dollar projections shown here at the thirteen category level.

To interpret the results reported in Chapter A4, it is most useful to work backwards as follows. First, find out which of the dollar changes at the thirteen category level account for most of the ‘action’ at the five category level, then examine Table C1.5 to see which industries are the most important sources of those categories of revenue initially. Finally, examine the projected percentage changes in output of those industries, relative to those of other industries, to find out whether their projected behaviour in the face of Hilmer and related reforms can in fact account for most of the aggregate changes reported in Chapter A4.

This procedure can be used to verify the statements made in Chapter A4 about the industry sources of some of the major changes in Commonwealth and State, Territory and local budget revenues in the face of reforms undertaken by those two levels of government. This procedure can also be used by the reader to investigate the sources of some of the more subtle compositional changes embodied in the model results. The strictures of time have prevented the Commission from reporting more fulsomely itself.

Tables C2.1 to C2.4 give the necessary revenue and sectoral results for State reforms, assuming monetary accommodation.

Tables C2.5 to C2.8 give the necessary revenue and sectoral results for Commonwealth reforms, under the same monetary assumption.

Tables C2.9 to C2.12 and Tables C2.13 to C2.16 repeat the pattern for State and Commonwealth reforms, but under the assumption of monetary non-accommodation and zero indexation of the income tax schedule.

Tables C2.17 to C2.20 and Tables C2.21 to C2.24 repeat the pattern for State and Commonwealth reforms, but under the assumption of monetary non-accommodation and full indexation of the income tax schedule.

Tables C2.25 to C2.28 give similar revenue and sectoral information, along with the projected macroeconomic implications, of a rail reform scenario that makes a more generous allowance for CSOs, as reported in Chapter A4.

Finally, Tables C2.29 to C2.32 give similar revenue and sectoral information, along with the projected macroeconomic implications, for an alternative set of

GBE reform scenarios in which the impacts of imposing competitive neutrality in financing structure have been omitted, also as reported in Chapter A4.

c2.1 landscape

c2.2 landscape

c2.3 landscape

c2.4

c2.4 continued

c2.4 continued

c2.4 continued

Table C2.5: Commonwealth reforms: projected revenue implications by tax type (assuming monetary accommodation) (per cent)

	<i>Statutory marketing arrangements</i>	<i>Comp. tenderin g</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
Nominal revenue change (%)						
Direct taxes						
Individuals - net tax instalments	0.11	-0.06	1.07	0.09	0.04	1.26
Other	0.22	0.20	0.61	0.07	0.01	1.11
Payroll taxes	0.15	0.15	0.72	0.07	0.02	1.11
Property taxes	0.04	0.11	1.01	0.08	0.03	1.27
Export taxes	7.20	4.22	23.56	1.90	3.31	40.18
Import duties	0.22	0.14	0.67	0.08	0.03	1.14
Excise	-0.61	0.15	0.84	0.07	0.04	0.49
Franchise fees	-2.52	0.11	0.71	0.05	0.03	-1.62
Sales tax, other commodity taxes (net)	0.16	0.13	0.89	0.07	0.02	1.26
Other non-commodity indirect taxes (net)	0.35	0.15	1.78	0.11	0.05	2.43
Income from Commonwealth public enterprises	0.03	0.03	2.58	-0.02	0.47	3.10
Income from State public enterprises	0.15	0.13	0.98	0.08	0.02	1.36
Other income	0.04	-0.09	0.08	0.00	0.01	0.04
Less commodity subsidies	0.16	0.13	0.89	0.07	0.02	1.26
Less other indirect subsidies	0.35	0.15	1.78	0.11	0.05	2.43
Price deflators (%)						
Government current expenditure price index	0.09	-0.37	0.30	0.01	0.02	0.05
Commonwealth current expenditure price index	0.11	-0.76	0.17	0.01	0.01	-0.46
State & local current expenditure price index	0.08	-0.24	0.35	0.01	0.02	0.22
Consumer price index	0.00	0.00	0.00	0.00	0.00	0.00
Investment price index	0.17	-0.03	0.28	0.03	0.01	0.46
GDP deflator	0.04	-0.09	0.08	0.00	0.01	0.04
Indicators of real activity (%)						
Real GDP (value added)	0.04	0.16	0.65	0.07	0.03	0.93
Real aggregate output	0.01	0.14	0.60	0.07	0.00	0.82

Table C2.6: Commonwealth reforms: projected real revenue implications in detail (assuming monetary accommodation)(\$ million)

	<i>Statutory marketing arrangements</i>	<i>Comp. tenderin g</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
Commonwealth						
Direct taxes						
Individuals - net tax instalments	31	15	423	38	13	520
Other	41	68	122	16	2	249
Payroll taxes	0	0	0	0	0	0
Property taxes	0	0	0	0	0	0
Export taxes	0	0	1	0	0	2
Import duties	5	6	16	2	1	30
Excise	-72	27	84	8	4	50
Franchise fees	0	0	0	0	0	0
Sales tax, other commodity taxes (net)	15	28	99	8	1	151
Other non-commodity indirect taxes (net)	6	5	32	2	1	46
Income from public enterprises	0	6	118	-1	22	144
Other income	1	3	13	1	1	19
Less commodity subsidies	2	3	11	1	0	17
Less other indirect subsidies	4	3	23	1	1	33
Total revenue net of subsidies	21	151	873	72	44	1161
States						
Direct taxes						
Individuals - net tax instalments	0	0	0	0	0	0
Other	7	15	39	4	1	66
Payroll taxes	0	13	60	5	1	79
Property taxes	0	0	0	0	0	0
Export taxes	0	0	0	0	0	0
Import duties	0	0	0	0	0	0
Excise	-103	8	25	2	1	-67
Franchise fees	7	14	49	4	1	75
Sales tax, other commodity taxes (net)	0	0	0	0	0	0
Other non-commodity indirect taxes (net)	29	22	157	10	5	223
Income from public enterprises	6	12	47	4	1	69
Other income	2	9	39	4	2	56
Less commodity subsidies	2	4	14	1	0	22
Less other indirect subsidies	6	5	33	2	1	47
Total revenue net of subsidies	-60	84	369	29	10	432

Table C2.7: Commonwealth reforms: projected nominal revenue implications in detail (assuming monetary accommodation)(\$ million)

	<i>Statutory marketing arrangements</i>	<i>Comp. tenderin g</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
Commonwealth						
Direct taxes						
Individuals - net tax instalments	47	-24	458	39	16	536
Other	50	46	141	17	3	258
Payroll taxes	0	0	0	0	0	0
Property taxes	0	0	0	0	0	0
Export taxes	0	0	1	0	0	2
Import duties	6	4	19	2	1	31
Excise	-68	16	93	8	4	54
Franchise fees	0	0	0	0	0	0
Sales tax, other commodity taxes (net)	20	16	109	9	2	156
Other non-commodity indirect taxes (net)	7	3	34	2	1	46
Income from public enterprises	2	2	122	-1	22	146
Other income	1	1	15	1	1	20
Less commodity subsidies	2	2	12	1	0	18
Less other indirect subsidies	5	2	24	1	1	33
Total revenue net of subsidies	58	60	955	75	49	1198
States						
Direct taxes						
Individuals - net tax instalments	0	0	0	0	0	0
Other	0	0	0	0	0	0
Payroll taxes	9	9	44	4	2	68
Property taxes	3	7	65	5	2	81
Export taxes	0	0	0	0	0	0
Import duties	0	0	0	0	0	0
Excise	0	0	0	0	0	0
Franchise fees	-101	4	29	2	1	-65
Sales tax, other commodity taxes (net)	10	8	54	4	1	77
Other non-commodity indirect taxes (net)	32	14	165	10	5	226
Income from public enterprises	8	7	52	4	1	71
Other income	15	-23	68	5	4	69
Less commodity subsidies	3	2	16	1	0	23
Less other indirect subsidies	7	3	35	2	1	48
Total revenue net of subsidies	-34	21	426	32	14	458

Table C2.8: Commonwealth reforms: projected implications for industry output (assuming monetary accommodation) (per cent)

	<i>Industry</i>	<i>Statutory marketing arrangements</i>	<i>Comp. tendering</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
1	pastoral zone	0.74	0.29	0.27	0.08	0.01	1.38
2	wheat sheep zone	0.53	0.31	0.45	0.09	0.01	1.39
3	high rainfall zone	0.44	0.32	0.60	0.10	0.00	1.46
4	northern beef	2.30	0.70	2.00	0.26	0.02	5.27
5	milk cattle	-15.61	0.01	0.06	0.00	0.00	-15.54
6	pigs	0.51	0.46	1.03	0.15	0.01	2.16
7	sugar cane	2.10	1.29	2.80	0.41	0.04	6.63
8	other farming export	0.05	0.26	0.68	0.09	0.01	1.08
9	potatoes	0.10	0.06	0.39	0.03	0.01	0.60
10	other farming import	-1.77	0.16	0.42	0.05	0.01	-1.14
11	poultry	0.33	0.30	0.68	0.10	0.01	1.41
12	services to agriculture	-0.01	0.18	0.37	0.06	0.00	0.61
13	forestry and logging	0.13	0.04	0.62	0.06	0.01	0.87
14	fishing and hunting	0.13	0.13	0.41	0.05	0.01	0.73
15	ferrous metal ores	1.44	0.68	2.14	0.27	0.06	4.60
16	non ferrous metal or	1.41	0.74	2.63	0.31	0.06	5.15
17	black coal	1.93	1.00	2.51	0.36	0.05	5.85
18	oil gas and brown coal	0.16	0.16	0.64	0.07	0.02	1.05
19	minerals nec	1.11	0.60	2.11	0.26	0.05	4.14
20	services to mining nec	0.89	0.49	1.74	0.21	0.04	3.36
21	meat products	0.45	0.44	0.98	0.14	0.01	2.01
22	pasteurised milk	-3.12	0.02	0.08	0.01	0.00	-3.00
23	milk products	-20.10	0.02	0.08	0.01	0.00	-19.99
24	fruit and vegetables	0.00	0.04	0.19	0.01	0.00	0.24
25	margarine oils and fats	0.08	0.09	0.36	0.04	0.00	0.57
26	flour mill cereal products	-0.08	0.05	0.18	0.02	0.00	0.18
27	bread cakes biscuits	0.02	0.02	0.11	0.01	0.00	0.17
28	confectionery	-0.03	0.06	0.24	0.02	0.00	0.30
29	raw sugar	1.94	1.19	2.60	0.38	0.03	6.15
30	food products nec	0.32	0.48	1.19	0.16	0.02	2.17
31	soft drinks cordials	0.00	0.02	0.19	0.01	0.00	0.22
32	beer and malt	0.00	0.04	0.27	0.02	0.00	0.33
33	alcoholic beverages	0.19	0.15	0.84	0.09	0.01	1.28
34	tobacco products	2.12	0.05	0.25	0.02	0.00	2.44
35	cotton ginning	0.77	0.40	0.95	0.14	0.02	2.28
36	wool scouring	0.80	0.42	0.84	0.13	0.02	2.20
37	man made fibres	0.63	0.37	1.23	0.15	0.03	2.41
38	cotton fabrics	0.66	0.36	0.90	0.13	0.01	2.07
39	wool worsted fabrics	0.22	0.13	0.44	0.06	0.01	0.85
40	textile finishing	0.12	0.09	0.34	0.04	0.01	0.61
41	floor coverings etc	0.07	0.06	0.41	0.05	0.01	0.60
42	textile products nec	0.15	0.14	0.57	0.07	0.01	0.94
43	knitting mills	0.10	0.07	0.23	0.03	0.00	0.43
44	clothing	0.08	0.06	0.22	0.02	0.01	0.39

Table C2.8: Commonwealth reforms: projected implications for industry output (assuming monetary accommodation) (per cent) (continued)

	<i>Industry</i>	<i>Statutory marketing arrangements</i>	<i>Comp. tendering</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
45	footwear	0.34	0.20	0.43	0.07	0.00	1.03
46	woodchips	0.00	0.00	0.00	0.00	0.00	0.00
47	sawmill products	0.22	0.20	0.86	0.09	0.01	1.38
48	veneers manufactured wood boards	0.07	0.09	0.50	0.06	0.01	0.71
49	joinery and wood products	0.03	0.08	0.56	0.06	0.00	0.74
50	furniture and mattresses	0.06	0.04	0.28	0.04	0.01	0.44
51	pulp paper paperboard	0.11	0.17	0.57	0.07	0.02	0.95
52	bags and containers	-0.04	0.14	0.43	0.06	0.03	0.62
53	paper products nec	-0.03	0.09	0.47	0.04	0.00	0.57
54	publishing printing	0.05	0.10	0.43	0.06	0.01	0.65
55	printing stationary	0.00	0.10	0.50	0.05	0.01	0.65
56	chemical fertilisers	-0.04	0.33	0.81	0.11	0.01	1.22
57	basic chemicals	0.23	0.25	0.87	0.11	0.03	1.50
58	paints	0.12	0.13	0.65	0.08	0.01	0.98
59	pharmaceuticals	0.07	0.17	0.61	0.07	0.00	0.92
60	soap and detergents	0.04	0.06	0.32	0.03	0.00	0.45
61	cosmetics	0.07	0.06	0.30	0.03	0.00	0.46
62	chemical products nec	0.41	0.28	0.91	0.12	0.02	1.73
63	petroleum coal products	0.11	0.15	0.63	0.07	0.04	0.99
64	glass and glass products	-0.49	0.12	0.54	0.06	0.01	0.24
65	clay products	0.11	0.12	0.74	0.07	0.00	1.04
66	cement	0.02	0.06	0.44	0.07	0.00	0.59
67	ready mixed concrete	0.00	0.05	0.41	0.06	0.00	0.53
68	concrete products	-0.01	0.05	0.38	0.06	0.00	0.49
69	non metallic mineral	0.10	0.11	0.62	0.07	0.00	0.90
70	basic iron and steel	0.16	0.15	0.64	0.09	0.01	1.04
71	non ferrous metals	1.54	0.83	2.65	0.33	0.05	5.40
72	structural metal products	0.05	0.10	0.57	0.08	0.00	0.81
73	sheet metal products	-0.02	0.07	0.56	0.06	0.01	0.68
74	metal products nec	0.21	0.19	0.79	0.10	0.01	1.30
75	motor vehicles	0.30	0.27	1.21	0.15	0.01	1.94
76	ships and boats	0.18	0.13	0.80	0.08	-0.03	1.15
77	locomotives rollings	0.04	0.14	0.61	0.08	-0.08	0.79
78	aircraft	0.09	0.09	0.61	0.05	0.55	1.38
79	scientific etc equipment	0.23	0.15	0.65	0.07	0.01	1.10
80	electronic equipment	0.22	0.16	-1.07	0.06	0.02	-0.62
81	household appliances	0.04	0.10	0.71	0.06	0.01	0.91
82	electrical equipment	0.18	0.16	-0.92	0.05	0.01	-0.52
83	agricultural machinery	-0.57	0.34	3.06	0.28	-0.02	3.10
84	construction etc machinery	0.53	0.31	0.80	0.15	0.03	1.83
85	machinery equipment	0.19	0.16	0.91	0.12	0.02	1.39
86	leather products	0.33	0.20	0.55	0.08	0.01	1.17

87 rubber products 0.34 0.26 0.98 0.11 0.01 1.70

Table C2.8: Commonwealth reforms: projected implications for industry output (assuming monetary accommodation) (per cent) (continued)

<i>Industry</i>	<i>Statutory marketing arrangements</i>	<i>Comp. tendering</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
88 plastic related products	-0.16	0.17	0.68	0.08	0.03	0.80
89 signs writing equipment	0.09	0.14	0.64	0.07	0.01	0.95
90 manufacturing nec	1.36	0.75	2.38	0.30	0.04	4.84
91 electricity	0.09	0.16	0.66	0.07	0.00	0.98
92 gas	0.19	0.21	0.86	0.09	0.01	1.38
93 water sewerage drainage	0.02	0.11	0.54	0.05	0.01	0.73
94 residential building	0.05	0.09	0.78	0.05	0.00	0.96
95 construction	-0.04	0.03	0.18	0.07	0.00	0.23
96 wholesale trade	-0.12	0.15	0.34	0.06	0.01	0.44
97 retail trade	-0.01	0.04	0.33	0.02	0.00	0.39
98 mechanical repairs	0.00	0.09	0.47	0.04	-0.01	0.59
99 repairs nec	0.12	0.14	0.69	0.06	0.01	1.03
100 road freight transport	0.01	0.21	0.77	0.11	0.01	1.11
101 road passenger transport	0.01	0.03	0.13	0.02	0.00	0.19
102 mining rail transport	0.99	0.55	1.56	0.21	0.03	3.34
103 private iron ore rail transport	1.47	0.70	2.18	0.28	0.06	4.68
104 non bulk rail transport	-0.22	0.23	-0.05	0.07	-0.02	0.01
105 grain freight rail transport	0.34	0.27	-0.15	0.05	-0.01	0.49
106 rail passenger trans	0.01	0.02	0.07	0.01	0.00	0.10
107 railway fixed costs	0.00	0.00	0.00	0.00	0.00	0.00
108 water transport	0.49	0.27	0.92	0.11	0.02	1.81
109 international air transport	0.10	0.10	0.69	0.05	0.82	1.76
110 domestic air transport	0.10	0.10	0.45	0.04	0.83	1.52
111 services to transport	0.12	0.16	0.55	0.06	-0.77	0.11
112 postal services	0.04	0.11	0.87	1.82	0.00	2.83
113 telecommunications	0.02	0.10	5.61	0.06	0.00	5.80
114 banking	0.02	0.11	0.64	0.05	0.01	0.84
115 non bank finance	0.03	0.12	0.56	0.06	0.02	0.79
116 investment nec	0.08	0.12	0.57	0.05	0.01	0.83
117 insurance nec	0.04	0.08	0.42	0.03	0.01	0.58
118 business services	0.00	0.12	0.60	0.06	0.01	0.79
119 ownership of dwellings	0.04	0.08	0.60	0.03	0.00	0.77
120 public administration	0.00	0.04	0.13	0.01	0.00	0.19
121 defence	0.00	0.00	0.00	0.00	0.00	0.00
122 health	0.03	0.08	0.19	0.01	0.00	0.31
123 education libraries	0.01	0.02	0.05	0.00	0.00	0.09
124 welfare etc services	0.03	0.15	0.30	0.02	0.00	0.50
125 entertainment leisure	0.02	0.13	0.56	0.04	0.01	0.76
126 restaurants hotels clubs	0.07	0.07	0.46	0.04	0.01	0.64
127 personal services	0.05	0.08	0.41	0.03	0.00	0.56
128 non competing imports	0.00	0.00	0.00	0.00	0.00	0.00

c2.9 landscape

c2.10 landscape

c2.11 landscape

c2.12 landscape

c2.12 continued

c2.12 continued

c2.12 continued

Table C2.13: Commonwealth reforms: projected revenue implications by tax type (assuming monetary non-accommodation and zero income tax indexation) (per cent)

	<i>Statutory marketing arrangements</i>	<i>Comp. tenderin g</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
Nominal revenue change (%)						
Direct taxes						
Individuals - net tax instalments	-0.01	-0.16	-0.18	-	-0.02	-0.41
				0.03		
Other	0.14	0.14	-0.11	0.00	-0.02	0.16
Payroll taxes	0.08	0.08	-0.02	0.00	-0.01	0.13
Property taxes	-0.03	0.05	0.30	0.01	-0.01	0.33
Export taxes	7.04	4.07	21.04	1.74	3.23	37.12
Import duties	0.14	0.07	-0.02	0.01	-0.01	0.20
Excise	-0.68	0.08	0.10	0.00	0.01	-0.50
Franchise fees	-2.59	0.04	-0.03	-	0.00	-2.60
				0.01		
Sales tax, other commodity taxes (net)	0.09	0.07	0.16	0.00	-0.02	0.31
Other non-commodity indirect taxes (net)	0.28	0.09	1.05	0.04	0.02	1.49
Income from Commonwealth public enterprises	0.01	0.02	2.79	-	0.46	3.24
				0.04		
Income from State public enterprises	0.09	0.08	0.34	0.02	-0.01	0.51
Other income	-0.04	-0.16	-0.62	-	-0.03	-0.90
				0.07		
Less commodity subsidies	0.09	0.07	0.16	0.00	-0.02	0.31
Less other indirect subsidies	0.28	0.09	1.05	0.04	0.02	1.49
Price deflators (%)						
Government current expenditure price index	0.02	-0.43	-0.43	-	-0.02	-0.93
				0.06		
Commonwealth current expenditure price index	0.04	-0.83	-0.56	-	-0.02	-1.44
				0.06		
State and local current expenditure price index	0.01	-0.30	-0.38	-	-0.02	-0.75
				0.06		
Consumer price index	-0.07	-0.06	-0.73	-	-0.03	-0.97
				0.07		
Investment price index	0.09	-0.09	-0.34	-	-0.02	-0.40
				0.04		
GDP deflator	-0.04	-0.16	-0.62	-	-0.03	-0.90
				0.07		
Indicators of real activity (%)						
Real GDP (value added)	0.04	0.16	0.62	0.07	0.03	0.91
Real aggregate output	0.01	0.14	0.60	0.07	0.00	0.83

Table C2.14: Commonwealth reforms: projected real revenue implications in detail (assuming monetary non-accommodation and zero income tax indexation) (\$ million)

	<i>Statutory marketing arrangements</i>	<i>Comp. tenderin g</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
Commonwealth						
Direct taxes						
Individuals - net tax instalments	9	-3	185	18	3	212
Other	41	68	119	16	2	246
Payroll taxes	0	0	0	0	0	0
Property taxes	0	0	0	0	0	0
Export taxes	0	0	1	0	0	2
Import duties	5	6	16	2	1	30
Excise	-72	27	79	8	4	45
Franchise fees	0	0	0	0	0	0
Sales tax, other commodity taxes (net)	15	28	96	8	1	149
Other non-commodity indirect taxes (net)	6	5	32	2	1	45
Income from public enterprises	2	8	160	1	23	195
Other income	1	3	13	1	1	18
Less commodity subsidies	2	3	11	1	0	17
Less other indirect subsidies	4	3	23	1	1	32
Total revenue net of subsidies	3	135	667	54	35	894
States						
Direct taxes						
Individuals - net tax instalments	0	0	0	0	0	0
Other	0	0	0	0	0	0
Payroll taxes	7	15	36	4	1	63
Property taxes	0	13	59	5	1	79
Export taxes	0	0	0	0	0	0
Import duties	0	0	0	0	0	0
Excise	0	0	0	0	0	0
Franchise fees	-103	8	24	2	1	-68
Sales tax, other commodity taxes (net)	8	14	47	4	1	74
Other non-commodity indirect taxes (net)	29	23	155	10	5	222
Income from public enterprises	6	12	50	4	1	74
Other income	2	9	37	4	2	54
Less commodity subsidies	2	4	14	1	0	22
Less other indirect subsidies	6	5	33	2	1	47
Total revenue net of subsidies	-58	85	362	31	10	430

Table C2.15: Commonwealth reforms: projected nominal revenue implications in detail (assuming monetary non-accommodation and zero income tax indexation)
(\$ million)

	<i>Statutory marketing arrangements</i>	<i>Comp. tenderin g</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
Commonwealth						
Direct taxes						
Individuals - net tax instalments	-6	-70	-78	-11	-9	-173
Other	33	32	-25	1	-5	36
Payroll taxes	0	0	0	0	0	0
Property taxes	0	0	0	0	0	0
Export taxes	0	0	1	0	0	2
Import duties	4	2	-1	0	0	6
Excise	-76	9	11	0	1	-55
Franchise fees	0	0	0	0	0	0
Sales tax, other commodity taxes (net)	11	9	20	0	-2	38
Other non-commodity indirect taxes (net)	5	2	20	1	0	28
Income from public enterprises	1	1	131	-2	22	153
Other income	0	0	0	0	0	0
Less commodity subsidies	1	1	2	0	0	4
Less other indirect subsidies	4	1	14	1	0	20
Total revenue net of subsidies	-32	-17	63	-11	7	9
States						
Direct taxes						
Individuals - net tax instalments	0	0	0	0	0	0
Other	0	0	0	0	0	0
Payroll taxes	5	5	-1	0	-1	8
Property taxes	-2	3	19	1	0	21
Export taxes	0	0	0	0	0	0
Import duties	0	0	0	0	0	0
Excise	0	0	0	0	0	0
Franchise fees	-104	2	-1	-1	0	-104
Sales tax, other commodity taxes (net)	5	4	10	0	-1	19
Other non-commodity indirect taxes (net)	26	8	98	4	2	138
Income from public enterprises	5	4	18	1	-1	27
Other income	-10	-44	-175	-19	-8	-256
Less commodity subsidies	2	1	3	0	0	6
Less other indirect subsidies	5	2	21	1	0	29
Total revenue net of subsidies	-83	-21	-56	-14	-9	-183

Table C2.16: Commonwealth reforms: projected implications for industry output (assuming monetary non-accommodation and zero income tax indexation (per cent))

	<i>Industry</i>	<i>Statutory marketing arrangements</i>	<i>Comp. tendering</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
1	pastoral zone	0.73	0.29	0.20	0.07	0.00	1.29
2	wheat sheep zone	0.53	0.30	0.37	0.08	0.00	1.28
3	high rainfall zone	0.43	0.31	0.52	0.09	0.00	1.36
4	northern beef	2.29	0.69	1.80	0.24	0.01	5.03
5	milk cattle	-15.61	0.01	0.06	0.00	0.00	-15.53
6	pigs	0.50	0.45	0.90	0.14	0.01	2.01
7	sugar cane	2.07	1.27	2.43	0.38	0.02	6.17
8	other farming export	0.04	0.26	0.62	0.08	0.01	1.01
9	potatoes	0.10	0.06	0.41	0.04	0.01	0.62
10	other farming import	-1.78	0.16	0.39	0.05	0.01	-1.17
11	poultry	0.32	0.29	0.60	0.09	0.00	1.31
12	services to agriculture	-0.01	0.18	0.33	0.05	0.00	0.55
13	forestry and logging	0.13	0.04	0.62	0.06	0.01	0.87
14	fishing and hunting	0.13	0.13	0.39	0.05	0.01	0.71
15	ferrous metal ores	1.43	0.67	1.93	0.26	0.05	4.34
16	non ferrous metal ores	1.39	0.72	2.39	0.30	0.05	4.86
17	black coal	1.91	0.98	2.21	0.34	0.04	5.47
18	oil gas and brown coal	0.16	0.16	0.62	0.07	0.02	1.02
19	minerals nec	1.10	0.59	1.94	0.25	0.05	3.93
20	services to mining nec	0.88	0.49	1.59	0.20	0.04	3.19
21	meat products	0.44	0.43	0.86	0.14	0.01	1.86
22	pasteurised milk	-3.12	0.02	0.08	0.01	0.00	-3.00
23	milk products	-20.10	0.02	0.08	0.01	0.00	-19.99
24	fruit and vegetables	0.00	0.04	0.20	0.02	0.00	0.26
25	margarine oils and fats	0.08	0.09	0.35	0.04	0.01	0.57
26	flour mill cereal products	-0.08	0.05	0.17	0.02	0.00	0.17
27	bread cakes biscuits	0.02	0.02	0.12	0.01	0.00	0.17
28	confectionery	-0.03	0.06	0.24	0.02	0.00	0.30
29	raw sugar	1.92	1.17	2.26	0.36	0.02	5.73
30	food products nec	0.31	0.47	1.06	0.15	0.01	2.01
31	soft drinks cordials	0.00	0.03	0.20	0.01	0.00	0.24
32	beer and malt	0.01	0.04	0.29	0.02	0.00	0.36
33	alcoholic beverages	0.19	0.15	0.84	0.09	0.01	1.29
34	tobacco products	2.12	0.05	0.26	0.02	0.00	2.45
35	cotton ginning	0.76	0.40	0.85	0.13	0.02	2.15
36	wool scouring	0.79	0.41	0.73	0.12	0.01	2.07
37	man made fibres	0.62	0.37	1.15	0.14	0.02	2.30
38	cotton fabrics	0.65	0.36	0.82	0.12	0.01	1.96
39	wool worsted fabrics	0.22	0.13	0.44	0.06	0.01	0.86
40	textile finishing	0.12	0.09	0.34	0.04	0.01	0.60
41	floor coverings etc	0.07	0.06	0.46	0.05	0.01	0.66
42	textile products nec	0.15	0.14	0.58	0.07	0.01	0.95

Table C2.16: Commonwealth reforms: projected implications for industry output (assuming monetary non-accommodation and zero income tax indexation) (per cent) (continued)

<i>Industry</i>	<i>Statutory marketing arrangements</i>	<i>Comp. tendering</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>	
43	knitting mills	0.10	0.07	0.23	0.03	0.00	0.43
44	clothing	0.08	0.06	0.22	0.02	0.01	0.39
45	footwear	0.34	0.19	0.38	0.06	0.00	0.98
46	woodchips	0.00	0.00	0.00	0.00	0.00	0.00
47	sawmill products	0.22	0.20	0.88	0.09	0.01	1.41
48	veneers manufactured wood boards	0.07	0.09	0.54	0.06	0.01	0.77
49	joinery & wood products	0.04	0.08	0.62	0.06	0.01	0.81
50	furniture and mattresses	0.06	0.05	0.35	0.04	0.01	0.51
51	pulp paper paperboard	0.11	0.17	0.56	0.07	0.02	0.93
52	bags and containers	-0.04	0.14	0.44	0.06	0.03	0.63
53	paper products nec	-0.03	0.09	0.47	0.04	0.00	0.58
54	publishing printing	0.05	0.10	0.44	0.06	0.01	0.66
55	printing stationary	0.00	0.10	0.51	0.05	0.01	0.66
56	chemical fertilisers	-0.05	0.33	0.73	0.11	0.01	1.13
57	basic chemicals	0.23	0.25	0.84	0.11	0.02	1.46
58	paints	0.12	0.13	0.68	0.08	0.01	1.02
59	pharmaceuticals	0.07	0.17	0.60	0.07	0.00	0.91
60	soap and detergents	0.04	0.06	0.33	0.03	0.00	0.46
61	cosmetics	0.07	0.06	0.30	0.03	0.00	0.46
62	chemical products nec	0.41	0.27	0.85	0.11	0.02	1.66
63	petroleum coal products	0.11	0.15	0.62	0.07	0.04	0.99
64	glass & glass products	-0.49	0.12	0.55	0.06	0.01	0.25
65	clay products	0.12	0.12	0.78	0.07	0.00	1.10
66	cement	0.02	0.07	0.52	0.07	0.00	0.67
67	ready mixed concrete	0.00	0.05	0.49	0.07	0.00	0.62
68	concrete products	0.00	0.05	0.46	0.07	0.00	0.58
69	non metallic mineral	0.10	0.11	0.67	0.07	0.00	0.95
70	basic iron and steel	0.16	0.15	0.65	0.09	0.01	1.05
71	non ferrous metals	1.52	0.81	2.41	0.32	0.04	5.11
72	structural metal products	0.06	0.10	0.62	0.08	0.01	0.86
73	sheet metal products	-0.01	0.07	0.59	0.06	0.01	0.72
74	metal products nec	0.21	0.19	0.80	0.10	0.01	1.30
75	motor vehicles	0.30	0.27	1.18	0.14	0.01	1.90
76	ships and boats	0.18	0.13	0.78	0.07	-0.03	1.13
77	locomotives rollings	0.04	0.14	0.60	0.07	-0.08	0.77
78	aircraft	0.09	0.09	0.62	0.05	0.55	1.40
79	scientific etc equipment	0.23	0.15	0.62	0.07	0.01	1.08
80	electronic equipment	0.22	0.16	-0.87	0.06	0.02	-0.42
81	household appliances	0.05	0.10	0.74	0.06	0.01	0.96
82	electrical equipment	0.18	0.16	-0.74	0.05	0.01	-0.34
83	agricultural machinery	-0.57	0.34	3.02	0.27	-0.02	3.03

Table C2.16: Commonwealth reforms: projected implications for industry output (assuming monetary non-accommodation and zero income tax indexation) (per cent) (continued)

	<i>Industry</i>	<i>Statutory marketing arrangements</i>	<i>Comp. tendering</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
84	construction etc machinery	0.52	0.31	0.81	0.15	0.03	1.82
85	machinery equipment	0.19	0.15	0.92	0.11	0.02	1.40
86	leather products	0.33	0.20	0.50	0.07	0.01	1.12
87	rubber products	0.33	0.26	0.94	0.11	0.01	1.65
88	plastic related products	-0.16	0.17	0.68	0.08	0.03	0.80
89	signs writing equipment	0.09	0.14	0.64	0.07	0.01	0.95
90	manufacturing nec	1.35	0.74	2.15	0.29	0.04	4.56
91	electricity	0.09	0.16	0.65	0.07	0.00	0.97
92	gas	0.19	0.21	0.84	0.09	0.01	1.35
93	water sewerage drainage	0.02	0.11	0.56	0.05	0.01	0.76
94	residential building	0.06	0.09	0.84	0.05	0.00	1.04
95	construction	-0.04	0.03	0.27	0.07	0.00	0.33
96	wholesale trade	-0.12	0.15	0.36	0.06	0.01	0.47
97	retail trade	0.00	0.04	0.35	0.03	0.00	0.42
98	mechanical repairs	0.00	0.09	0.49	0.04	0.00	0.62
99	repairs nec	0.12	0.14	0.69	0.07	0.01	1.03
100	road freight transport	0.00	0.21	0.75	0.11	0.01	1.08
101	road passenger transport	0.01	0.03	0.14	0.02	0.00	0.20
102	mining rail transport	0.98	0.54	1.41	0.20	0.03	3.15
103	private iron ore rail transport	1.46	0.68	1.96	0.26	0.05	4.41
104	non bulk rail transport	-0.22	0.22	-0.07	0.07	-0.02	-0.02
105	grain freight rail transport	0.33	0.26	-0.20	0.04	-0.01	0.42
106	rail passenger trans	0.01	0.02	0.08	0.01	0.00	0.12
107	railway fixed costs	0.00	0.00	0.00	0.00	0.00	0.00
108	water transport	0.48	0.27	0.84	0.11	0.02	1.73
109	international air transport	0.10	0.10	0.70	0.06	0.82	1.78
110	domestic air transport	0.10	0.10	0.47	0.04	0.83	1.55
111	services to transport	0.12	0.16	0.52	0.06	-0.77	0.09
112	postal services	0.04	0.11	0.87	1.81	0.00	2.83
113	telecommunications	0.02	0.10	5.45	0.07	0.00	5.64
114	banking	0.03	0.11	0.66	0.06	0.01	0.87
115	non bank finance	0.03	0.13	0.58	0.06	0.02	0.81
116	investment nec	0.08	0.12	0.57	0.05	0.01	0.84
117	insurance nec	0.04	0.08	0.43	0.04	0.01	0.60
118	business services	0.00	0.12	0.61	0.06	0.01	0.80
119	ownership of dwellings	0.05	0.09	0.66	0.04	0.01	0.85
120	public administration	0.00	0.04	0.13	0.01	0.00	0.19
121	defence	0.00	0.00	0.00	0.00	0.00	0.00
122	health	0.03	0.08	0.21	0.02	0.00	0.34
123	education libraries	0.01	0.02	0.06	0.00	0.00	0.10
124	welfare etc services	0.03	0.15	0.31	0.03	0.00	0.52

Table C2.16: **Commonwealth reforms: projected implications for industry output (assuming monetary non-accommodation and zero income tax indexation) (per cent)** (continued)

	<i>Industry</i>	<i>Statutory marketing arrangements</i>	<i>Comp. tendering</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
125	entertainment leisure	0.02	0.13	0.59	0.04	0.01	0.79
126	restaurants hotels clubs	0.07	0.08	0.49	0.04	0.01	0.69
127	personal services	0.05	0.08	0.45	0.03	0.01	0.62
128	non competing imports	0.00	0.00	0.00	0.00	0.00	0.00

c2.17 landscape

c2.18 landscape

c2.19 landscape

c2.20 landscape

c2.20 continued

c2.20 continued

c2.20 continued

Table C2.21: Commonwealth reforms: projected revenue implications by tax type (assuming monetary non-accommodation and full income tax indexation) (per cent)

	<i>Statutory marketing arrangements</i>	<i>Comp. tenderin g</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
Nominal revenue change (%)						
Direct taxes						
Individuals - net tax instalments	0.04	-0.12	0.32	0.02	0.00	0.26
Other	0.14	0.14	-0.11	0.00	-0.02	0.16
Payroll taxes	0.08	0.08	-0.02	0.00	-0.01	0.13
Property taxes	-0.03	0.05	0.27	0.01	-0.01	0.29
Export taxes	7.13	4.16	22.10	1.84	3.28	38.51
Import duties	0.14	0.07	-0.02	0.01	-0.01	0.20
Excise	-0.68	0.08	0.10	0.00	0.01	-0.50
Franchise fees	-2.59	0.04	-0.03	-	0.00	-2.60
				0.02		
Sales tax, other commodity taxes (net)	0.09	0.07	0.15	0.00	-0.02	0.29
Other non-commodity indirect taxes (net)	0.27	0.09	1.01	0.04	0.02	1.43
Income from Commonwealth public enterprises	0.01	0.02	2.78	-	0.46	3.23
				0.04		
Income from State public enterprises	0.09	0.08	0.34	0.02	-0.01	0.51
Other income	-0.04	-0.16	-0.61	-	-0.03	-0.90
				0.07		
Less commodity subsidies	0.09	0.07	0.15	0.00	-0.02	0.29
Less other indirect subsidies	0.27	0.09	1.01	0.04	0.02	1.43
Price deflators (%)						
Government current expenditure price index	0.02	-0.43	-0.43	-	-0.02	-0.93
				0.06		
Commonwealth current expenditure price index	0.04	-0.83	-0.56	-	-0.02	-1.43
				0.06		
State & local current expenditure price index	0.01	-0.30	-0.38	-	-0.02	-0.75
				0.06		
Consumer price index	-0.07	-0.06	-0.72	-	-0.03	-0.96
				0.07		
Investment price index	0.09	-0.09	-0.32	-	-0.02	-0.38
				0.04		
GDP deflator	-0.04	-0.16	-0.61	-	-0.03	-0.90
				0.07		
Indicators of real activity (%)						
Real GDP (value added)	0.04	0.16	0.61	0.07	0.03	0.90
Real aggregate output	0.01	0.14	0.60	0.07	0.00	0.82

Table C2.22: Commonwealth reforms: projected real revenue implications in detail (assuming monetary non-accommodation and full income tax indexation) (\$ million)

	<i>Statutory marketing arrangements</i>	<i>Comp. tenderin g</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
Commonwealth						
Direct taxes						
Individuals - net tax instalments	31	15	395	38	13	492
Other	41	68	118	16	2	245
Payroll taxes	0	0	0	0	0	0
Property taxes	0	0	0	0	0	0
Export taxes	0	0	1	0	0	2
Import duties	5	6	16	2	1	30
Excise	-72	27	78	8	4	44
Franchise fees	0	0	0	0	0	0
Sales tax, other commodity taxes (net)	15	28	94	8	1	146
Other non-commodity indirect taxes (net)	6	5	31	2	1	44
Income from public enterprises	2	8	160	1	23	194
Other income	1	3	12	1	1	18
Less commodity subsidies	2	3	11	1	0	16
Less other indirect subsidies	4	3	22	1	1	32
Total revenue net of subsidies	23	153	873	74	45	1169
States						
Direct taxes						
Individuals - net tax instalments	0	0	0	0	0	0
Other	0	0	0	0	0	0
Payroll taxes	7	15	36	4	1	63
Property taxes	0	13	56	5	1	76
Export taxes	0	0	0	0	0	0
Import duties	0	0	0	0	0	0
Excise	0	0	0	0	0	0
Franchise fees	-103	8	23	2	1	-69
Sales tax, other commodity taxes (net)	7	14	46	4	1	72
Other non-commodity indirect taxes (net)	29	22	151	10	4	216
Income from public enterprises	6	12	50	4	1	74
Other income	2	9	37	4	2	54
Less commodity subsidies	2	4	14	1	0	21
Less other indirect subsidies	6	5	32	2	1	45
Total revenue net of subsidies	-59	85	354	30	10	419

Table C2.23: Commonwealth reforms: projected nominal revenue implications in detail (assuming monetary non-accommodation and full income tax indexation)
(million)

	<i>Statutory marketing arrangements</i>	<i>Comp. tenderin g</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
Commonwealth						
Direct taxes						
Individuals - net tax instalments	16	-51	135	10	1	110
Other	33	32	-25	1	-5	36
Payroll taxes	0	0	0	0	0	0
Property taxes	0	0	0	0	0	0
Export taxes	0	0	1	0	0	2
Import duties	4	2	-1	0	0	6
Excise	-76	9	11	0	1	-55
Franchise fees	0	0	0	0	0	0
Sales tax, other commodity taxes (net)	11	9	18	0	-2	35
Other non-commodity indirect taxes (net)	5	2	19	1	0	27
Income from public enterprises	1	1	131	-2	22	152
Other income	0	0	0	0	0	0
Less commodity subsidies	1	1	2	0	0	4
Less other indirect subsidies	4	1	14	1	0	19
Total revenue net of subsidies	-11	1	274	10	17	290
States						
Direct taxes						
Individuals - net tax instalments	0	0	0	0	0	0
Other	0	0	0	0	0	0
Payroll taxes	5	5	-1	0	-1	8
Property taxes	-2	3	17	1	-1	18
Export taxes	0	0	0	0	0	0
Import duties	0	0	0	0	0	0
Excise	0	0	0	0	0	0
Franchise fees	-104	2	-1	-1	0	-105
Sales tax, other commodity taxes (net)	5	4	9	0	-1	18
Other non-commodity indirect taxes (net)	25	8	94	4	2	133
Income from public enterprises	5	4	18	1	-1	27
Other income	-10	-44	-174	-19	-8	-255
Less commodity subsidies	2	1	3	0	0	5
Less other indirect subsidies	5	2	20	1	0	28
Total revenue net of subsidies	-83	-21	-61	-15	-9	-189

Table C2.24: Commonwealth reforms: projected implications for industry output (assuming monetary non-accommodation and full income tax indexation per cent)

	<i>Industry</i>	<i>Statutory marketing arrangements</i>	<i>Comp. tendering</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
1	pastoral zone	0.74	0.29	0.28	0.08	0.01	1.39
2	wheat sheep zone	0.53	0.31	0.45	0.09	0.01	1.39
3	high rainfall zone	0.44	0.32	0.59	0.10	0.00	1.46
4	northern beef	2.30	0.70	1.96	0.26	0.02	5.24
5	milk cattle	-15.60	0.01	0.05	0.00	0.00	-15.54
6	pigs	0.51	0.46	1.01	0.15	0.01	2.15
7	sugar cane	2.10	1.29	2.74	0.41	0.04	6.59
8	other farming export	0.05	0.26	0.66	0.09	0.01	1.07
9	potatoes	0.10	0.06	0.38	0.03	0.01	0.58
10	other farming import	-1.77	0.16	0.41	0.05	0.01	-1.14
11	poultry	0.33	0.30	0.67	0.10	0.01	1.40
12	services to agriculture	-0.01	0.18	0.37	0.06	0.00	0.60
13	forestry and logging	0.13	0.04	0.62	0.06	0.01	0.87
14	fishing and hunting	0.13	0.13	0.40	0.05	0.01	0.72
15	ferrous metal ores	1.45	0.69	2.10	0.27	0.06	4.57
16	non ferrous metal or	1.41	0.74	2.57	0.32	0.06	5.10
17	black coal	1.93	1.00	2.46	0.36	0.05	5.81
18	oil gas and brown coal	0.16	0.16	0.63	0.07	0.02	1.04
19	minerals nec	1.11	0.61	2.08	0.27	0.05	4.11
20	services to mining nec	0.89	0.49	1.70	0.21	0.04	3.34
21	meat products	0.45	0.44	0.96	0.14	0.01	2.00
22	pasteurised milk	-3.12	0.02	0.08	0.01	0.00	-3.00
23	milk products	-20.10	0.02	0.08	0.01	0.00	-19.99
24	fruit vegetable prod	0.00	0.04	0.19	0.01	0.00	0.24
25	margarine oils and fats	0.08	0.09	0.35	0.04	0.00	0.56
26	flour mill cereal products	-0.08	0.05	0.18	0.02	0.00	0.17
27	bread cakes biscuits	0.02	0.02	0.11	0.01	0.00	0.17
28	confectionery	-0.03	0.06	0.24	0.02	0.00	0.29
29	raw sugar	1.95	1.20	2.55	0.38	0.04	6.12
30	food products nec	0.32	0.48	1.17	0.16	0.02	2.15
31	soft drinks cordials	0.00	0.02	0.18	0.01	0.00	0.22
32	beer and malt	0.00	0.04	0.26	0.02	0.00	0.32
33	alcoholic beverages	0.19	0.15	0.82	0.09	0.01	1.26
34	tobacco products	2.12	0.05	0.25	0.02	0.00	2.44
35	cotton ginning	0.77	0.41	0.94	0.14	0.02	2.27
36	wool scouring	0.80	0.42	0.83	0.13	0.02	2.20
37	man made fibres	0.63	0.37	1.22	0.15	0.03	2.39
38	cotton fabrics	0.66	0.36	0.89	0.13	0.02	2.06
39	wool worsted fabrics	0.22	0.13	0.44	0.06	0.01	0.86
40	textile finishing	0.12	0.09	0.34	0.04	0.01	0.60
41	floor coverings etc	0.07	0.06	0.42	0.05	0.01	0.61
42	textile products nec	0.15	0.14	0.58	0.07	0.01	0.95

Table C2.24: Commonwealth reforms: projected implications for industry output (assuming monetary non-accommodation and full income tax indexation) (per cent) (continued)

<i>Industry</i>	<i>Statutory marketing arrangements</i>	<i>Comp. tendering</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>	
43	knitting mills	0.10	0.07	0.23	0.03	0.00	0.43
44	clothing	0.08	0.06	0.22	0.02	0.01	0.39
45	footwear	0.34	0.20	0.42	0.07	0.00	1.03
46	woodchips	0.00	0.00	0.00	0.00	0.00	0.00
47	sawmill products	0.22	0.20	0.86	0.09	0.01	1.38
48	veneers manufactured wood boards	0.07	0.09	0.51	0.06	0.01	0.73
49	joinery and wood products	0.03	0.08	0.58	0.06	0.00	0.75
50	furniture and mattresses	0.06	0.04	0.30	0.04	0.01	0.45
51	pulp paper paperboard	0.11	0.17	0.57	0.07	0.02	0.94
52	bags and containers	-0.04	0.14	0.44	0.06	0.03	0.63
53	paper products nec	-0.03	0.09	0.46	0.04	0.00	0.57
54	publishing printing	0.05	0.10	0.43	0.06	0.01	0.64
55	printing stationary	0.00	0.10	0.49	0.05	0.01	0.65
56	chemical fertilisers	-0.04	0.33	0.80	0.11	0.01	1.21
57	basic chemicals	0.24	0.25	0.87	0.11	0.03	1.50
58	paints	0.12	0.13	0.66	0.08	0.01	1.00
59	pharmaceuticals	0.07	0.17	0.60	0.07	0.00	0.90
60	soap and detergents	0.04	0.06	0.31	0.03	0.00	0.45
61	cosmetics	0.07	0.06	0.29	0.03	0.00	0.45
62	chemical products nec	0.41	0.28	0.90	0.12	0.02	1.72
63	petroleum coal products	0.11	0.15	0.62	0.07	0.04	0.98
64	glass and glass products	-0.49	0.12	0.54	0.06	0.01	0.24
65	clay products	0.11	0.12	0.74	0.07	0.00	1.04
66	cement	0.02	0.06	0.48	0.07	0.00	0.63
67	ready mixed concrete	0.00	0.05	0.46	0.06	0.00	0.57
68	concrete products	-0.01	0.05	0.43	0.06	0.00	0.53
69	non metallic mineral	0.10	0.11	0.63	0.07	0.00	0.91
70	basic iron and steel	0.16	0.15	0.66	0.09	0.01	1.06
71	non ferrous metals	1.54	0.83	2.61	0.33	0.05	5.37
72	structural metal products	0.05	0.10	0.61	0.08	0.00	0.85
73	sheet metal products	-0.02	0.07	0.58	0.06	0.01	0.70
74	metal products nec	0.21	0.19	0.81	0.10	0.01	1.31
75	motor vehicles	0.30	0.27	1.21	0.15	0.01	1.95
76	ships and boats	0.18	0.13	0.79	0.08	-0.03	1.15
77	locomotives rollings	0.04	0.14	0.62	0.07	-0.08	0.79
78	aircraft	0.09	0.09	0.60	0.05	0.55	1.37
79	scientific etc equipment	0.23	0.15	0.63	0.07	0.01	1.08
80	electronic equipment	0.22	0.16	-0.87	0.06	0.02	-0.41
81	household appliances	0.04	0.10	0.70	0.06	0.01	0.90
82	electrical equipment	0.18	0.16	-0.74	0.05	0.01	-0.34
83	agricultural machinery	-0.57	0.34	3.08	0.27	-0.02	3.11

Table C2.24: Commonwealth reforms: projected implications for industry output (assuming monetary non-accommodation and full income tax indexation) (per cent) (continued)

	<i>Industry</i>	<i>Statutory marketing arrangements</i>	<i>Comp. tendering</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
84	construction etc machinery	0.53	0.31	0.86	0.15	0.03	1.89
85	machinery equipment	0.19	0.16	0.94	0.11	0.02	1.42
86	leather products	0.33	0.21	0.54	0.08	0.01	1.16
87	rubber products	0.34	0.26	0.97	0.11	0.01	1.70
88	plastic related products	-0.16	0.17	0.69	0.08	0.03	0.81
89	signs writing equipment	0.09	0.14	0.63	0.07	0.01	0.94
90	manufacturing nec	1.37	0.76	2.33	0.30	0.05	4.79
91	electricity	0.09	0.16	0.65	0.07	0.00	0.97
92	gas	0.19	0.21	0.85	0.09	0.01	1.37
93	water sewerage drainage	0.02	0.11	0.53	0.05	0.01	0.72
94	residential building	0.05	0.09	0.76	0.05	0.00	0.94
95	construction	-0.04	0.03	0.26	0.07	0.00	0.32
96	wholesale trade	-0.12	0.15	0.36	0.06	0.01	0.47
97	retail trade	-0.01	0.04	0.32	0.02	0.00	0.38
98	mechanical repairs	0.00	0.09	0.46	0.04	-0.01	0.58
99	repairs nec	0.12	0.14	0.68	0.06	0.01	1.02
100	road freight transport	0.01	0.21	0.77	0.11	0.01	1.11
101	road passenger transport	0.01	0.03	0.13	0.02	0.00	0.19
102	mining rail transport	0.99	0.55	1.54	0.21	0.03	3.32
103	private iron ore rail transport	1.47	0.70	2.13	0.28	0.06	4.65
104	non bulk rail transport	-0.22	0.23	-0.02	0.07	-0.02	0.03
105	grain freight rail transport	0.34	0.27	-0.13	0.05	-0.01	0.51
106	rail passenger trans	0.01	0.02	0.07	0.01	0.00	0.10
107	railway fixed costs	0.00	0.00	0.00	0.00	0.00	0.00
108	water transport	0.49	0.28	0.90	0.11	0.02	1.80
109	international air transport	0.10	0.10	0.67	0.05	0.82	1.74
110	domestic air transport	0.10	0.10	0.44	0.04	0.83	1.51
111	services to transport	0.12	0.16	0.54	0.06	-0.77	0.11
112	postal services	0.04	0.11	0.85	1.81	0.00	2.80
113	telecommunications	0.02	0.10	5.42	0.06	0.00	5.61
114	banking	0.02	0.11	0.63	0.05	0.01	0.83
115	non bank finance	0.03	0.12	0.56	0.06	0.02	0.79
116	investment nec	0.08	0.12	0.56	0.05	0.01	0.82
117	insurance nec	0.04	0.08	0.41	0.03	0.01	0.57
118	business services	0.00	0.12	0.59	0.06	0.01	0.78
119	ownership of dwellings	0.04	0.08	0.58	0.03	0.00	0.74
120	public administration	0.00	0.04	0.13	0.01	0.00	0.19
121	defence	0.00	0.00	0.00	0.00	0.00	0.00
122	health	0.03	0.08	0.18	0.01	0.00	0.30
123	education libraries	0.01	0.02	0.05	0.00	0.00	0.09
124	welfare etc services	0.03	0.15	0.29	0.02	0.00	0.50

Table C2.24: **Commonwealth reforms: projected implications for industry output (assuming monetary non-accommodation and full income tax indexation) (per cent)** (continued)

	<i>Industry</i>	<i>Statutory marketing arrangements</i>	<i>Comp. tendering</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC & CAA</i>	<i>Total</i>
125	entertainment leisure	0.02	0.13	0.55	0.04	0.01	0.74
126	restaurants hotels clubs	0.07	0.07	0.44	0.04	0.01	0.62
127	personal services	0.05	0.08	0.39	0.03	0.00	0.55
128	non competing imports	0.00	0.00	0.00	0.00	0.00	0.00

Table C2.25: Rail reform with 75 per cent loading on CSOs: projected macroeconomic and sectoral implications (assuming monetary non-accommodation and full income tax indexation)(per cent)

<i>Results</i>	<i>Rail</i>
Real GDP	0.28
Real GNP	0.34
Real consumption	0.15
Real investment	0.14
Real government spending	0.00
Export volume	1.18
Import volume	0.11
CPI	-0.26
GDP deflator	-0.28
Nominal exchange rate	-0.28
Real pre-tax wage	-0.02
Real post-tax wage	-0.01
Aggregate employment	0.01
Aggregate capital stock	0.01
Sectoral outputs	
Agriculture	-0.03
Mining	2.13
Manufacturing	-0.01
Services	0.09

Table C2.26: Rail reform with 75 per cent loading on CSOs: projected revenue implications by tax type (assuming monetary non-accommodation and full income tax indexation) (per cent)

	<i>Rail</i>
Nominal revenue change (%)	
Direct taxes	
Individuals - net tax instalments	-0.40
Other	0.10
Payroll taxes	-0.25
Property taxes	-1.07
Export taxes	9.11
Import duties	-0.14
Excise	-0.39
Franchise fees	-0.28
Sales tax, other commodity taxes (net)	-0.17
Other non-commodity indirect taxes (net)	-0.11
Income from Commonwealth public enterprises	-0.05
Income from State public enterprises	-0.65
Other income	-0.28
Less commodity subsidies	-0.17
Less other indirect subsidies	-0.11 ^a
Price deflators (%)	
Government current expenditure price index	-0.28
Commonwealth current expenditure price index	-0.28
State and local current expenditure price index	-0.28
Consumer price index	-0.26
Investment price index	-0.27
GDP deflator	-0.28
Indicators of real activity (%)	
Real GDP (value added)	0.28
Real aggregate output	0.14

^a Except rail subsidies

Table C2.27: Rail reform with 75 per cent loading on CSOs: projected real revenue implications in detail (assuming monetary non-accommodation and full income tax indexation) (\$ million)

	<i>Rail</i>
Commonwealth	
Direct taxes	
Individuals - net tax instalments	-51
Other	88
Payroll taxes	0
Property taxes	0
Export taxes	0
Import duties	4
Excise	-13
Franchise fees	0
Sales tax, other commodity taxes (net)	13
Other non-commodity indirect taxes (net)	3
Income from public enterprises	10
Other income	6
Less commodity subsidies	2
Less other indirect subsidies	2
Total revenue net of subsidies	57
States	
Direct taxes	
Individuals - net tax instalments	0
Other	0
Payroll taxes	1
Property taxes	-51
Export taxes	0
Import duties	0
Excise	0
Franchise fees	0
Sales tax, other commodity taxes (net)	7
Other non-commodity indirect taxes (net)	16
Income from public enterprises	-20
Other income	17
Less commodity subsidies	2
Less other indirect subsidies	-628
Total revenue net of subsidies	596

Table C2.28: Rail reform with 75 per cent loading on CSOs: projected implications for industry output (assuming monetary non-accommodation and full income tax indexation (per cent))

<i>Industry</i>	<i>Rail</i>	<i>Industry</i>	<i>Rail</i>		
1	pastoral zone	-0.68	41	floor coverings etc	0.07
2	wheat sheep zone	0.39	42	textile products nec	-0.07
3	high rainfall zone	-0.52	43	knitting mills	0.03
4	northern beef	0.15	44	clothing	0.03
5	milk cattle	0.00	45	footwear	0.02
6	pigs	-0.15	46	woodchips	0.00
7	sugar cane	-0.89	47	sawmill products	-0.07
8	other farming export	-0.17	48	veneers manufactured wood boards	0.11
9	potatoes	0.09	49	joinery and wood products	0.16
10	other farming import	0.03	50	furniture and mattresses	0.17
11	poultry	-0.09	51	pulp paper paperboard	-0.02
12	services to agriculture	-0.04	52	bags and containers	-0.23
13	forestry and logging	-0.05	53	paper products nec	-0.11
14	fishing and hunting	-0.02	54	publishing printing	-0.11
15	ferrous metal ores	-0.02	55	printing stationary	0.07
16	non ferrous metal or	1.07	56	chemical fertilisers	0.27
17	black coal	5.98	57	basic chemicals	0.11
18	oil gas and brown coal	0.00	58	paints	0.12
19	minerals nec	0.12	59	pharmaceuticals	0.07
20	services to mining nec	0.83	60	soap and detergents	0.06
21	meat products	-0.14	61	cosmetics	0.07
22	pasteurised milk	0.00	62	chemical products nec	0.56
23	milk products	0.00	63	petroleum coal products	-0.15
24	fruit vegetable prod	0.05	64	glass and glass products	0.11
25	margarine oils and fats	0.06	65	clay products	0.21
26	flour mill cereal products	0.05	66	cement	0.05
27	bread cakes biscuits	0.04	67	ready mixed concrete	0.03
28	confectionery	0.05	68	concrete products	0.01
29	raw sugar	-0.83	69	non metallic mineral	0.18
30	food products nec	-0.42	70	basic iron and steel	-0.10
31	soft drinks cordials	0.03	71	non ferrous metals	0.97
32	beer and malt	0.12	72	structural metal products	0.03
33	alcoholic beverages	0.15	73	sheet metal products	-0.05
34	tobacco products	0.12	74	metal products nec	-0.02
35	cotton ginning	0.07	75	motor vehicles	0.28
36	wool scouring	0.08	76	ships and boats	0.22
37	man made fibres	0.10	77	locomotives rollings	-10.38
38	cotton fabrics	0.12	78	aircraft	0.18
39	wool worsted fabrics	0.07	79	scientific etc equipment	0.10
40	textile finishing	0.06	80	electronic equipment	0.08

Table C2.28: Rail reform with 75 per cent loading on CSOs: projected implications for industry output (assuming monetary non-accommodation and full income tax indexation) (per cent) (continued)

	Industry	Rail		Industry	Rail
81	household appliances	0.16	105	grain freight rail transport	6.93
82	electrical equipment	0.17	106	rail passenger trans	-1.04
83	agricultural machinery	0.60	107	railway fixed costs	0.00
84	construction etc machinery	0.66	108	water transport	0.34
85	machinery equipment	0.14	109	international air transport	0.15
86	leather products	0.02	110	domestic air transport	0.15
87	rubber products	0.44	111	services to transport	0.21
88	plastic related products	0.02	112	postal services	0.13
89	signs writing equipment	-0.19	113	telecommunications	0.14
90	manufacturing nec	0.11	114	banking	0.12
91	electricity	0.13	115	non bank finance	-0.18
92	gas	0.50	116	investment nec	0.06
93	water sewerage drainage	0.16	117	insurance nec	0.10
94	residential building	0.28	118	business services	0.14
95	construction	-0.13	119	ownership of dwellings	0.24
96	wholesale trade	0.05	120	public administration	-0.02
97	retail trade	0.12	121	defence	0.00
98	mechanical repairs	0.03	122	health	0.09
99	repairs nec	0.17	123	education libraries	0.03
100	road freight transport	0.96	124	welfare etc services	0.08
101	road passenger transport	0.04	125	entertainment leisure	0.13
102	mining rail transport	2.65	126	restaurants hotels clubs	0.17
103	private iron ore rail transport	-0.02	127	personal services	0.17
104	non bulk rail transport	-8.81	128	non competing imports	0.00

Table C.29: **GBE reforms: projected macroeconomic and sectoral implications (assuming monetary non-accommodation and full income tax indexation)** (per cent)

<i>Results</i>	<i>Electricity</i>					<i>CAA &</i>	
	<i>Rail</i>	<i>& gas</i>	<i>Water</i>	<i>Ports</i>	<i>Telecom</i>	<i>Post</i>	<i>FAC</i>
Real GDP	0.27	1.38	0.11	0.02	0.62	0.07	0.03
Real GNP	0.35	1.54	0.13	0.02	0.68	0.07	0.03
Real consumption	0.12	1.10	0.13	0.01	0.63	0.03	0.02
Real investment	0.08	1.42	0.02	0.02	0.20	0.07	0.02
Real government spending	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Export volume	1.25	2.65	0.27	0.05	1.41	0.22	0.02
Import volume	0.07	0.04	0.07	0.00	0.11	0.02	-0.05
CPI	-0.23	-0.80	-0.14	-0.02	-0.72	-0.07	-0.03
GDP deflator	-0.27	-1.36	-0.11	-0.02	-0.62	-0.07	-0.03
Nominal exchange rate	-0.25	-0.64	-0.09	-0.03	-0.04	0.01	-0.02
Real pre-tax wage	-0.13	1.09	0.08	0.02	0.75	0.03	0.03
Real post-tax wage	-0.10	0.93	0.07	0.01	0.63	0.03	0.02
Aggregate employment	0.01	0.12	0.01	0.00	0.07	0.00	0.00
Aggregate capital stock	0.08	1.42	0.02	0.02	0.20	0.07	0.02
Sectoral outputs							
Agriculture	-0.07	-0.06	0.12	-0.02	0.53	0.09	0.00
Mining	2.28	2.38	0.34	0.11	1.81	0.26	0.03
Manufacturing	-0.03	0.84	0.14	0.01	0.71	0.10	0.01
Services	0.07	0.73	0.09	0.01	0.55	0.05	0.01

Table C2.30: GBE reforms: projected revenue implications by tax type (assuming monetary non-accommodation and full income tax indexation)(per cent)

<i>Results</i>	<i>Rail</i>	<i>Electricity & gas</i>	<i>Water</i>	<i>Ports</i>	<i>Teleco m</i>	<i>Post</i>	<i>CAA & FAC</i>
Nominal revenue change (%)							
Direct taxes							
Individuals - net tax instalments	-0.57	0.43	-0.09	0.00	0.32	0.02	0.00
Other	0.05	0.71	0.03	0.01	0.00	0.00	-0.01
Payroll taxes	-0.34	-0.57	-0.25	0.00	-0.02	0.00	-0.01
Property taxes	-1.24	0.83	-0.02	0.00	0.30	0.01	-0.01
Export taxes	9.78	7.22	1.99	1.46	20.99	1.83	3.11
Import duties	-0.17	-0.88	-0.02	0.00	-0.04	0.01	-0.01
Excise	-0.43	-0.06	-0.05	-0.03	0.10	0.00	0.01
Franchise fees	-0.30	-0.08	-0.07	-0.02	-0.02	-0.02	0.00
Sales tax, other commodity taxes (net)	-0.23	0.03	0.01	-0.01	0.16	0.00	-0.02
Other non-commodity indirect taxes (net)	-0.04	0.62	0.12	0.09	1.05	0.04	0.02
Income from Commonwealth public enterprises	-0.07	-0.12	0.01	0.00	-3.46	-0.03	0.00
Income from State public enterprises	-1.09	-9.30	0.64	0.00	0.34	0.02	-0.01
Other income	-0.27	-1.36	-0.11	-0.02	-0.62	-0.07	-0.03
Less commodity subsidies	-0.23	0.03	0.01	-0.01	0.16	0.00	-0.02
Less other indirect subsidies	-0.04 ^a	0.62	0.12	0.09	1.05	0.04	0.02
Price deflators (%)							
Government current expenditure price index	-0.33	-0.63	0.05	-0.01	-0.42	-0.06	-0.02
Commonwealth current expenditure price index	-0.31	-0.97	-0.06	-0.02	-0.55	-0.06	-0.02
State and local current expenditure price index	-0.33	-0.54	0.07	-0.01	-0.37	-0.06	-0.02
Consumer price index	-0.23	-0.80	-0.14	-0.02	-0.72	-0.07	-0.03
Investment price index	-0.29	-3.28	-0.16	-0.02	-0.37	-0.04	-0.02
GDP deflator	-0.27	-1.36	-0.11	-0.02	-0.62	-0.07	-0.03
Indicators of real activity (%)							
Real GDP (value added)	0.27	1.38	0.11	0.02	0.62	0.07	0.03
Real aggregate output	0.11	0.73	0.10	0.01	0.60	0.07	0.00

^a Except rail subsidies

Table C2.31: GBE reforms: projected real revenue implications in detail (assuming monetary non-accommodation and full income tax indexation) (\$ million)

<i>Results</i>	<i>Rail</i>	<i>Electricity & gas</i>	<i>Water</i>	<i>Ports</i>	<i>Telecom</i>	<i>Post</i>	<i>CAA & FAC</i>
Commonwealth							
Direct taxes							
Individuals - net tax instalments	-130	766	7	9	399	38	13
Other	75	482	33	6	144	16	5
Payroll taxes	0	0	0	0	0	0	0
Property taxes	0	0	0	0	0	0	0
Export taxes	0	0	0	0	1	0	0
Import duties	3	13	3	0	16	2	1
Excise	-18	144	7	-1	79	8	4
Franchise fees	0	0	0	0	0	0	0
Sales tax, other commodity taxes (net)	5	172	15	1	96	8	1
Other non-commodity indirect taxes (net)	4	38	4	2	32	2	1
Income from public enterprises	10	58	6	1	-134	2	1
Other income	5	28	2	0	13	1	1
Less commodity subsidies	1	19	2	0	11	1	0
Less other indirect subsidies	3	27	3	1	23	1	1
Total revenue net of subsidies	-49	1655	72	17	612	75	26
States							
Direct taxes							
Individuals - net tax instalments	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Payroll taxes	-4	49	-9	1	36	4	1
Property taxes	-62	140	6	1	59	5	1
Export taxes	0	0	0	0	0	0	0
Import duties	0	0	0	0	0	0	0
Excise	0	0	0	0	0	0	0
Franchise fees	-1	51	2	0	24	2	1
Sales tax, other commodity taxes (net)	3	85	7	0	47	4	1
Other non-commodity indirect taxes (net)	21	184	22	10	155	10	5
Income from public enterprises	-43	-418	40	1	50	4	1
Other income	16	82	7	1	37	4	2
Less commodity subsidies	1	25	2	0	14	1	0
Less other indirect subsidies	-904	39	5	2	33	2	1
Total revenue net of subsidies	832	109	68	13	362	30	10

Table C2.32: GBE reforms: projected implications for industry output (assuming monetary non-accommodation and full income tax indexation(per cent))

No.	Industry	Electricity					FAC &	
		Rail	& gas	Water	Ports	Telecom	Post	CAA
1	pastoral zone	-0.93	-0.44	0.05	-0.03	0.19	0.08	0.00
2	wheat sheep zone	0.39	-0.38	0.11	-0.02	0.37	0.09	0.00
3	high rainfall zone	-0.71	-0.36	0.08	-0.03	0.51	0.10	0.00
4	northern beef	0.43	0.46	0.31	-0.06	1.79	0.26	0.00
5	milk cattle	0.00	0.13	0.02	0.00	0.06	0.00	0.00
6	pigs	-0.11	0.00	0.18	-0.04	0.90	0.15	0.00
7	sugar cane	-1.13	-0.42	0.64	-0.06	2.41	0.41	0.01
8	other farming export	-0.25	0.38	0.17	-0.01	0.61	0.09	0.01
9	potatoes	0.09	0.81	0.14	0.01	0.41	0.03	0.01
10	other farming import	0.05	0.35	0.12	-0.01	0.39	0.05	0.00
11	poultry	-0.08	0.03	0.13	-0.02	0.59	0.10	0.00
12	services to agriculture	-0.07	-0.03	0.08	-0.01	0.32	0.06	0.00
13	forestry and logging	-0.10	0.64	-0.06	0.01	0.62	0.06	0.01
14	fishing and hunting	-0.06	0.47	0.13	0.00	0.39	0.05	0.00
15	ferrous metal ores	0.13	2.12	0.34	0.88	1.91	0.27	0.04
16	non ferrous metal or	1.21	5.31	0.44	0.06	2.38	0.32	0.04
17	black coal	6.27	3.97	0.39	-0.01	2.19	0.36	0.03
18	oil gas and brown coal	-0.01	-2.38	0.12	0.02	0.61	0.07	0.02
19	minerals nec	0.18	1.13	0.40	0.01	1.92	0.27	0.04
20	services to mining nec	0.91	1.69	0.29	0.06	1.58	0.21	0.03
21	meat products	-0.11	0.00	0.17	-0.04	0.85	0.14	0.00
22	pasteurised milk	0.00	0.11	0.02	0.00	0.08	0.01	0.00
23	milk products	-0.01	0.12	0.02	0.00	0.08	0.01	0.00
24	fruit vegetable prod	0.05	0.47	0.07	0.00	0.20	0.01	0.00
25	margarine oils and fats	0.05	0.65	0.12	0.00	0.35	0.04	0.00
26	flour mill cereal products	0.04	0.26	0.05	0.00	0.17	0.02	0.00
27	bread cakes biscuits	0.04	0.23	0.04	0.00	0.12	0.01	0.00
28	confectionery	0.05	0.43	0.08	0.00	0.24	0.02	0.00
29	raw sugar	-1.06	-0.35	0.59	-0.06	2.24	0.38	0.01
30	food products nec	-0.60	0.44	0.27	-0.02	1.05	0.16	0.01
31	soft drinks cordials	0.01	0.41	0.07	0.00	0.20	0.01	0.00
32	beer and malt	0.10	0.80	0.12	0.01	0.29	0.02	0.00
33	alcoholic beverages	0.16	1.35	0.23	0.00	0.84	0.09	0.01
34	tobacco products	0.11	0.53	0.09	0.01	0.26	0.02	0.00
35	cotton ginning	0.17	0.29	0.18	-0.03	0.84	0.14	0.01
36	wool scouring	0.19	0.16	0.16	-0.03	0.72	0.13	0.01
37	man made fibres	0.18	1.53	0.22	-0.02	1.14	0.15	0.02
38	cotton fabrics	0.22	0.98	0.17	-0.03	0.81	0.13	0.01
39	wool worsted fabrics	0.09	0.80	0.15	0.00	0.43	0.06	0.01
40	textile finishing	0.08	0.40	0.10	0.00	0.34	0.04	0.01
41	floor coverings etc	0.04	1.14	0.24	0.01	0.45	0.05	0.01

Table C2.32: GBE reforms: projected implications for industry output (assuming monetary non-accommodation and full income tax indexation)(per cent) (continued)

No.	Industry	Electricity					FAC &	
		Rail	& gas	Water	Ports	Telecom	Post	CAA
42	textile products nec	-0.09	0.53	0.16	0.02	0.57	0.07	0.01
43	knitting mills	0.04	0.31	0.06	0.00	0.23	0.03	0.00
44	clothing	0.04	0.25	0.06	0.00	0.21	0.02	0.00
45	footwear	0.07	0.12	0.09	-0.02	0.38	0.07	0.00
46	woodchips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	sawmill products	-0.11	0.97	0.04	0.02	0.87	0.08	0.01
48	veneers manufactured wood boards	0.09	0.67	0.08	0.01	0.53	0.06	0.01
49	joinery and wood products	0.13	0.66	-0.01	0.02	0.61	0.06	0.01
50	furniture and mattresses	0.16	1.09	0.27	0.01	0.33	0.04	0.01
51	pulp paper paperboard	-0.03	1.09	0.13	0.01	0.56	0.07	0.01
52	bags and containers	-0.29	0.47	0.12	0.01	0.43	0.06	0.03
53	paper products nec	-0.14	0.56	0.10	0.01	0.47	0.04	0.00
54	publishing printing	-0.14	0.57	0.10	0.01	0.43	0.06	0.01
55	printing stationary	0.06	0.58	0.10	0.01	0.50	0.05	0.01
56	chemical fertilisers	0.26	0.58	0.20	0.00	0.73	0.11	0.01
57	basic chemicals	0.12	1.49	0.20	0.01	0.83	0.11	0.02
58	paints	0.10	0.41	0.08	0.02	0.67	0.08	0.01
59	pharmaceuticals	0.07	0.83	0.16	0.00	0.60	0.07	0.00
60	soap and detergents	0.06	0.51	0.08	0.00	0.32	0.03	0.00
61	cosmetics	0.07	0.52	0.11	0.00	0.30	0.03	0.00
62	chemical products nec	0.60	1.03	0.17	0.04	0.84	0.12	0.01
63	petroleum coal products	-0.19	1.29	0.14	0.03	0.62	0.07	0.04
64	glass and glass products	0.12	0.49	0.13	0.01	0.54	0.06	0.01
65	clay products	0.18	1.04	-0.02	0.01	0.77	0.07	0.01
66	cement	0.01	-0.20	0.01	0.02	0.49	0.06	0.00
67	ready mixed concrete	-0.01	-0.30	0.00	0.02	0.47	0.06	0.00
68	concrete products	-0.04	-0.49	0.01	0.02	0.43	0.06	0.00
69	non metallic mineral	0.15	0.52	0.01	0.02	0.65	0.07	0.00
70	basic iron and steel	-0.17	-0.55	0.07	0.02	0.63	0.09	0.00
71	non ferrous metals	1.09	10.61	0.40	0.13	2.39	0.33	0.03
72	structural metal products	-0.02	-4.80	0.06	0.02	0.60	0.08	0.00
73	sheet metal products	-0.11	0.16	0.11	0.01	0.58	0.06	0.01
74	metal products nec	-0.05	-1.69	0.10	0.02	0.78	0.10	0.01
75	motor vehicles	0.39	0.70	0.25	-0.01	1.16	0.14	0.01
76	ships and boats	0.24	0.60	-0.23	0.14	0.78	0.07	-0.04
77	locomotives rollings	-12.05	0.05	-0.30	-0.05	0.60	0.07	-0.11
78	aircraft	0.17	0.76	0.01	-0.01	0.62	0.05	0.54
79	scientific etc equipment	0.13	0.35	0.16	0.00	0.62	0.07	0.01
80	electronic equipment	0.07	0.08	0.25	0.01	-0.95	0.06	0.01

Table C2.32: GBE reforms: projected implications for industry output (assuming monetary non-accommodation and full income tax indexation)(per cent) (continued)

No.	Industry	Electricity					FAC &	
		Rail	& gas	Water	Ports	Telecom	Post	CAA
81	household appliances	0.13	1.07	0.05	0.01	0.73	0.06	0.01
82	electrical equipment	0.14	-0.38	0.01	0.03	-0.81	0.06	0.01
83	agricultural machinery	0.55	-1.59	-1.59	0.01	3.00	0.26	-0.02
84	construction etc machinery	0.66	0.59	0.66	0.09	0.77	0.15	0.02
85	machinery equipment	0.09	-2.68	-0.02	0.04	0.90	0.11	0.02
86	leather products	0.05	0.32	0.12	-0.01	0.50	0.08	0.00
87	rubber products	0.52	0.95	0.17	0.02	0.93	0.11	0.01
88	plastic related products	0.01	0.66	0.26	0.00	0.67	0.08	0.02
89	signs writing equipment	-0.23	0.70	0.32	0.01	0.63	0.07	0.01
90	manufacturing nec	0.30	1.14	0.38	-0.05	2.13	0.30	0.03
91	electricity	0.10	1.73	0.14	0.01	0.64	0.07	0.00
92	gas	0.50	18.83	0.16	0.03	0.83	0.09	0.01
93	water sewerage drainage	0.15	1.11	-0.01	0.01	0.56	0.05	0.01
94	residential building	0.26	1.49	-0.09	0.02	0.83	0.05	0.01
95	construction	-0.19	-1.47	0.05	0.01	0.24	0.07	0.00
96	wholesale trade	0.03	0.52	0.12	0.02	0.34	0.07	0.01
97	retail trade	0.11	0.59	0.11	0.01	0.35	0.02	0.00
98	mechanical repairs	0.03	0.75	0.13	0.00	0.49	0.04	0.00
99	repairs nec	0.15	0.89	0.15	0.01	0.68	0.06	0.01
100	road freight transport	1.58	0.47	0.14	-0.02	0.74	0.11	0.01
101	road passenger transport	0.04	0.23	0.04	0.00	0.14	0.02	0.00
102	mining rail transport	2.78	2.18	0.25	0.01	1.40	0.21	0.02
103	private iron ore rail transport	0.13	2.19	0.35	0.90	1.94	0.28	0.04
104	non bulk rail transport	-13.93	0.78	0.09	-0.05	-0.08	0.07	-0.03
105	grain freight rail transport	6.90	0.02	0.08	-0.02	-0.21	0.05	-0.02
106	rail passenger trans	-3.15	0.40	0.04	0.00	0.08	0.01	0.00
107	railway fixed costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
108	water transport	0.45	1.42	0.13	0.58	0.84	0.11	0.02
109	international air transport	0.14	0.91	0.16	0.01	0.70	0.05	0.82
110	domestic air transport	0.14	0.91	0.16	0.01	0.47	0.04	0.83
111	services to transport	0.23	0.77	0.11	-0.45	0.52	0.06	-0.78
112	postal services	0.11	0.77	0.12	0.01	0.86	1.81	0.00
113	telecommunications	0.14	0.90	0.12	0.01	5.45	0.06	0.00
114	banking	0.11	1.02	0.14	0.01	0.66	0.05	0.01
115	non bank finance	-0.22	0.78	0.12	0.01	0.57	0.06	0.02
116	investment nec	0.03	0.81	0.12	0.02	0.57	0.05	0.01
117	insurance nec	0.09	0.71	0.12	0.01	0.43	0.03	0.01

Table C2.32: GBE reforms: projected implications for industry output (assuming monetary non-accommodation and full income tax indexation) (per cent) (continued)

No.	Industry	Electricity					FAC &	
		Rail	& gas	Water	Ports	Telecom	Post	CAA
118	business services	0.13	0.73	0.09	0.01	0.60	0.06	0.01
119	ownership of dwellings	0.21	1.69	0.14	0.02	0.66	0.03	0.01
120	public administration	-0.03	0.15	0.02	0.00	0.13	0.01	0.00
121	defence	0.00	0.00	0.00	0.00	0.00	0.00	0.00
122	health	0.10	0.64	0.02	0.00	0.21	0.01	0.00
123	education libraries	0.03	0.14	0.02	0.00	0.06	0.00	0.00
124	welfare etc services	0.08	0.49	0.04	0.00	0.31	0.02	0.00
125	entertainment leisure	0.12	1.12	0.22	0.01	0.58	0.04	0.01
126	restaurants hotels clubs	0.15	1.30	0.23	0.01	0.49	0.04	0.01
127	personal services	0.16	1.28	0.19	0.01	0.44	0.03	0.01
128	non competing imports	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C3 OTHER STUDIES

C3.1 Introduction

Interest in the gains from microeconomic reform dates back at least to the report of the Vernon Committee in the mid-1960s. For the next two decades the focus was on reform of the tradeables sector of the economy, and more particularly on border assistance to manufacturing activities. During the 1980s the scope of analysis was extended to the predominantly non-tradeable services sector which dominated the Australian economy, and more particularly to the public sector component of services. The initial impetus for this came from business sector concerns about the costs to business of public services. Subsequently governments became more concerned with improving the efficiency of their enterprises, in part to relieve pressure on their budgets.

A landmark occurred in 1988 with the announcement by the Commonwealth of a program of reductions in assistance in its May 1988 Statement, and the sending of a reference on Government (non-tax) charges to the Industries Assistance Commission.

Much of the subsequent impetus for action to improve the performance of government businesses stems from that IAC inquiry, which identified the significance of government charges in business costs, laid out principles for improving the performance of government business activities, and put forward some initial estimates of the likely gains to the Australian economy from such improvements.

The micro reform agenda is huge. Although a lot has already been achieved, much more remains and the ambit of possible reforms is constantly widening.

Although this appendix summarises the overall coverage of previous studies of the estimated gains from microeconomic reforms, the emphasis is on those reforms that are most relevant to this exercise, namely those activities that will be most affected by the proposed Hilmer and related reforms — particularly government business activities — and on features of the modelling that might have a significant bearing on the overall gains in GDP and the government revenue implications.

It should be noted at the outset that none of the previous studies have focussed on the government revenue implications. However, assumptions have had to be made about whether revenue changes are offset by changes in expenditure,

by reductions in the PSBR, by changing other taxes to neutralise the revenue, or by some combination of these.

Similarly it should be noted that some sectors of the economy that will be affected by the proposed Hilmer reforms have not been covered explicitly in previous studies, eg the unincorporated sector and statutory marketing arrangements for agriculture — although the latter are subsumed within estimates of the effects of removing assistance to agriculture.

The next section provides a broad overview of the coverage of previous studies of the gains from microeconomic reform, while the estimated gains are discussed in section 4.3. Some of the key reasons for differences in the estimated gains are considered in section 4.4, while the difficult issue of the timing of the gains is touched on in section 4.5, and some summary remarks are set out in the final section.

C3.2 Previous studies

This appendix looks at the results of eight studies of the potential gains from packages of microeconomic reforms. The studies are listed in Box C4.1. All of the studies have been undertaken using versions of the ORANI or Murphy models of the Australian economy, under the sponsorship of government bodies such as the Industry Commission, EPAC and the Australian Manufacturing Council, and of business groups, particularly the BCA.

Other models such as IMP, G-cubed, MSG and various macro models can and have been used to analyse the impacts of particular microeconomic reforms, rather than sectoral packages of reforms. In addition there have been numerous other pieces of work which have drawn on these eight studies — particularly the 1990 IC study and the 1994 EPAC studies.

Over time the coverage of the studies has increased significantly — see Table C4.1. The first work was undertaken by the Office of the IAC for a group of business organisations — the BCA, AMIC, ACM and NFF — and only considered a range of reforms to the transport sector. The IAC drew on this work and also on its previous studies of the impact of industry assistance and the inquiry into Government (non-tax) charges (IAC 1989a), in the second study which appeared in its 1988-89 Annual Report (IAC 1989b).

The list of reforms was further extended to include the water industry and contracting out of government services, and some of the previous estimates were revised in the third study that appeared in the Industry Commission's 1989-90 Annual Report (IC 1990). The BIE drew heavily on the IC's work in the fourth study, which it undertook on behalf of the Australian

Manufacturing Council, with the assistance of modellers at the IAESR. In addition the BIE took account of the impact of investment incentives and of significant improvements in labour productivity, the latter accounting for the major part of the estimated gains in GDP (BIE 1990).

Box C3.1 The previous studies

<i>Sponsor & year</i>	<i>Model used</i>	<i>Key modellers</i>
BCA et al. (Office of IAC, 1989)	ORANI	IAC staff
IAC (1989)	ORANI	IAC staff
IC (1990)	ORANI	IC staff
AMC (BIE, 1990)	ORANI-F	BIE staff, & IAESR
BCA (Access Economics, 1993)	AEM	Access Economics
BCA (Access Economics, 1994)	AEM	Access Economics
EPAC (1994(I)) (Filmer & Dao, 1994)	AEM	EPAC staff, & Access Economics
EPAC (1994(II)) (Dao & Jowett, 1994)	Murphy	EPAC staff, & COPS, Monash Uni

After 1990 there was a lull in producing broader studies. The emphasis switched to implementation of some of the previously identified reforms and to more micro studies of the likely benefits of reform (for example IC inquiries into SMAs, Energy generation and distribution, Rail transport, Intrastate aviation, Water resources, Mail, courier and parcel services, Port authorities and Urban transport).

The next group of studies were able to draw heavily on these more micro studies. They used the newly developed Access Economics Murphy (AEM) multi-sectoral model to analyse the impacts of a much wider range of reforms in work commissioned by the BCA and EPAC.

Their analysis was extended to cover a range of general government activities including the level and efficiency of government service provision and (for the BCA) the impact of changes in the indirect tax mix. Implementation of all the reforms, together with improvements in the operation of labour markets were also assumed to generate significant increases in productivity and allow the economy to operate at much lower levels of unemployment. The impact of improvements to the operations of governments and the induced increase in

productivity and decrease in employment were estimated to have a much greater impact on the economy than the more traditional list of microeconomic reforms.

Table C3.1 Reforms covered in previous studies

Reform	Study by:							
	<i>BCA et al. '89</i>	<i>IAC '89</i>	<i>IC '90</i>	<i>BIE '90</i>	<i>BCA '93</i>	<i>BCA '94</i>	<i>EPAC '94(I)</i>	<i>EPAC '94(II)</i>
Transport					x	x		
- water								
-- domestic	x	x	x	x			x	x
-- international	x	x	x	x			x	x
- bulk commodity handling	x	x	x	x				
- rail	x	x	x	x			x	x
- aviation								
-- domestic		x	x	x				
-- international		x	x	x			x	x
- road		x	x				x	x
Communications					x	x		
- post		x	x	x			x	x
- telecommunications		x	x	x				
Utilities								
- electricity		x	x	x	x	x	x	x
- water			x		x	x	x	x
Industry assistance								
- rural		x	x	x	x	x	x	x
- manufacturing		x	x	x	x	x	x	x
- investment incentives				x				
Government activities								
- government services								
-- level					x	x		
-- efficiency					x	x	x	x
-- contracting out			x			x		
- indirect tax mix					x	x		
Induced improvements								
- productivity								
-- manufacturing				x	x	x	x	x
-- services				x			x	x
- reduced unemployment					x	x	x	x

One other feature to note in the most recent studies by EPAC is that some of the microeconomic reforms had already occurred and so the projected gains from some further reforms were starting to fall. Also EPAC produced a range of estimates of the gains, reflecting conservative and favourable assumptions about the extent of reform possible.

The most comprehensive list of potential microeconomic reforms is provided in the two EPAC 1994 studies, and is reproduced in Box C3.2.

C3.3 Key results

The benefits from microeconomic reforms can manifest themselves in many ways — greater consumption, higher savings, lower taxes, greater government expenditure, higher wages or lower unemployment are some of the possibilities. For convenience, in this section attention is focussed on the impact on that well-used summary measure — gross domestic product (GDP). It should be noted, however, that this measures by how much Australia's output increases, whereas what is more relevant is the increase in Australia's income or GNP. Some of the GDP increase will produce higher incomes for foreigners rather than Australians. Unfortunately, however, the earlier studies do not provide estimates of the GNP gains.

The estimated long-run impacts on GDP of each of the groups of reforms that are distinguished in the previous studies are set out in Table C4.2. The estimates produced by the Industry Commission and its predecessor differ greatly from those of the subsequent studies because the IC did not try to take into account any of the reforms of government service provision or tax raising, or of any induced impacts on productivity or the overall level of unemployment.

While changes in the overall level of government expenditure will have implications for the economy, it should not be categorised as a microeconomic reform. Changes in the structure of indirect taxes are seen by many to be an important reform, and could be put into a similar category to industry assistance because it would have similar significant implications for different types of industries, such as those with an export orientation.

One of the main rationales for microeconomic reform that is advanced by its proponents is that as well as any static gains there will be significant dynamic gains. Economic models find it very hard to handle such dynamic gains which result from endogenous changes in productivity, innovation and tastes. As a proxy for some of these effects, exogenous improvements in productivity can be imposed on the models as is done in the BIE and subsequent studies.

Box C3.2 EPAC microeconomic reform proposals (as at September 1993)

Tariffs and subsidies

Tariff reductions

Subsidy reductions

Labour Market reform

Enterprise bargaining

Workers' compensation

Work practices

Working hours

Facilitating the operation of markets

Competition policy for private sector

Facilitation of interstate trade

Increased tendering of public

Privatisation

infrastructure construction

Product liability

Transport and communications

International aviation competition

Aviation services reform - CAA

Road pricing

Aviation services reform - FAC

Waterfront reform

Coastal shipping

Ship registration

Liner shipping

Trans Tasman shipping

Port charges

Tugboat charges and work practices

Grain handling

Rail transport — grains

Rail transport — other bulk

Rail transport — freight non-bulk

Rail transport — passenger

Taxi licensing

Communications competition

Reform of Government Business Enterprises and Marketing

Authorities

General GBE reform

Electricity supply

Agricultural marketing reforms

Gas and water supply

Public Administration reforms

Efficiencies in provision of health services

Efficiencies in provision of education services

General public administration reform

Other

International trade negotiations designed to improve access for Australian exports

Support for emerging exporters.

Source: Filmer and Dao (1994), Table 1.

Thus the induced improvements in productivity and employment levels can be thought of as reflecting, at least in part, the dynamic gains from some of the other microeconomic reforms, such as the lowering of industry assistance. (In the studies these induced improvements are also attributed to other factors such as labour market improvements.) But it would be hard to demonstrate that they stem from any particular sub-set of microeconomic reforms, such as reforms of government business enterprises.

Abstracting from estimated gains attributable to the induced improvements, the level of government expenditure and the indirect tax mix, leaves three sets estimated gains, stemming from efficiency improvements in the private traded sector, the public business sector and the government services sector.

Lowering industry assistance is estimated to improve the efficiency of the private traded sector, and thereby increase GDP. Over time the estimated benefit falls reflecting that considerable progress has already been achieved in reducing assistance levels. The BIE study generates a much lower benefit from the removal of industry assistance. This reflects their assumption that the tariff reduction is phased in. Since they report only annual results of a partial tariff reduction, their estimates should probably be scaled up by much more than a factor of ten to obtain an estimate of the long-run gains in GDP from a complete removal of industry assistance.

Estimates of the gains from improved efficiency in the provision of government services vary significantly. The 1990 IC study confined its attention to contracting out. The two BCA studies assumed that it was possible to improve the productivity of labour and capital by 9 per cent (1993) and 10 per cent (1994). EPAC considered that the 10 per cent overall productivity improvement was achievable in its favourable scenario, but its more conservative assumption, which is reported in Table C4.2, was to improve the productivity of both labour and capital by 5 per cent. At this stage relatively little is known about the likely extent of efficiency gains. The current COAG-initiated exercise to compare the performance of service provision of different governments in Australia should provide more reliable information.

The more puzzling trends in results are for reforms of government business activities. The estimated gains grew steadily as the coverage of the Industry Commission's analysis was extended and refined. By the 1990 BIE study the gains were projected to be 5.2 per cent of GDP, and many activities were still not included. Subsequent work for the BCA and EPAC produced significantly lower estimates of the gains from reforms of government business enterprises. Access Economics attributes the differences in the estimates to some of the reforms identified by the IC already having been achieved, but it is difficult to believe that the extent of reform was so great in such a short period of time.

The lower EPAC estimates are in part because their conservative scenario is shown in Table C4.2. Under their more favourable and revised scenario, the gains are estimated to be 2.8 per cent — see Table C4.3. That table also shows that a significant proportion of identified micro reforms are already under way.

Table C3.3 Alternative estimates of long-run GDP gains from further microeconomic reform (EPAC 1994 study)
(percentage points)

<i>Gains from:</i>	<i>Existing policy</i>		<i>New reforms</i>	
	<i>Conservative</i>	<i>Favourable</i>	<i>Conservative</i>	<i>Favourable</i>
Infrastructure reforms including GBEs	1.0	1.2	1.8	2.8
Tariff reductions	0.7	0.7	0.8	0.8
Productivity improvements in delivery of general government services	0.6	0.6	1.6	3.1
Improved productivity private sector (nec)	3.3	3.3	3.5	3.5
Increased employment as result of total package	2.6	2.6	5.3	5.5
Total	8.2	8.4	13.0	15.7

a Two sets of results were derived, based on conservative and optimistic estimates of the likely gains from the specified microeconomic reforms.

Source: Dao and Jowett (1994), Table 7.

The overall gains to GDP from reforms of government business activities range from 1.5 per cent (EPAC (Filmer and Dao 1994) study — conservative scenario) to 5.2 per cent of GDP (BIE 1990 study).

These reforms also provide a boost to government revenues. For example the 1990 IC study shows that on top of the estimated GDP gain of 4.4 per cent from reform of government businesses, governments can reduce direct tax rates by 4.6 per cent and increase their real expenditure by 2.8 per cent, while holding constant the public sector borrowing requirement (PSBR). Similarly the BCA studies indicate significant reductions in the ratio of PSBR to GDP in their overall packages of reforms.¹ The improvement in government's finances is not, however, apparent in the EPAC study (Filmer and Dao 1994). This probably reflects an alternative assumption of how the increase in Australia's real output is used.

¹ Derived by comparing the results from Tables A.2 and A.14 in Access Economics (1993).

Microeconomic reform is also estimated to have a significant impact on Australian industries. The distribution of effects varies according to the reform group, but across a wide range of reforms all industries benefit significantly. This is illustrated in Table C3.4 which shows the estimated industry output effects generated by the reforms included in the EPAC 1994(I) study. Overall GDP in that study increases by 12.7 per cent, but industry output increases vary from 9.3 per cent (public administration) to 20.8 per cent (transport). The second largest projected gain is for clothing and footwear (16.7 per cent). Tariff reductions are projected to reduce output in four industries, but all other groups of reforms have either positive or zero impacts on estimated industry outputs. These results demonstrate that broadly-based reforms have uniformly positive effects on industries — after all the necessary adjustments have worked their way through the system.

The next section looks more analytically at the reasons for differences in the estimates of the gains from microeconomic reforms in the different studies.

C3.4 Why do the results differ?

The previous section has drawn attention to the main reason for the differences in the the estimates of the gains from microeconomic reform in the earlier studies, namely that different groups of reforms are included. But that is only one of many reasons for differences, albeit usually the largest, and a number of other causes have been alluded to. A more comprehensive list of factors influencing the estimated results would be:

- range of reforms
- magnitudes of specified shocks
- model structures
- databases / parameters
- dynamics and timing
- model closures
 - savings
 - government
 - expenditure
 - (tax) revenue
 - public sector borrowing requirements (PSBR).

C3.4

It is usually very hard to make a detailed comparison of the results of different studies because of the lack of information on many features of the model simulations, eg the closure and database. In some instances the information may be available in other papers. In the time available, this analysis has relied only on the information contained in the papers cited in the references to this appendix.

Range of reforms

Over time the coverage of reforms in the eight studies has broadened, although previous estimates still do not exist for a number of the reforms included in this study. More recent studies have included a number of areas of reform that are not really relevant to this particular exercise, as discussed in the previous section.

The more recent AEM model-based studies have been carried out using a more aggregated industry structure, and results are only available for broader groups of reforms, eg all improvements in the performance of GBEs are aggregated into one set of results. However as indicated previously, the EPAC studies did take account of the widest set of reforms (see Box C4.2). There is no reason why separate results could not be generated for each of the reforms listed. By comparison, the earlier ORANI-based studies provide results for up to 11 different sets of reforms that overlap with this study, including seven categories of transport, communications, two types of utilities and contracting out by the public sector.

Magnitudes of specified shocks

Even within the same reform group, estimates of the direct benefits from reforms (which determine the shocks to the model or values of the exogenous variables) have varied considerably, reflecting:

- more refined estimates of the direct gains, eg the IC increased its estimate of the gains from rail reform in the light of more detailed information,
- greater coverage of the extent of reforms within a sector,
- taking into account reform that has already taken place, and which therefore reduces the potential gains from further reforms, and
- conservative estimates of the proportion of potential reform that is likely to be achieved (eg see the EPAC conservative and favorable scenarios in Table C4.3).

Model structures

This is an important potential source of differences in estimates, but not so in practice because of the close similarities between the ORANI and AEM models. It becomes more relevant if other models such as IMP, or the various macro and multi-country models, are used for the simulations.

Databases & parameters

Considerable attention has been given to the database in this study, which illustrates how important it is to determining the results. As the IC has found with its use of the ORANI model, different results are obtained from similar simulations when the database is rebased to a more recent year (particularly in simulations with a shorter-term focus). In part to overcome this, when the database is updated more representative data are used for some of the more volatile sectors of the economy, such as agriculture.

Both the ORANI and AEM models are based on the ABS input-output tables, which may be quite dated by the time that new tables become available and are modified for use in the models. The AEM model updates the database to a more recent year, using national accounts information on GDP by industry. Because of its greater detail, it is a much harder task to update the ORANI model, though work is well underway to do so as part of the IMPACT Project.

Differences in databases are unlikely to have a significant effect on the results of the different studies. Parameter values, which determine how responsive economic agents are to the shocks, may be more important. The AEM model is more aggregated than ORANI, and a general feature of aggregation is that parameter values are typically lower (but of course applicable to a larger group of economic agents). This may tend to reduce the estimated benefits, but as pointed out by Access Economics, their results are quite similar to those obtained from the ORANI model.

Model closures

Past experience with the ORANI model has shown that model closures are of key importance in determining the magnitudes of results. There are a number of dimensions to this. In multi-sectoral models typically there are many more economic variables specified than behavioural equations to explain them. Any excess variables must have their values determined outside the model (exogenously). When originally specified, most models are highly non-linear. To solve them two broad techniques can be used. They may be solved in the levels, as happens with the AEM model. This a number of advantages, but because the solution techniques are usually tailor-made to make the solution procedure faster, it is usually harder to change the sets of endogenous and exogenous variables. Alternatively, the non-linear equations may be linearised around a particular solution to the model, as happens with the

ORANI model. This introduces linearisation errors (which can be overcome using iterative solution techniques), but provides great flexibility in model closures. There are few mathematical constraints - other than avoiding singularity - to the choice of endogenous variables, but of course the choice must also make economic sense.

The next dimension is the time period. Although the ORANI model is comparative static and so essentially timeless, the appropriate choice of which variables are exogenous does provide some perspective to the time period. Thus if industry capital stocks are held constant an approximation to the short run is obtained. Of the eight studies considered in this appendix, all but the BIE study have a long-term focus. The estimated gains are after inputs, including capital, and prices have fully adjusted. The BIE study has a more medium-term focus (which is why the results reported in Table C4.2 were scaled up to approximate the long-term benefits).

Of lesser significance is the choice of numeraire for the models. Comparative-static models show relative changes in economic variables. To tie them down, it is necessary to evaluate them relative to some other variable, which becomes the numeraire. The IC has traditionally used the nominal exchange rate as the numeraire, while the CPI is typically used in applications of the ORANI-F model, as in the BIE study. The choice of numeraire does not affect the results, but can at times cause confusion in interpreting them.

The fourth important dimension reflects the behavioral constraints imposed by the modeller. Do the gains from microeconomic reform go mainly to consumption, or are they used to boost savings and domestic investment, thereby reducing the current account deficit. These assumptions are usually more important when the simulations are run in conjunction with an underlying macroeconomic scenario. In the context of this study, what is assumed about the behaviour of governments is of particular significance.

Government behaviour

The (weighted) majority of the reforms considered in this study have important implications for governments. In typical ORANI simulations run by the IC, a fairly neutral assumption about the behaviour of government has been used. If the economy grows, then government consumption expenditure is expected to increase too, albeit at a slower rate. If government tax revenue rises, then this is usually neutralised by a reduction in direct tax rates, to keep the PSBR constant. Thus governments do not gain directly from microeconomic reforms. On the other hand, the BIE study assumed that real government consumption expenditure was fixed, while the PSBR was endogenous. The micro reforms were estimated to reduce the PSBR significantly, implying a boost to government income. Similarly in the Access

Economics studies for the BCA, microeconomic reform reduces the ratio of the PSBR to GDP, indicating an improvement in the income of governments.

C3.5 Timing issues

Timing issues are particularly hard for economic modellers to handle. General equilibrium modellers have tried to finesse some of these problems by using comparative-static techniques, which are essentially timeless and report the new equilibrium after the specified set of endogenous (ie determined by the model) variables have adjusted fully to the specified changes to the list of exogenous (ie determined outside the economic model) variables. Economic gains are measured as the difference between the initial values and the new equilibrium.

The results reported in the previous studies were essentially obtained using the comparative-static approach, although the BIE study used a version of the ORANI model, which incorporates some rudimentary dynamics (ORANI-F), and provides estimates of the annual average gains over the period from 1988-89 to 1994-95. The four AEM model-based studies run a separate comparative-static model and then incorporate those results into a macro model to provide some time path of the estimated benefits from microeconomic reform.

Work is currently underway to improve the dynamic structure of ORANI (the new MONASH model, the first results of which have recently been reported), and to integrate a multisectoral model into the dynamic Murphy macroeconomic model.

Ideally, models should be able to address at least four types of timing issues:

- the time path of reforms,
- the rate of response of economic agents to the reforms, including the anticipation of announced but not yet implemented reforms,
- the adjustment costs and their duration, incurred by economic agents, and
- the overall gains in the (specified) long term.

None of the models provide any direct information on adjustment costs, although inferences can be drawn about some of the adjustments that must take place by comparing for example employment by industry before and after the reforms have taken place. But we do not know how long it takes to obtain a new job. Nor do the models take account of the costs of unemployment until the new jobs are found.

In comparative-static versions of ORANI, economic shocks are imposed in one go. No account is taken of the phasing of reforms. Similarly no information is available on the timing of the benefits - only an estimate of the long-term gain, after all adjustment has taken place, is available. The long term is thought to be around ten years in the ORANI model. However, more dynamic multi-sectoral models may take a very long time before they stabilise in response to some economic shock (see for example the results from the recent EMBA symposium, reported in Hargreaves (1994)).

The ORANI-F based study by the BIE did allow for the phased introduction of reforms and provided annual average estimates of the likely medium-term benefits of those reforms. Similarly the results from the AEM industry model could be incorporated into the AEM macro model to provide some time path of the medium-term benefits from the reforms identified in the EPAC and BCA studies. But at that stage in its development, the AEM model could not provide any dynamic timepath of the estimated gains at the industry level of detail. Work is currently under way to make available dynamic multi-sectoral versions of the ORANI and AEM models.

C4.6 Summing up

The eight previous studies that have been considered in this appendix contain widely differing estimates of the economy-wide gains from microeconomic reforms. This largely reflects the range of reforms that are encompassed by the studies. When appropriate allowances are made for the different approaches adopted, the differences are not nearly so great. This is because the studies have only used two economic models - ORANI and AEM, and the latter is calibrated to give similar comparative-static results to ORANI for the same magnitudes of shocks.

The main messages to come out of the studies are that there is a lot of uncertainty about the likely direct impacts of microeconomic reforms, but the eventual benefits to consumers in all cases are significant. Also the broader the range of reforms, the greater the likelihood that that all sectors of the economy will benefit. In a number of studies it can be inferred that governments gain considerable economic benefits from the reforms, which can be taken in various combinations of greater revenues, expenditures or savings (lower PSBR).

The studies mostly abstract from the difficult timing issues, such as the phasing in of the reforms, the rate at which economic agents react to those reforms, the duration and magnitude of adjustment costs, and the length of time before the full gains from the reforms are achieved on an ongoing basis.

These timing issues are important in determining whether the discounted long-term benefits exceed the short-term costs of reform. Again, the broader the package of reforms, the more likely this will be, because the losers from one set of reforms will be the gainers from many other reforms.

D1 TERMS OF REFERENCE

TELEPHONE: (06) 263 3738
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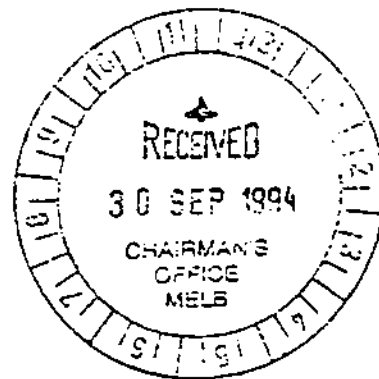
OFFICE OF THE SECRETARY
CANBERRA ACT 2600



THE TREASURY

23 September 1994

Mr W.I. Scales, AO
Chairman
Industry Commission
Benjamin Offices
Chan Street
BELCONNEN ACT 2616

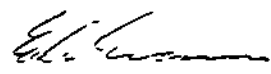


Dear Mr Scales

ASSESSMENT OF THE BENEFITS OF HILMER AND RELATED REFORMS

The Council of Australian Governments (COAG), at its meeting on 19 August 1994, requested the Industry Commission to undertake an assessment of the benefits to economic growth and revenue from the implementation of Hilmer and related reforms on a brief provided by Heads of Treasuries.

I attach terms of reference, agreed by Commonwealth, State and Territory Heads of Treasuries, for the assessment sought by COAG.


E A Evans
Secretary to Treasury

TERMS OF REFERENCE FOR INDUSTRY COMMISSION ASSESSMENT OF BENEFITS OF HILMER AND RELATED REFORMS

Introduction

The Council of Australian Governments (COAG) is considering the implementation of a national competition policy based on the report of an independent committee of inquiry (the Hilmer report). The objectives of a national competition policy are:

- to develop open, integrated domestic markets for goods and services;
 - to reduce complexity, administrative duplication and other barriers to the efficient operation of national markets; and
 - to reinforce the general thrust of micro-economic reform by providing the opportunity to progress reform on a broad front and in a nationally consistent way.
2. Competition policy reform should contribute to a domestic market environment that facilitates improvements in the productivity of capital and labour and leads to lower prices and/or better quality goods and services.
 3. All sections of Australian society should benefit from competition policy reform through sustainable increases in living standards and greater national output and income. Governments will benefit as part of this process through, inter alia, greater revenue resulting from enhanced levels of economic activity and growth.
 4. At the August 1994 COAG meeting it was agreed that "all Governments should share the benefits to economic growth and revenue from Hilmer and related reforms to which they have contributed. An assessment of such benefits would be made by the Industry Commission on a brief provided by the Heads of Treasury."
 5. The Industry Commission will present its assessment to Heads of Government.

Purpose of Inquiry

6. The Industry Commission is requested to investigate the effect on economic growth and revenue of "Hilmer and related reforms" as detailed in Attachment A, including where these reforms are already under way.

Hilmer reforms

Implementation of the proposed national competition policy as submitted to the August 1994 COAG meeting, including:

- (a) **Extending application of Part IV of the Trade Practices Act to all currently exempt sectors, including unincorporated businesses and State and Territory businesses within the shield of the Crown.**

- (b) **Minor amendments to the Part IV provisions** such as permitting the authorisation of resale price maintenance and price fixing agreements for goods and the repeal of the prohibition against anti-competitive price discrimination.
- (c) Establishing a **legal right to negotiate access** to declared essential facilities on commercial terms.
- (d) **Extending the price notification provisions of the Prices Surveillance Act** to State and Territory businesses.
- (e) **Governments applying the principles contained in the draft Competition Principles Agreement.**
- (f) Application of the new competition arrangements being affected by **transitional arrangements and the application of revised exemption mechanisms.**

Related reforms

- (a) **Electricity reform:** The necessary changes to allow a competitive electricity market to commence from 1 July 1995 or as soon as possible thereafter.
- (b) **Gas reform:** The necessary changes to enable free and fair trade in natural gas by 1 July 1996.
- (c) **Water reform:** A strategic framework to reform the water industry over the next 5 to 8 years, covering both urban and rural water supply.
- (d) **Road Transport reform:** The implementation, by 1 July 1996, of the package of road transport reforms being progressed by the National Road Transport Commission.
- (e) **Mutual Recognition:** The implementation of the principles of mutual recognition for goods and occupations embodied in mutual recognition legislation and the associated Intergovernmental Agreement.
- (f) **Review of Partially Registered Occupations:** A national approach to the treatment of partially registered occupations (ie those occupations which are registered in some States and Territories but not others), based on the response of jurisdictions to the report of the Vocational Education, Employment and Training Advisory Committee (VEETAC).
- (g) **Ports:** Port reforms with the details to be indicated to the Commission by individual jurisdictions.

Scope of assessment

7. The Commission's report should provide estimates of the following:
- (a) The full and complete benefit to economic growth arising from the implementation by all jurisdictions of all the Hilmer and related reforms (as specified in Attachment A).
 - (i) The benefit to economic growth arising from Hilmer and related reforms refers to the increase in GDP; the Commission may also refer to other important economic aggregates in identifying the benefit to economic growth. __

- (ii) To the extent possible, the analysis should separately identify the benefits arising from the contribution made by (a) the Commonwealth Government and (b) the State, Territory and local governments in aggregate to the Hilmer and related reforms.
- (b) The total revenue growth accruing to (a) the Commonwealth and (b) the States and Territories and local government in aggregate arising from the benefit to economic growth from each set of contributions as required in 7(a)(ii) above.
- (i) In calculating the benefits to economic growth and revenue, the Commission should focus on the consequences of the complete implementation of the full range of Hilmer and related reforms, abstracting from any cyclical factors.

Methodology

8. In providing its assessment of the GDP and revenue growth consequences of Hilmer and related reforms, the Commission should provide an explanation of the methodology and assumptions used to derive the estimates. The Commission should also provide guidance as to the sensitivity of the results to the assumptions used.

9. To enhance understanding of how the estimates have been generated, the Commission is requested to provide an indication of the contribution each broad category of reforms, as set out in paragraph 6 above, is expected to make to the increases in GDP and revenue growth. This may include an assessment of any additional effect arising from the interaction of all reforms considered and take account of specific exemptions and grandfathering arrangements. The benefits do not need to be disaggregated by individual State or Territory.

10. To the maximum extent feasible and depending on the extent to which jurisdictions provide details of their reforms, the Industry Commission should provide an indication of the likely time path by which benefits accrue.

11. The Commission should undertake a review of previous studies which have investigated the economic costs and benefits arising from microeconomic reform, outline the different scope and coverage of those studies compared with its current assessment, and, where feasible, reconcile the results of the current study with those from earlier studies.

Timing

12. A draft report should be provided to governments by no later than 30 November 1994 for comment by 23 December. A final report should be provided to governments by no later than 20 January 1995.

DETAILS OF REFORMS

The following material is intended to provide some general guidance to the Industry Commission as to the nature of the Hilmer and related reforms but the Commission is to be able to interpret these reforms as widely as necessary.

Hilmer Reforms

The following outlines the main elements of the Hilmer Report's recommendations that are under consideration by the Council.

- (a) Extending application of Part IV of the Trade Practices Act to all currently exempt sectors, including unincorporated businesses and State and Territory businesses within the shield of the Crown.
 - (i) This could restrict or limit (at the end of transition periods, discussed below) certain anti-competitive practices undertaken by the professions, co-operatives, Statutory Marketing Authorities and some Government business trading arrangements.
- (b) Minor amendments to the Part IV provisions such as permitting the authorisation of resale price maintenance and price fixing agreements for goods and the repeal of the prohibition against anti-competitive price discrimination.
- (c) Establishing a legal right to negotiate access to declared essential facilities on commercial terms. Where negotiation is unsuccessful the Act will provide for arbitrated terms and conditions of access. The arrangement will apply to essential facilities that are of national significance and where there is not an effective access regime already in place.
- (d) Applying the Prices Surveillance Act to those State and Territory businesses that are not subject to effective State or Territory price oversight arrangements.
- (e) All governments will agree to
 - (i) apply competitive neutrality arrangements that seek to equalise net competitive advantages of government agencies arising from their public sector ownership;
 - (ii) develop a program to review anti-competitive legislation with the objective of considering non-legislative approaches to meeting policy objectives, which do not unnecessarily restrict competition
 - reviews of anti-competitive legislation may have implications for licensing arrangements for certain occupations and the professions and Statutory Marketing Authority arrangements ;
 - (iii) undertake a review to establish the appropriate structure for a public monopoly, before that monopoly is exposed to competition from the private sector or before it is privatised, and remove any regulatory functions from the public monopoly before it is exposed to competition.

- (f) Application of the new competition arrangements will be affected by transitional arrangements and the application of revised exemption mechanisms. These are:
- (i) The extension of the competitive conduct rules will not affect existing contracts which are currently outside the coverage of those rules. Those contracts will be grandfathered.
 - (ii) In extending the conduct rules to persons and State and Territory businesses not previously covered by the Trade Practices Act, there will be a twelve month transition period to allow those persons to become accustomed to the rules and to undertake education and compliance programs, and another twelve month period before pecuniary penalties apply.
 - (iii) States and Territories will maintain an ability to exempt certain anti-competitive conduct by Act rather than by Act or regulation as at present.
 - (iv) Existing State and Territory laws exempting conduct under current subsection 51(1) which do not comply with the new subsection 51(1) rules will be preserved for three years from the date the Bill receives Royal Assent.
 - (v) States and Territories will be required to develop a timetable for reviewing anti-competitive regulation by December 1995 with reforms to legislation to be completed by the year 2000.
 - (vi) States and Territories will be required to publish by December 1995 a timetable for implementing competitive neutrality in respect of their government agencies.

Related Reforms

- (a) **Electricity reform:** The necessary changes to allow a competitive electricity market to commence from 1 July 1995 or as soon as possible thereafter. The main elements of the structural changes to be:
- (i) open access to the eastern and southern Australian grid through establishment of an interstate electricity transmission network;
 - (ii) a cost reflective and uniform approach to transmission and distribution pricing;
 - (iii) extension of the grid to Queensland (Eastlink) and Tasmania (Basslink) if economically justified;
 - (iv) free trade in bulk electricity for private generating companies, public utilities and private and public electricity consumers;
 - (v) separation of transmission from generation and distribution elements;
 - (vi) competitive sourcing of generation capacity based on merit order dispatch of individual generators;
 - (vii) a corporatised Snowy Mountains electricity generation company effectively competing for supply into the national grid; and

(viii) national regulation of market conduct and national prices oversight with a code of conduct to cover other matters.

(b) **Gas reform:** The necessary changes to enable free and fair trade in natural gas by 1 July 1996. The main elements of these changes to be:

- (i) removal of any legislative or regulatory barrier to both inter- and intra- jurisdictional trade in gas by 1 July 1996;
- (ii) uniform framework for third party access rights to both inter- and intra- jurisdictional supply networks to be implemented by 1 July 1996;
- (iii) uniform national pipeline construction standards;
- (iv) increased commercialisation of the operations of publicly-owned gas utilities, through corporatisation, by 1 July 1996;
- (v) no restrictions on the use of natural gas (eg for electricity generation);
- (vi) gas franchise arrangements consistent with free and fair competition in gas markets and third party access; and
- (vii) structural separation of publicly owned transmission and distribution activities and legislation to "ring fence" transmission and distribution activities in the private sector by 1 July 1996.

(c) **Water reform:** A strategic framework to reform the water industry over the next 5 to 8 years, covering both urban and rural water supply. For urban water supply, the main directions for reform are:

- (i) elimination of cross subsidies and restructuring pricing on a pay for use basis;
- (ii) achieving positive economic rates of return on investment; and
- (iii) improving service delivery by separating service provision and regulatory functions, identifying and paying for CSOs, and adopting international best practice.

For rural water supply, the directions for reform are:

- (i) changing pricing regimes so that they recoup operating and maintenance costs of water supply systems;
- (ii) requiring new investment projects to demonstrate that they are economically viable and ecologically sustainable; and
- (iii) introducing a market for trading in water entitlements to allow water to flow to its highest value uses, while providing sufficient allocations for the environment.

(d) **Road Transport Reform:** The implementation, by 1 July 1996, of the package of road transport reforms that are being developed by the National Road Transport Commission.

- (i) The main elements of this package of reform involve the introduction of uniform, national registration charges for heavy vehicles and vehicle regulations.
 - (ii) Implementation requires the passage of adoptive complementary legislation by the States which will repeal, amend or modify a State's existing road transport regulation to avoid any conflict with Commonwealth legislation.
 - (iii) The States would be required to abide by the decisions of the Australian Transport Council as set out in the Heavy Vehicles and Light Vehicles agreement.
- (e) **Mutual Recognition:** The implementation of the principles of mutual recognition for goods and occupations embodied in mutual recognition legislation and the associated Intergovernmental Agreement.
- (f) **Review of Partially Registered Occupations:** A national approach to the treatment of partially registered occupations (ie those occupations which are registered in some States and Territories but not others), based on the response of jurisdictions to the report of the Vocational Education, Employment and Training Advisory Committee (VEETAC).
- (g) **Ports:** Port reforms with the details to be indicated to the Commission by individual jurisdictions.

D2 HILMER REVIEW AND GOVERNMENT RESPONSES

D2.1 Hilmer review

In October 1992 agreement was reached by the Commonwealth, State and Territory governments that a national competition policy should give effect to certain specific principles. They included that:

- universal and uniformly applied rules of conduct should apply to all market participants;
- if anti-competitive conduct is claimed to be in the public interest, that must be demonstrated by an assessment of the public costs and benefits;
- an open and integrated domestic market should be developed; and
- regulatory complexity should be reduced and administrative duplication eliminated.

A committee of inquiry, chaired by Professor Fred Hilmer, was established to examine relevant issues and advise governments on how these principles could be put into effect. In August 1993 the committee presented its report “National Competition Policy”, often referred to as the Hilmer review, the Hilmer report, or just “Hilmer”.

Six sets of interrelated issues were examined in the Hilmer review. Firstly, the **competitive conduct rules** contained in the Trade Practices Act (for example, those limiting price discrimination) were assessed as to their effectiveness in promoting competition. But because those rules do not adequately cover some aspects of competition arising from extensive government ownership and regulation, five additional policy elements were examined:

- the **structural reform of government monopolies** ;
- **access** by all, on commercial terms, **to essential facilities** such as electricity transmission systems, rail lines etc;
- the restraint of **monopoly pricing** ;
- fostering of **competitive neutrality** when government business enterprises compete against private sector firms; and
- a wide range of government **regulatory restrictions on competition** .

In this appendix brief outlines are provided for each of these six elements: they cover the nature of the problems, what Hilmer recommended should be done, and what governments agreed to do.

The treatment here of the Hilmer reforms is not intended to be comprehensive, but rather to focus on what is of particular relevance to this study. For example, apart from timing issues, Hilmer's recommendations on the legal and institutional aspects of implementing the reforms are not directly relevant to the study.

D2.2 Competitive conduct rules

The first priority according to Hilmer is the need for Government initiatives to limit anti-competitive conduct. Part IV of the *Trade Practices Act 1974* contains provisions aimed at supporting competition in markets by prohibiting anti-competitive agreements, anti-competitive price discrimination, the misuse of market power, resale price maintenance, and certain mergers and acquisitions. These provisions are referred to as the "competitive conduct rules".

On occasions, there may be grounds for suspending these rules if the public benefits of the practice in question outweigh the costs. But any unwarranted exemptions can thwart the competitive objectives of the conduct rules. Hilmer put it this way:

The current Australian regime involves the interaction of up to seven often overlapping exemption mechanisms, many of which are unrelated to any question of public benefit and can fragment application of the rules according to State borders. The Committee sees a need for substantial reform in this area, with fewer and more rigorous and transparent exemption processes. (Hilmer p. xxiii).

Accordingly, Hilmer recommended some relaxation of the competitive conduct rules in specific circumstances, and that they should have greater coverage by being applied to all business activities regardless of ownership. These recommendations have been accepted by governments.

Hilmer drew attention to an aspect of the present regime whereby all price fixing arrangements on *goods* are prohibited but it is possible to obtain authorisation for price fixing of *services*, under particular conditions. Hilmer saw no grounds for this different treatment of services from goods, and recommended removal of the potential for authorisation for price fixing for services (Hilmer, p. 34). This element has not been accepted by governments; rather, authorisation of price fixing of goods is to be permitted, bringing it into line with the current arrangement for services.

Thus, proposals that will be put to COAG for endorsement and which are included in the scope of this study are as follows.

- Minor amendments to the Part IV provisions of the Trade Practices Act such as permitting the authorisation of resale price maintenance and price fixing agreements for goods in cases where it can be demonstrated to yield net public benefits. It also is proposed to repeal the specific prohibition against price discrimination on the grounds that anti-competitive pricing is prohibited under provisions covering misuse of market power.
- Extension of the application of Part IV of the Trade Practices Act to all currently exempt sectors, including unincorporated businesses and State and Territory government businesses.

D2.3 Structural reform of government monopolies

Government monopolies, both Commonwealth and State, have been subjected to a range of reforms ranging from commercialisation through to corporatisation and privatisation. An important adjunct to these reforms are moves to promote competition in markets which previously were serviced exclusively by the government monopolies, but to date not much has been achieved on this front.

Hilmer recommended that the following principles should apply:

- the separation of regulatory and commercial functions of public monopolies (for example, regulation being the responsibility of the Civil Aviation Authority and separate from the airport commercial activities of the Federal Airports Corporation);
- the separation of natural monopoly and potentially competitive activities (for example, keeping maintenance of railway infrastructure separate from provision of train services);
- the separation of potentially competitive activities into a number of smaller, independent business units (for example, fostering competition between electricity generating facilities).

The application of these principles would enhance competition regardless of ownership. They become more important if privatisation is in prospect because they will help prevent establishment of a private monopoly which might then engage in predatory practices to the detriment of the nation. Accordingly, Hilmer recommended there be rigorous, open and independent study before competition is introduced to a sector traditionally supplied by a government monopoly, or where privatisation is proposed.

While Hilmer envisaged some role for a national competition agency to advise governments when required, what was *agreed* was that each jurisdiction should be free to determine its own agenda for the reform of public monopolies (Competitive Principles Agreement p. 4.6). Hilmer’s suggestion that there be open and independent inquiries was not accepted.

D2.4 Access to essential facilities

Because the structural reform of government monopolies (Section D2.3 above) has progressed little, there has been limited access to networks or infrastructure such as pipelines, electricity grids and railway lines. As a result, competition has not evolved in some markets. Typically the owners of such facilities have been the sole providers of services, and have excluded other providers in order to protect their monopolies. And the relatively high cost of such infrastructure means that it is not economically feasible to duplicate it in order to provide competing services.

Hilmer has argued that there should be a right of access to certain “essential facilities” on fair and reasonable terms, and that such access is an important element of a national competition policy. In essence, Hilmer recommended that a new legal regime be established to create a right of access in prescribed circumstances. It would include provisions whereby, should the owner not consent to access, a Commonwealth Minister would be able to declare access rights if doing so is in the public interest (essential to permit effective competition), and a public inquiry process has recommended such access, as well as the terms and conditions which should apply. In such cases, the legitimate interests of the owner are to be protected.

Governments have agreed to the establishment of a national access regime, but that it would not apply to facilities already covered by an access regime that complies with a specific set of principles — these are set down in the draft “Competitive Principles Agreement” and reflect the thrust of Hilmer’s recommendations. Importantly, and not surprisingly given the dominance of State-owned GBEs that would be involved, governments have not agreed to the Hilmer proposal that a Commonwealth Minister may declare access rights — State and Territory Ministers will decide if facilities are to be subject to the national access regime.

D2.5 Monopoly pricing

In those markets which lack effective competition, businesses may be able to impose high prices because of their monopoly position. Such behaviour

results eventually in a wasteful allocation of resources, and is detrimental to the national economy. Monopoly pricing is evident in both the private and government sectors; in the latter, reform of government business enterprises in recent years has resulted in pricing that is more market oriented than previously.

Hilmer recommended that measures to enhance competition should be the preferred way to counter monopoly pricing. Should that prove inadequate, it was recommended there be a national regime of prices monitoring or surveillance, but not prices control. A designated Commonwealth Minister would make declarations if a firm was shown via a public inquiry to have substantial power in a substantial market, but new and existing declarations would automatically lapse after set periods of time. Hilmer envisaged that State governments would oversight the pricing policies of their GBEs.

It was agreed that States and Territories will consider establishing independent sources of price oversight where these do not already exist (Competitive Principles Agreement p 4.4). It was *not agreed* that there would be a national regime.

In response to the Hilmer Review, the Commonwealth Government instructed the PSA to undertake a systematic two year public review of all goods and services currently subject to surveillance. In that review, the PSA is required to address whether existing regulations are still justified in the light of changes in competitive forces in recent years¹.

D2.6 Competitive neutrality

In pursuit of the more efficient provision of services, many government business enterprises have been required to operate increasingly on commercial principles. A by-product is that they now sometimes compete for work against private sector suppliers, and that has led to complaints of unfair competition because the GBEs are perceived as having inherent advantages not available to private sector companies.

Hilmer put forward a set of principles which would guide policy in the pursuit of “competitive neutrality”. GBEs should not enjoy any net competitive advantage, because of their ownership, under these principles. Any advantage should be neutralised within a year of competition with the private sector. A national competition authority would report allegations of non-compliance.

¹The Industry Commission has made a submission (published as IC 1994e to that review, arguing that of 19 goods and services currently declared, only 3 warrant prices surveillance.

Governments *agreed* that each jurisdiction is to be responsible for implementing the principle of competitive neutrality — a reporting role for a national authority was not agreed.

D2.7 Regulatory restrictions on competition

The Hilmer Review describes regulation by all levels of government as the greatest impediment to enhanced competition in many key sectors of the economy (Hilmer p. xxix). Regulation can take the form of statutes (law) and subordinate legislation, or can be a consequence of government ownership and the granting of monopolies and licences. Compliance with such government regulations takes precedence over the requirements of the Trade Practices Act, no matter what might be the detrimental effects on competition.

But there may be a need for some government regulation when market failures occur. In such cases, an essential element of any competition policy is that regulatory restrictions on competition must provide benefits clearly greater than the costs imposed.

Hilmer recommended that:

- (a) a central plank of national competition policy be the reform of regulation that unjustifiably restricts competition;
- (b) any restriction on competition must be clearly demonstrated to be in the public interest;
- (c) those elements of any new regulations which do justifiably restrict competition should automatically lapse within five years unless re-enacted following a process of public review;
- (d) existing regulations be systematically reviewed, by an independent body using a public inquiry process, to ensure they do not restrict competition — those retained with justification would lapse after five years, as in (c) above; and
- (e) all review should be from an economy-wide perspective.

Some of the States have recognised the importance of assessing regulations, and have had in operation systematic programs of review and automatic phased repeal, sometimes for competition policy reasons, but often with the sole objective of simplification. The Commonwealth Government has not yet started to systematically review its stock of regulations.

Governments have accepted the thrust of Hilmer's recommendations on regulatory reform. However, some important modifications were agreed

which will have the overall effect of reducing the potential gains from this category of reforms. In particular;

- each government will determine its own agenda and priorities for reform;
- there will be no automatic five year lapsing mechanism for regulations that do restrict competition;
- if a regulation which restricts competition is demonstrated to confer net benefits on the community, it need not again be reviewed for 10 years; and
- there was not acceptance by governments that reviews of regulation should be conducted in the open and transparent way recommended by Hilmer.

While in-principle agreement between governments has been reached, no formal agreement has been signed. The substance of the regulatory reform is one element of the “Competitive Principles Agreement” currently circulated for comment and which is intended for signing at the next 1995 COAG meeting. Each government is to develop, by December 1995, a program of review so that all legislation is covered by the year 2000. Reviews are to:

- clarify the objectives of the legislation;
- identify the nature of the restriction on competition;
- analyse the likely effect of the restriction on competition and on the economy generally;
- assess and compare the costs and benefits of the restriction; and
- consider alternative means for achieving the same result, including non-legislative approaches. (Competitive Principles Agreement, p. 4.8)

D2.8 Summary

In this appendix the nature and scope of reforms that might flow from the Hilmer Review have been described in general terms. Many are agreed only in principle as yet, and when it comes to putting them into practice there is likely to be much resistance and procrastination from entrenched interest groups. Thus, there is considerable uncertainty as to the timing and impact of the reforms.

Many are so fundamental that they can be expected to unleash favourable dynamic forces not previously observed in Australia. Their very nature, their diversity, their potentially pervasive effects and their uncertainty all mean that many of these reforms are not amenable to quantitative assessment.

DC3 DETAILS OF THE MODEL AND SIMULATION METHODS

D3.1 Demand and supply in HILORANI

Like all models, ORANI contains a large number of assumptions. This section gives a brief description of the characterisations of industry supply and demand in the model.

Supply side

On the supply side, the key assumptions are those made about the production technology used to produce output, since these determine the extent to which industries can substitute between the various input categories to minimise the cost of producing output.

Industries are assumed to combine a bundle of intermediate inputs in fixed proportion with a bundle of primary factors. The demand for each separate intermediate input is also assumed to vary in strict proportion to output. This Leontief structure implies that production processes are relatively inflexible in their use of intermediate inputs. However, industries are assumed to be able to substitute to some extent between domestic and imported sources of each intermediate input, in response to changes in the domestic price relative to the price of the imported alternative. The substitution elasticities between domestic and imported sources of each intermediate input are generally around 2.0. Their specific values are shown in Table D3.1.

Industries are also assumed to be able to substitute to some extent between the different primary factors in the primary factor bundle. For most industries, the relevant primary factors are labour and capital. In HILORANI, each agricultural and mining industry also uses a third primary factor specific to that industry. In the case of agricultural industries, the factor can be thought of as agricultural land. In mining, the specific factor can be thought of as the ore body. Since in each case the specific factor is assumed to be in fixed supply, this treatment in turn constrains the output supply response of these industries, although their output response is also affected by the assumed ease with which they can substitute capital and labour for the industry-specific factor.

Table D3.1: Domestic-import substitution elasticities in HILORANI

<i>Code</i>	<i>Description</i>	<i>Import substitution</i>	<i>Code</i>	<i>Description</i>	<i>Import substitution</i>
1	Wool	0.50	67	Glass and glass products	1.20
2	Sheep	2.00	68	Clay products and refractories	1.20
3	Wheat	0.50	69	Cement	0.75
4	Barley	0.50	70	Ready mixed concrete	0.00
5	Rice	0.50	71	Concrete products	1.20
6	Other cereals	0.50	72	Nonmetallic mineral products nec	0.80
7	Meat cattle	2.00	73	Basic iron and steel	0.82
8	Milk cattle	2.00	74	Nonferrous metals and products	1.00
9	Pigs	2.00	75	Structural metal products	1.50
10	Sugar cane	2.00	76	Sheet metal products	1.50
11	Other farming export	2.00	77	Metal products nec	2.00
12	Potatoes	2.00	78	Motor vehicles	5.20
13	Other farming import competing	2.00	79	Ships and boats	0.50
14	Poultry	2.00	80	Locomotive rolling stock	0.50
15	Services to agriculture	0.00	81	Aircraft	0.50
16	Forestry and logging	2.00	82	Scientific equipment etc	0.50
17	Fishing and hunting	0.50	83	Electronic equipment	1.90
18	Ferrous metal ores	0.50	84	Household appliances	1.60
19	Nonferrous metal ores	0.50	85	Electrical equipment	0.84
20	Black coal	0.50	86	Agricultural machinery	0.50
21	Oil, gas and brown coal	2.00	87	Construction machinery etc	0.50
22	Minerals nec	2.00	88	Machinery and equipment nec	0.50
23	Services to mining nec	2.00	89	Leather products	2.00
24	Meat products	0.50	90	Rubber products	1.50
25	Pasteurised milk	1.60	91	Plastic and related products	1.50
26	Milk products	1.60	92	Signs, writing equipment	2.00
27	Fruit and vegetables products	0.80	93	Manufacturing nec	2.00
28	Margarine and oils and fats nec	1.70	94	Electricity	0.00
29	Flour mill and cereal food products	2.10	95	Gas	0.00
30	Bread, cakes and biscuits	0.00	96	Water, sewerage and drainage	0.00
31	Confectionery products	2.00	97	Residential building construction	0.00
32	Raw sugar	0.50	98	Other construction	0.00
33	Food products nec	0.50	99	Wholesale trade	0.00
34	Soft drinks, cordials and syrups	0.00	100	Retail trade	0.00
35	Beer and malt	0.00	101	Mechanical repairs	0.00
36	Alcoholic beverages	4.80	102	Repairs nec	0.00
37	Tobacco products	2.00	103	Road freight transport	0.00
38	Cotton ginning	0.40	104	Road passenger transport	0.00
39	Wool scouring	0.40	105	Mining rail transport	0.00
40	Man made fibres	4.70	106	Private iron ore rail transport	0.00
41	Cotton fabrics	4.70	107	Non bulk rail transport	0.00
42	Wool, worsted fabrics	2.00	108	Grain freight rail transport	0.00
43	Textile finishing	2.00	109	Rail passenger transport	0.00
44	Floor coverings etc	2.20	110	Railway fixed costs	0.00
45	Textile products nec	1.60	111	Water transport	2.00
46	Knitting mills	1.90	112	International air transport	2.00
47	Clothing	2.80	113	Domestic air transport	2.00
48	Footwear	6.80	114	Services to transport	2.00
49	Woodchips	2.30	115	Postal services	0.00
50	Sawmill products	2.30	116	Telecommunications	0.00
51	Veneers and manufactured wood boards	0.90	117	Banking	0.00
52	Joinery and wood products nec	2.00	118	Nonbank finance	0.00
53	Furniture and mattresses	2.30	119	Investment nec	0.00
54	Pulp, paper and paperboard	1.10	120	Insurance nec	0.00
55	Bags and containers	1.10	121	Business services nec	0.00
56	Paper products nec	1.10	122	Ownership of dwellings	0.00
57	Publishing and printing	2.00	123	Public administration	0.00
58	Printing, stationery	2.00	124	Defence	0.00
59	Chemical fertilisers	1.65	125	Health	0.00

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60	Basic chemicals	1.90	126	Education, libraries	0.00
61	Paints	2.50	127	Welfare etc services nec	0.00
62	Pharmaceuticals	2.00	128	Entertainment and recreational services	0.00
63	Soap and detergents	1.30	129	Restaurants, hotels and clubs	0.00
64	Cosmetics	2.00	130	Personal services	0.00
65	Chemical products nec	2.00	131	Non competing imports	0.00
66	Petroleum and coal products	0.40			

In all industries other than mining, the elasticities of substitution between primary factors have been set at 1.28, a relatively high value giving a characterisation of substitution prospects over the longer term. In mining, the substitution elasticity between capital and labour is also set at 1.28, but in each case the substitution elasticity associated with the fixed ore body is set at a value that gives the mining industry an implicit output supply elasticity of 10.

Within the labour category, industries can also substitute to a limited extent between eight different skill categories, in response to any variation in relative occupational wages. The elasticities of substitution between skill categories are set at a relatively low value of 0.35.

Industries also require a bundle of other inputs known as ‘other costs’, which comprise working capital requirements and any indirect taxes or subsidies on production (ie. Other indirect taxes nec). Other costs are assumed to be required in strict proportion to output.

Industries that purchase intermediate inputs are required to pay freight, insurance and other costs needed to ship those inputs from their point of manufacture or importation. They are also required to pay any commodity taxes on those inputs. The intermediate input costs that guide industry choices over domestic or imported sources of intermediate inputs are the costs inclusive of the commodity taxes and transport margins. Similarly, the primary factor costs that guide primary factor choices are inclusive of payroll and property taxes.

Unlike standard ORANI, HILORANI assumes that industries have a degree of choice over the transport modes used to ship their intermediate input requirements. HILORANI allows for this so-called intermodal substitution between road freight transport, rail transport (mining rail, private iron ore rail, non-bulk rail and/or grain freight rail, as appropriate) and water transport. In the past, versions of ORANI that have allowed for intermodal substitution have allowed for a relatively low degree of intermodal substitutability for grains, in order to reflect existing restrictions on grain shipment by road (eg. Wear 1993). In HILORANI, the road/rail intermodal substitution elasticities for grains have been set at the same values as for other products. The full set of intermodal substitution elasticities assumed in HILORANI is shown in Table D3.2.

Table D3.2: Intermodal substitution elasticities in HILORANI

<i>Code</i>	<i>Description</i>	<i>Road & Rail</i>	<i>Road & Water</i>	<i>Rail & Water</i>
1	Wool	2	0.5	0.5
2	Sheep	2	0.5	0.5
3	Wheat	2	0	0
4	Barley	2	0	0
5	Rice	2	0	0
6	Other cereals	2	0	0
7	Meat cattle	2	0.5	0.5
8	Milk cattle	2	0.5	0.5
9	Pigs	2	0.5	0.5
10	Sugar cane	2	0.5	0.5
11	Other farming export	2	0.5	0.5
12	Potatoes	2	0.5	0.5
13	Other farming import competing	2	0.5	0.5
14	Poultry	2	0.5	0.5
15	Services to agriculture	2	0.5	0.5
16	Forestry and logging	2	0.5	0.5
17	Fishing and hunting	2	0.5	0.5
18	Ferrous metal ores	2	0	0
19	Nonferrous metal ores	0	0	0
20	Black coal	0	0	0
21	Oil, gas and brown coal	0	0	0
22	Minerals nec	0	0	0
23	Services to mining nec	2	0	0
24	Meat products	2	0.5	0.5
25	Pasteurised milk	2	0.5	0.5
26	Milk products	2	0.5	0.5
27	Fruit and vegetables products	2	0.5	0.5
28	Margarine and oils and fats nec	2	0.5	0.5
29	Flour mill and cereal food products	2	0.5	0.5
30	Bread, cakes and biscuits	2	0.5	0.5
31	Confectionery products	2	0.5	0.5
32	Raw sugar	2	0.5	0.5
33	Food products nec	2	0.5	0.5
34	Soft drinks, cordials and syrups	2	0.5	0.5
35	Beer and malt	2	0.5	0.5
36	Alcoholic beverages	2	0.5	0.5
37	Tobacco products	2	0.5	0.5
38	Cotton ginning	2	0.5	0.5
39	Wool scouring	2	0.5	0.5
40	Man made fibres	2	0.5	0.5
41	Cotton fabrics	2	0.5	0.5
42	Wool, worsted fabrics	2	0.5	0.5
43	Textile finishing	2	0.5	0.5
44	Floor coverings etc	2	0.5	0.5
45	Textile products nec	2	0.5	0.5
46	Knitting mills	2	0.5	0.5
47	Clothing	2	0.5	0.5
48	Footwear	2	0.5	0.5
49	Woodchips	2	1	1
50	Sawmill products	2	1	1
51	Veneers and manufactured wood boards	2	1	1
52	Joinery and wood products nec	2	1	1
53	Furniture and mattresses	2	1	1

54	Pulp, paper and paperboard	2	0.5	0.5
55	Bags and containers	2	0.5	0.5
56	Paper products nec	2	0.5	0.5
57	Publishing and printing	2	0.5	0.5
58	Printing, stationery	2	0.5	0.5
59	Chemical fertilisers	2	0.75	0.75
60	Basic chemicals	2	0.75	0.75

Table D3.2: Intermodal substitution elasticities in HILORAN (Mtd)

<i>Code</i>	<i>Description</i>	<i>Road & Rail</i>	<i>Road & Water</i>	<i>Rail & Water</i>
61	Paints	2	0.75	0.75
62	Pharmaceuticals	2	0.75	0.75
63	Soap and detergents	2	0.75	0.75
64	Cosmetics	2	0.75	0.75
65	Chemical products nec	2	0.75	0.75
66	Petroleum and coal products	1	1	1
67	Glass and glass products	2	0.75	0.75
68	Clay products and refractories	2	0.75	0.75
69	Cement	2	0.75	0.75
70	Ready mixed concrete	2	0.75	0.75
71	Concrete products	2	0.75	0.75
72	Nonmetallic mineral products nec	2	0.75	0.75
73	Basic iron and steel	2	1	1
74	Nonferrous metals and products	2	1	1
75	Structural metal products	2	1	1
76	Sheet metal products	2	1	1
77	Metal products nec	2	1	1
78	Motor vehicles	2	1	1
79	Ships and boats	0	0	0
80	Locomotive rolling stock	0	0	0
81	Aircraft	0	0	0
82	Scientific equipment etc	2	1	1
83	Electronic equipment	2	1	1
84	Household appliances	2	1	1
85	Electrical equipment	2	1	1
86	Agricultural machinery	2	1	1
87	Construction machinery etc	2	1	1
88	Machinery and equipment nec	2	1	1
89	Leather products	2	1	1
90	Rubber products	2	1	1
91	Plastic and related products	2	1	1
92	Signs, writing equipment	2	1	1
93	Manufacturing nec	2	1	1
94	Electricity	0	0	0
95	Gas	0	0	0
96	Water, sewerage and drainage	0	0	0
97	Residential building construction	0	0	0
98	Other construction	0	0	0
99	Wholesale trade	0	0	0
100	Retail trade	0	0	0
101	Mechanical repairs	0	0	0
102	Repairs nec	0	0	0
103	Road freight transport	0	0	0
104	Road passenger transport	0	0	0
105	Mining rail transport	0	0	0
106	Private iron ore rail transport	0	0	0
107	Non bulk rail transport	0	0	0
108	Grain freight rail transport	0	0	0

109	Rail passenger transport	0	0	0
110	Railway fixed costs	0	0	0
111	Water transport	0	0	0
112	International air transport	0	0	0
113	Domestic air transport	0	0	0
114	Services to transport	0	0	0
115	Postal services	0	0	0
116	Telecommunications	0	0	0
117	Banking	0	0	0
118	Nonbank finance	0	0	0
119	Investment nec	0	0	0
120	Insurance nec	0	0	0

Table D3.2: Intermodal substitution elasticities in HILORANI (mtd)

<i>Code</i>	<i>Description</i>	<i>Road & Rail</i>	<i>Road & Water</i>	<i>Rail & Water</i>
121	Business services nec	0	0	0
122	Ownership of dwellings	0	0	0
123	Public administration	0	0	0
124	Defence	0	0	0
125	Health	0	0	0
126	Education, libraries	0	0	0
127	Welfare etc services nec	0	0	0
128	Entertainment and recreational services	0	0	0
129	Restaurants, hotels and clubs	0	0	0
130	Personal services	0	0	0
131	Non competing imports	0	0	0

Demand side

The ORANI framework contains a separate characterisation of several different categories of demand — for intermediate use, for investment purposes, household demand, government demand, and export demand. For each category of demand the model needs to explain two things — the overall size of demand, and the commodity composition of demand.

The commodity composition of intermediate demand is governed by the substitution possibilities outlined above. Since each industry uses intermediate inputs in strict proportion to output, the size of intermediate demand is governed by the scale of economic activity.

In the long-term time frame adopted in this exercise, the overall size of investment demand is governed by the requirement to cover depreciation to maintain the economy’s capital stock. ORANI’s production story explains how industry demands for installed capital would change at some point in the future, relative to what they would otherwise have been, in response to a policy change. But because ORANI is not dynamic (in the time frame sense), it does not show how investment might have to grow considerably in the short to medium term, for example, if more capital than otherwise were required to be put in place in the long term. The required investment boom would be reflected in the model’s results only to the extent that it could not be financed

from domestic savings in the interim, and would therefore be reflected in the long-term results for the dividend and other payments made to foreigners. In the long term, the additional investment would be that required to cover depreciation on the new, higher capital stock. Thus in the long term, the real investment expenditure made by each industry moves in line with that industry's capital stock.

The commodity composition of real investment expenditure is governed by a similar set of substitution possibilities as for intermediate demands. Each industry's investment expenditure is spread across a range of investment goods in fixed proportions, with the proportions for particular industries reflecting the structure of their capital stock (some being more machinery-intensive, some being more intensive in building construction, and so on). For each investment good, however, industries are assumed to have the ability to substitute between domestic and imported sources of supply, with substitution prospects governed by the same set of substitution elasticities as for intermediate demand.

In the Commission's version of ORANI, the size of aggregate household demand is governed by household disposable income (Dee 1989). For those employed (and therefore jointly making decisions about hours of work), the elasticities governing the sensitivity of consumption to income are taken from Tulpule (1980) and imply that for this group, 78 cents out of every dollar of additional disposable money income is spent (the rest saved). For those unemployed or not in the workforce, the model imposes the assumption that every additional dollar of disposable income is spent (none saved). The aggregate household consumption and saving behaviour in the model is therefore governed by projected changes in overall household disposable income, but also by projected compositional changes in the proportion of those working relative to those unemployed or not in the workforce.

The commodity composition of household demand is governed by substitution possibilities both among different commodities, as well as between domestic and imported sources of each commodity. The parameters governing the choice among commodities are also taken from Tulpule (1980), while those governing the choice among domestic and imported sources are the same as for intermediate demands.

The government demands in the standard ORANI framework are the demands by general government for current goods and services, consolidated across levels of government. Both the size and the commodity composition of government spending needs to be determined by the model user. The assumptions made for this exercise are spelt out in Chapter A3. The domestic

or imported sourcing of each commodity purchased by government is governed by the same substitution possibilities as for intermediate demands.

The export demand for each commodity is determined in one of several ways. In export-oriented industries producing goods that are not highly differentiated, or where Australia has only a small share of the world market, export demands are modelled as being highly price sensitive. Where Australia has a significant share of the world market (eg. wool) or where exports are of highly differentiated products (eg. scientific equipment), exports are modelled as being price sensitive, but to a much lower degree. For products from industries that are not export-oriented, or where exports are governed by bilateral arrangements (eg. international aviation), exports are assumed to be held constant in real terms. The list of commodities for which export demand is treated as being price sensitive in the results that follow is given in Table D3.3, along with the values of their price elasticities of export demand. The one exception to this treatment is in the State SMA scenario, where it was felt that given the size of the domestic price changes expected for raw sugar, and given that the envisaged changes in competition policy would not extend to international sugar markets, it was unclear whether raw sugar exports would be able to expand significantly. In this scenario only, raw sugar exports were held exogenously fixed.

Table D3.3: **Export demand elasticities in HILORANI**

<i>Code</i>	<i>Description</i>	<i>Export demand elasticity</i>
1	Wool	-1.30
2	Sheep	-15.00
3	Wheat	-12.50
4	Barley	-20.00
5	Rice	-20.00
6	Other cereals	-20.00
18	Ferrous metal ores	-10.00
19	Nonferrous metal ores	-8.00
20	Black coal	-20.00
22	Minerals nec	-20.00
24	Meat products	-10.00
32	Raw sugar	-20.00
33	Food products nec	-20.00
38	Cotton ginning	-2.60
39	Wool scouring	-2.60
74	Nonferrous metals and products	-10.00
82	Scientific equipment etc	-2.00
93	Manufacturing nec	-20.00

D3.2 Updating the data on direct taxation

The model's database is constructed on the assumption that for wage and salary earners, the effective rate of income tax is the same as the statutory personal income tax rate, taking account of income tax progressivity and the economy-wide average level of rebates (Dee 1989). By contrast, for corporations and individuals paying provisional income tax, the model's effective rate of income tax is determined by what is actually collected, as revealed in the published Taxation Statistics of the Australian Taxation Office. In 1991–92, the latest year for which Taxation Statistics are available, the average tax rate for individuals paying provisional income tax was 22.5 per cent of their declared taxable income, while the average tax rate for corporations was 23.5 per cent of their declared taxable income.

In order to update the model's direct taxes on wages and salaries, all that is required is to provide new data for marginal tax rates, tax bracket borders, tax paid at the border and the economy-wide level of rebates. The model itself then uses this information, along with its data on the number of wage and salary earners employed in each occupation and industry and the total wage bill paid to wage and salary earners in each occupation and industry, to derive an average tax rate for each occupation and industry, as well as an elasticity describing how the average tax rate would change with changes in wage and salary income per person.

The personal income tax rates applying from 1 November 1993 are:

- 0 per cent on income of \$0–\$5,400
- 20 per cent on income of \$5,401–\$20,700
- 34 per cent on income of \$20,701–\$38,000
- 43 per cent on income of \$38,001–\$50,000
- 47 per cent on income over \$50,000.

These need to be adjusted for the fact that the model's database is expressed in 1986–87 dollars. This is done by deflating the tax bracket borders by the ratio of nominal GDP in 1993–94 to nominal GDP in 1986–87. The 1993–94 nominal GDP figure of \$423,279 is taken from ABS (1994). The 1986–87 figure of \$262,723 is taken from the MR-ORANI database, the starting point for the development of the HILORANI database. The deflated tax bracket borders are \$3,353, \$12,848, \$23,586, and \$31,034. The corresponding marginal tax rates are the same as in 1993–94.

The updated figure for aggregate rebates is obtained by taking the Taxation Statistics' aggregate rebates and credits for 1991–92 and deflating by the ratio of nominal GDP in 1986–87 to 1991–92. Thus the 1991–92 rebate figure of \$4,387 million from ATO (1994, p. 79 and 85) is deflated to \$2,952 million.

While no deflation procedure is absolutely ideal, the intention is to have a personal income tax schedule in the model that reflects current marginal tax rates and yields that same ratio of PAYE tax revenue to GDP as currently. When combined with HILORANI's wage and employment data, this deflated personal income tax schedule yields PAYE tax revenue of \$28,060 million, which represents 10.7 per cent of HILORANI's nominal GDP figure of \$262,152 million.¹ This is slightly higher than the national accounts ratio of net tax instalments (\$42,674 million) to GDP (\$423,279 million) for 1993–94 of 10.08 per cent, but lower than the corresponding national accounts ratio for 1986–87 of 11.17 per cent.

The updated tax rates on non-wage and salary income are derived from Taxation Statistics data for 1991–92. The statutory corporate tax rate in that year was 39 per cent rather than the 33 per cent that applies currently, and the personal income tax rates applying to provisional taxpayers also differed from those applying currently. However, the 1991–92 Taxation Statistics give the latest available picture of the variation in effective tax rates across industries.

¹ When the MR-ORANI database was disaggregated further to form HILORANI, the RAS procedure used to re-establish equality between costs and sales in each industry altered value added in each industry slightly, and hence lead to a slightly different starting value for nominal GDP in HILORANI.

Hence, they are used to derive effective tax rates by source industry, using the same methods as were used to derive the model's original tax data on non-labour income. The tax rates obtained in this manner are then adjusted further to attempt to give a reasonable target value of revenue to GDP.

The methods used to derive average effective tax rates on non-wage income from the Taxation Statistics data are documented in detail elsewhere (Dee 1989, Kenderes 1992). A key feature of the procedure is that an attempt is made to trace corporate and provisional income tax paid on non-wage income back to the source industry that generated the income.

The Taxation Statistics provide company tax data broken down by industry of company operation, and provisional income tax data broken down by industry in which the main source of income is generated. The difficulty is that while individuals may earn business income from an enterprise located in the single industry to which they have been allocated, they may also earn interest, dividend and other income generated originally in a variety of other industries. An attempt is therefore made to allocate the provisional tax on interest, dividend and other income back to the industry generating the income, using available data on the interest and dividend payments *made* by companies and individuals.

The attempt is successful only to the extent that business enterprises making significant interest and dividend payments are required to lodge returns with the ATO. It therefore fails properly to identify the industry source of tax paid on interest and dividend payments made by State-owned GBEs. This is a drawback relevant to the procedures outlined in Section D3.5.

A second feature of the procedure is that the effective tax rates used in the model are derived by dividing a Taxation Statistics measure of the tax take by an ORANI database measure of the tax base, rather than a Taxation Statistics measure of the tax base. This has the advantage of recognising that in industries dominated by GBEs, the potential tax base is bigger than that reported to the ATO.

The procedure therefore gives a reasonable picture of the potential tax base in industries dominated by State-owned GBEs, although it understates the tax take collected indirectly from those industries, via the income tax paid by individuals who ultimately receive interest or dividend income from those GBEs.

The updated direct tax rates on non-wage income obtained using these procedures are shown in Table D3.4.² When applied to HILORANI's non-

² The procedures were used to derive an effective tax take by broad source industry in 1991–92 dollars and reflecting 1991–92 effective tax rates. These tax takes by broad

wage income tax base, they generate a starting value for tax revenue on non-wage income of \$15,961 million, or 6.33 per cent of HILORANI's nominal GDP. This proportion is higher than intended, primarily because HILORANI's nominal GDP is lower than MR-ORANI's, and MR-ORANI's was used to rescale the 1991–92 effective tax rates to yield a target value of non-wage tax revenue to 1986–87 GDP.³ It is nevertheless close to the average of 6.03 per cent (a simple average of national accounts non-wage tax revenue (total direct tax revenue less net tax instalments) to GDP recorded over the period 1985–86 to 1993–94.

The effective non-wage tax rates embedded in the model's database differ slightly from those used by the ATO for an additional reason, apart from those already given. The model's definition of the tax base differs from that used by the ATO. The model recognises some but not all of the deductions available to corporations and those paying provisional income tax. It recognises depreciation charges and investment allowances (though the latter were recently abolished), but because it does not explicitly recognise debt/equity ratios it does not explicitly recognise the deductibility of interest payments. To the extent that provisional income tax payers are the ultimate creditors of corporations, however, the deductibility of interest nets out in the aggregation

industry were then deflated to 1986–87 dollars using the ratio of nominal GDP in the two years, both from ABS (1994). These deflated tax takes were then divided by ORANI's 1986–87 tax bases by broad industry, taken from Kenderes (1992), to derive provisional effective tax rates by broad industry.

One disadvantage of the procedures used is that when the ATO mis-categorises the industry of operation of enterprises (apparently allocating too many individuals or companies to the broad industry categories of 'finance' and 'other manufacturing'), the procedure can produce effective tax rates that exceed the statutory rate. Corrections were made for this as follows.

The provisional effective tax rates were compared with effective tax rates by source industry implicit in the 1991–92 Taxation Statistics, obtained as a ratio of (i) the tax takes by broad industry noted above, and (ii) a comparable Taxation Statistics measure of the tax bases, derived by reallocating Taxation Statistics income measures back to source industry in the same way as for the corresponding tax takes. In industries where the first provisional tax rate exceeded the second, it was replaced by the second. The resulting 'excess' tax take was then prorated across the remaining industries in proportion to their tax bases (ORANI measure) to derive a new effective tax rate for each of the remaining industries.

This provided a new set of effective tax rates by industry that was then rescaled uniformly to achieve a target level of aggregate non-wage tax revenue as a proportion of GDP. These final effective tax rates by broad industry were then applied to each of the corresponding disaggregated industries in the HILORANI database.

³ The other reason for the difference is that HILORANI's non-wage tax base differs slightly from that in MR-ORANI. To save time, the procedure used to update direct tax revenue was designed around MR-ORANI prior to the completion of the disaggregations incorporated in the HILORANI database.

of corporate with individual provisional income taxation. This point is explained further in Section D3.5.

The resulting average rates of PAYE tax, and corporate and provisional income tax on non-wage income are shown in the last two columns of Table D3.4. The average PAYE tax rate reported for each industry is the sum of PAYE tax revenue across occupations, divided by the sum across occupations of wages paid to wage and salary earners (total wage costs of wage and salary earners less payroll tax). The average direct tax rate on non-wage income is the amount of corporate and provisional income tax divided by the model's definition of the corresponding tax base (gross operating surplus less depreciation and investment allowances).

Table D3.4 also gives the average rates of payroll and property tax applying in each industry. The average payroll tax rate reported for each industry is the sum across occupations of payroll tax revenue, divided by the sum across occupations of total labour costs less payroll taxes. In some key industries with a significant proportion of self-employment, total labour costs include not only the wages paid to wage and salary earners, but also an imputed return to the self-employed. This explains why the effective payroll tax rates are very low in some industries, particularly in agriculture. The variation in average payroll tax rates across other industries reflects exemptions available to small businesses.

Finally, the average property tax 'rates' reported in Table D3.4 are calculated as property tax revenue divided by the post-property tax flow returns to fixed capital and land in each industry. However, the model's theoretical structure recognises that property taxes are levied on capital values, not flow returns. The property tax 'rates' are reported the way they are in Table D3.4 in order to facilitate understanding of how compositional changes might affect the model's reported results for aggregate property tax revenue.

In the model's theoretical structure, the effective tax rate on corporations and those paying provisional income tax is treated as constant, not progressive.

As noted, the model's labour income comprises wages and salaries, and for some industries, an imputed wage to the self-employed. Correspondingly, the direct tax paid on labour income comprises PAYE taxes (modelled as being progressive) and where appropriate, taxes on the imputed wage of the self-employed at the (flat) average tax rate of corporations and provisional taxpayers. The model's direct taxes on non-labour income comprise the remaining taxes on corporations and provisional taxpayers.

D3.3 Government income from GBEs

The ABS has provided an unpublished industry breakdown of the national accounts figures for dividend income transferred by Commonwealth and State and local public trading enterprises in 1993–94 (Tables D3.5 and D3.6). The totals in those tables match closely the aggregate income reported to be received by the Commonwealth and by State and local governments from public trading enterprises in 1993–94 from ABS (1994, Tables 37, 38 and 39).

As explained in Chapter C1, the ABS has also provided an unpublished industry breakdown of the interest income paid by Commonwealth and State and local public trading enterprises to general government in 1993–94 (Tables D3.7 and D3.8). Once again, the totals are consistent with the ‘Interest income — other’ reported to be received by the Commonwealth and by State and local governments from public trading enterprises in 1993–94 from ABS (1994, Tables 37, 38 and 39).

The data have been incorporated into the HILORANI database as follows. For each 4-digit ASIC industry and for each level of government, the dividend and interest figures have been added together. The sum has then been deflated to 1986–87 by multiplying by the ratio of nominal GDP in 1986–87 to that in 1993–94 (both from ABS 1994). This ensures that the ratio of payments from each industry to total GDP is the same in the HILORANI database as it was in 1993–94. The 4-digit ASIC breakdown has then been converted to match the industry breakdown of HILORANI. Where a 4-digit ASIC category was required to be split across several HILORANI industries, the split was made using proportions of payments to fixed capital from the HILORANI database.

Table D3.4: Average tax rates in HILORANI

<i>Code</i>	<i>Description</i>	<i>Average payroll tax rate</i>	<i>Property tax rate</i>	<i>Average PAYE tax rate</i>	<i>Tax rate on non-wage income</i>
1	Pastoral zone	0.1	2.3	29.2	8.2
2	Wheat sheep zone	0.3	3.2	29.2	8.2
3	High rainfall zone	0.2	3.2	28.8	8.2
4	Northern beef	0.0	0.0	27.8	8.2
5	Milk cattle	0.3	4.8	29.2	8.2
6	Pigs	0.1	19.0	28.3	8.2
7	Sugar cane	0.4	6.4	30.3	8.2
8	Other farming export	0.6	10.2	28.3	8.2
9	Potatoes	0.6	18.1	28.9	8.2
10	Other farming import competing	0.6	18.1	28.8	8.2
11	Poultry	5.7	52.9	12.2	8.2
12	Services to agriculture	1.0	10.1	32.8	8.2
13	Forestry and logging	2.3	29.0	23.5	13.5
14	Fishing and hunting	0.6	15.3	15.1	27.4
15	Ferrous metal ores	6.4	0.9	29.2	24.0
16	Nonferrous metal ores	5.0	1.0	29.6	24.0
17	Black coal	4.7	1.3	33.0	24.0
18	Oil, gas and brown coal	6.8	0.2	32.9	24.0
19	Minerals nec	4.2	1.4	26.9	24.0
20	Services to mining nec	6.0	7.5	19.2	24.0
21	Meat products	4.3	3.1	20.1	20.6
22	Pasteurised milk	3.4	2.6	18.4	20.6
23	Milk products	4.1	2.6	21.7	20.6
24	Fruit and vegetables products	3.2	6.3	21.3	20.6
25	Margarine and oils and fats nec	3.2	1.1	26.2	20.6
26	Flour mill and cereal food products	4.4	1.9	21.0	20.6
27	Bread, cakes and biscuits	3.7	5.0	16.8	20.6
28	Confectionery products	4.4	2.1	20.2	20.6
29	Raw sugar	2.8	0.9	9.6	20.6
30	Food products nec	4.0	2.1	23.2	20.6
31	Soft drinks, cordials and syrups	4.2	1.7	21.8	20.6
32	Beer and malt	5.1	2.2	26.9	20.6
33	Alcoholic beverages	2.7	1.8	19.1	20.6
34	Tobacco products	4.5	1.2	24.6	20.6
35	Cotton ginning	4.6	8.5	25.5	13.8
36	Wool scouring	4.6	8.5	16.4	13.8
37	Man made fibres	5.0	6.7	17.4	13.8
38	Cotton fabrics	4.2	4.7	18.6	13.8
39	Wool, worsted fabrics	3.8	3.7	16.2	13.8
40	Textile finishing	3.8	10.2	22.4	13.8
41	Floor coverings etc	4.8	2.8	19.7	13.8
42	Textile products nec	4.1	2.7	18.6	13.8
43	Knitting mills	4.4	7.7	18.1	27.0
44	Clothing	3.5	5.6	14.1	27.0
45	Footwear	4.2	5.8	17.0	27.0
46	Woodchips	3.3	2.0	18.4	12.3
47	Sawmill products	3.3	2.0	18.4	12.3
48	Veneers and manufactured wood boards	3.1	3.8	21.3	12.3
49	Joinery and wood products nec	2.8	4.8	17.8	12.3
50	Furniture and mattresses	3.2	4.1	17.2	12.3
51	Pulp, paper and paperboard	2.5	0.7	27.7	17.1
52	Bags and containers	4.3	1.9	22.8	17.1

53	Paper products nec	5.1	1.6	21.6	17.1
54	Publishing and printing	4.1	2.0	22.4	17.1
55	Printing, stationery	3.6	3.0	20.4	17.1
56	Chemical fertilisers	3.8	34.2	25.8	22.2
57	Basic chemicals	5.4	2.7	28.0	22.2
58	Paints	5.0	6.4	22.9	22.2

Table D3.4: Average tax rates in HILORA (cont'd)

<i>Code</i>	<i>Description</i>	<i>Average payroll tax rate</i>	<i>Property tax rate</i>	<i>Average PAYE tax rate</i>	<i>Tax rate on non-wage income</i>
59	Pharmaceuticals	5.1	5.0	23.5	22.2
60	Soap and detergents	5.2	2.3	23.3	22.2
61	Cosmetics	5.4	3.4	23.1	22.2
62	Chemical products nec	2.8	2.4	23.2	22.2
63	Petroleum and coal products	4.8	11.3	30.5	22.2
64	Glass and glass products	4.3	3.4	24.6	22.2
65	Clay products and refractories	4.3	8.4	22.1	22.2
66	Cement	5.1	1.6	26.8	22.2
67	Ready mixed concrete	3.7	5.3	21.7	22.2
68	Concrete products	4.5	5.6	22.8	22.2
69	Nonmetallic mineral products nec	4.0	2.9	21.8	22.2
70	Basic iron and steel	4.4	2.4	25.2	30.4
71	Nonferrous metals and products	4.4	1.2	25.6	30.4
72	Structural metal products	3.3	5.0	20.7	30.4
73	Sheet metal products	3.6	3.4	20.1	30.4
74	Metal products nec	3.3	5.0	20.2	30.4
75	Motor vehicles	4.3	14.5	21.2	30.4
76	Ships and boats	2.5	2.5	22.8	30.4
77	Locomotive rolling stock	0.9	1.3	20.2	30.4
78	Aircraft	1.5	1.6	25.2	30.4
79	Scientific equipment etc	4.2	6.5	19.9	30.4
80	Electronic equipment	3.7	2.1	21.6	30.4
81	Household appliances	4.1	3.9	20.0	30.4
82	Electrical equipment	3.9	6.4	20.4	30.4
83	Agricultural machinery	3.2	11.9	19.4	30.4
84	Construction machinery etc	3.4	17.1	21.4	30.4
85	Machinery and equipment nec	3.9	7.1	21.5	30.4
86	Leather products	3.7	6.6	19.4	22.2
87	Rubber products	3.3	5.2	21.9	22.2
88	Plastic and related products	4.0	4.6	20.7	22.2
89	Signs, writing equipment	3.0	5.7	18.8	22.2
90	Manufacturing nec	3.5	4.5	17.4	22.2
91	Electricity	5.9	0.4	25.6	1.6
92	Gas	6.3	0.4	23.0	1.6
93	Water, sewerage and drainage	6.2	0.7	24.0	1.6
94	Residential building construction	0.9	4.0	20.3	19.4
95	Other construction	1.3	8.7	31.5	19.4
96	Wholesale trade	3.9	7.6	21.7	11.1
97	Retail trade	3.0	14.4	12.8	23.6
98	Mechanical repairs	3.1	17.5	12.5	23.6
99	Repairs nec	3.3	13.6	19.7	23.6
100	Road freight transport	1.8	2.1	26.1	17.5
101	Road passenger transport	1.7	2.1	26.3	17.5
102	Mining rail transport	3.1	66.0	10.5	17.5
103	Private iron ore rail transport	1.9	66.0	3.9	17.5
104	Non bulk rail transport	2.7	64.3	29.0	17.5

105	Grain freight rail transport	2.7	64.3	28.9	17.5
106	Rail passenger transport	2.7	14.3	23.8	17.5
107	Railway fixed costs	2.7	7.4	23.2	17.5
108	Water transport	2.7	4.1	36.0	17.5
109	International air transport	2.7	1.5	28.5	17.5
110	Domestic air transport	2.7	1.5	28.9	17.5
111	Services to transport	2.7	1.5	28.3	17.5
112	Postal services	2.7	1.0	13.3	17.5
113	Telecommunications	2.7	1.0	22.9	17.5
114	Banking	6.7	1.6	21.5	22.8
115	Nonbank finance	6.7	0.8	26.9	22.8
116	Investment nec	6.7	1.0	18.1	22.8

Table D3.4: Average tax rates in HILORANI (continued)

<i>Code</i>	<i>Description</i>	<i>Average payroll tax rate</i>	<i>Property tax rate</i>	<i>Average PAYE tax rate</i>	<i>Tax rate on non-wage income</i>
117	Insurance nec	6.0	7.1	21.0	22.8
118	Business services nec	5.3	3.2	19.0	22.8
119	Ownership of dwellings	0.0	9.9	0.0	22.8
120	Public administration	0.0	0.0	18.4	0.0
121	Defence	0.0	0.0	26.3	0.0
122	Health	0.4	12.6	22.1	15.7
123	Education, libraries	0.4	19.4	22.0	15.7
124	Welfare etc services nec	0.4	22.4	21.7	15.7
125	Entertainment and recreational services	2.7	6.5	12.0	13.3
126	Restaurants, hotels and clubs	2.7	4.6	11.5	13.3
127	Personal services	2.7	3.2	7.0	13.3
128	Non competing imports	0.0	0.0	0.0	0.0
National average		2.6	5.9	21.8	18.0

Table D3.5: Dividend income transferred by Commonwealth public trading enterprises 1993/4

<i>ASIC No</i>	<i>Description</i>	<i>\$ m</i>
2763	Pharmaceutical and veterinary products	5
5307	International sea transport	
5730	Services to air transport	8
5900	Communication	1 097
	Total	1 110

The HILORANI database also incorporates payments to Commonwealth and to State and local governments from public financial enterprises, broken down by HILORANI industry. The total figures were taken from ABS (1994, Tables

38 and 39). The Commonwealth total was split across HILORANI industries using information on the source of Commonwealth income from public financial enterprises from Table B.I of the Commonwealth Budget Paper No.1. The State and local total has been split across industries in the same proportions as for the Commonwealth.

Table D3.6: Dividend income transferred by State, Territory and local public trading enterprises 1993-94

<i>ASIC No</i>	<i>Description</i>	<i>\$ m</i>
2115	Meat (except smallgoods or poultry)	0
2954	Aluminium smelting	8
3610	Electricity	
	Income transferred by Public Trading Enterprises - unidentified	1 184
	Income transferred by Public Trading Enterprises	95
	Total	1 279
3620	Gas	148
3701	Water supply	252
3702	Sewerage and stormwater drainage	84
5200	Rail transport	
	Gross income transferred	210
	Receipt by PTE of contribution to offset non-recurring loss	-196
	Total	14
5500	Other transport	11
5722	Water transport terminals	
	Gross income transferred	8
	Receipt by PTE of contribution to offset non-recurring loss	-3
	Total	5
5724	Services to water transport nec	95
6321	Residential property operators	19
6322	Property operators and developers nec	3
8495	Sanitary and garbage disposal services	6
9142	Lotteries	17
9143	Gambling services (except lotteries)	25
9900	Non-classifiable economic units	12
	Gross income transferred	2 178
	Receipt by PTE of contribution to offset non-recurring loss	-199
	Total	1 979

Table D3.7: Interest paid to general government by Commonwealth public trading enterprises 1993-94

<i>ASIC No</i>	<i>Description</i>	<i>\$ m</i>
3610	Electricity	74
5200	Rail Transport	2
5500	Other Transport	8
5730	Services to Air Transport	41
5900	Communication	118
	Total	243

D3.4 Government expenditure deflators

The theoretical structure of the Commission's standard version of ORANI defines a single price deflator for current expenditure by general government, consolidated across Commonwealth, State and local levels of government. The model computes the percentage change in this deflator as a share-weighted sum of the percentage changes in the prices of each of the commodities in the model, both domestically produced and imported, with weights that reflected the shares of consolidated general government expenditure on each of those domestically produced or imported commodities.

For the final version of this report, the Commission has amended the theoretical structure so that the model computes separate current expenditure deflators for the Commonwealth government and for State and local governments. The percentage change in each of these deflators is still calculated as a share-weighted sum of the percentage changes in the prices of each of the commodities in the model, both domestically produced and imported. The domestic/import sourcing of each commodity for each level of government is also assumed to be the same as in the original model database for the consolidated general government as a whole. However, in the case of the Commonwealth deflator, the weighting across commodities reflects Commonwealth expenditure shares. Similarly, in the case of the State and local deflator, the weighting across commodities reflects State and local expenditure shares.

These separate shares were obtained on an input-output commodity basis from the input-output section of ABS for 1989–90. The data are shown in Table D3.9. The data were then converted from standard input-output to HILORANI

commodity classification, and the corresponding commodity shares, rather than dollar values, were then added to the model's database.

Table D3.8: Interest paid to general government by State, Territory and local public trading enterprises 1993-94

<i>ASIC No</i>	<i>Description</i>	<i>\$ m</i>
0206	Services to agriculture nec	0
0304	Forestry and services to forestry	0
2115	Meat (except smallgoods or poultry)	2
2532	Resawn and dressed timber	0
2644	Printing and bookbinding	0
2954	Aluminium smelting	4
3610	Electricity	1 340
3620	Gas	0
3701	Water supply	229
3702	Sewerage and stormwater drainage	168
4753	Cereal grains wholesalers	5
4763	Fish wholesalers	4
5122	Short distance bus transport (including tramway)	48
5200	Rail transport	218
5308	Coastal water transport	3
5500	Other transport	13
5722	Water transport terminals	62
5724	Services to water transport nec	31
5801	Grain storage	5
6172	Services to finance and investment nec	0
6321	Residential property operators	402
6322	Property operators and developers nec	6
7112	State government administration	3
7113	Local government administration	8
7120	Justice	3
8495	Sanitary and garbage disposal services	0
9136	Live theatre, orchestras and bands	2
9141	Parks and zoological gardens	1
9142	Lotteries	-1
9143	Gambling services (except lotteries)	1
9144	Sport and recreation nec	7
9363	Crematories and cemeteries	0
	Total	2 565

Table D3.9: 1989-90 input-output tables - Government final consumption expenditure by level of government (\$'000)

<i>commodity group</i>	<i>Input-output</i>	<i>Government final consumption expenditure</i>		
	<i>Description</i>	<i>Total</i>	<i>Commonwealth government</i>	<i>State and local government</i>
0200	Services to agriculture	65 169	0	65 169
0300	Forestry and logging	205 776	0	205 776
0400	Fishing and hunting	1 110	0	1 110
1600	Services to mining nec	36 460	12 328	24 132
2605	Printing, stationery etc	47 912	47 912	0
3701	Water, sewerage and drainage	140 720	-8 680	149 400
4102	Construction nec	3 865 161	0	3 865 161
4701	Wholesale trade	5 000	0	5 000
5101	Road transport	2 620	2 620	0
5701	Services to transport	666 807	426 420	240 387
6101	Banking	14 753	0	14 753
6103	Investment etc	141	0	141
6104	Insurance etc	309 445	309 445	0
6105	Business services nec	236 266	215 167	21 099
6106	Ownership of dwelling	62 000	62 000	0
7101	Public administration	15 550 009	8 567 318	6 982 691
7201	Defence	8 178 737	8 178 737	0
8101	Health	10 541 571	26 810	10 514 761
8201	Education, libraries etc	14 397 156	331 599	14 065 557
8301	Welfare etc services	6 726 726	1 385 501	5 341 225
9101	Entertainment etc	1 648 909	687 304	961 605
9201	Restaurants, hotels, clubs	85	85	0
9301	Personal services	48 570	0	48 570
	Sales by final buyers	-21 667	-21 667	0
	Total	62 729 436	20 222 899	42 506 537

In commenting on a draft version of this report, the New South Wales Treasury suggested that separate Commonwealth and State and local expenditure deflators could be proxied by taking linear combinations of the GDP deflator, the consumer price deflator and a wage deflator. The above method used by the Commission is a more direct method of obtaining deflators that accurately reflect Commonwealth and State and local current expenditure shares. The Commission's deflators will also capture the influence of wage costs to the extent that the commodities purchased by governments are produced using labour-intensive techniques. The deflators are current

expenditure deflators, however, and do not capture changes in the average price of capital spending by governments.

D3.5 Modelling the revenue implications of imposing competitive neutrality in financing structure on GBEs

State and Local GBEs

Consider an industry such as the gas distribution industry, with no significant foreign ownership but with a mix of private sector enterprises and State-owned GBEs.

The gross operating surplus (G_p) of the private sector enterprises can be divided into four components:

- I_p = a gross allocation for interest payments
- V_p = a gross allocation for dividends
- D_p = an allocation for depreciation
- R_p = a residual, here called retained earnings (although this does not match exactly the accounting definition of the term).

The corporate income tax paid to the Commonwealth government is given by

$$\text{corporate tax on private sector} = 0.33(G_p - D_p - I_p)$$

This formulation assumes that the enterprises pay corporate tax on the income subsequently issued as dividends, so that the dividends once issued are fully franked and the individuals receiving the dividend income do not have to pay personal income tax on it.

If individuals are also the ultimate creditors of these private sector enterprises, either directly by being bond-holders, or indirectly by depositing savings in financial institutions which the institutions then lend to the enterprises, then these individuals will pay income tax to the Commonwealth at the personal income tax rate when they receive their interest payments. Assuming that the average effective tax rate paid by individuals is the same as the corporate rate (an assumption borne out reasonable well in the Taxation Statistics of the ATO – see section D3.2), then

$$\text{provisional income tax on private sector} = 0.33I_p$$

The total income tax received by the Commonwealth from the non-labour income generated in these private sector enterprises is given by

$$\text{commonwealth income tax on private sector} = 0.33(G_p - D_p - I_p) + 0.33I_p$$

$$= 0.33(G_p - D_p)$$

This justifies the treatment in theoretical structure of ORANI which does not explicitly recognise the tax deductibility of interest payments.

The gross operating surplus of the State GBEs (G_g) can similarly be divided into four components, I_g , V_g , D_g and R_g .

The State GBEs do not pay corporate income tax the Commonwealth, but suppose some of them pay income tax equivalents to their State governments at the corporate tax rate . Then across all GBEs, income tax equivalents are paid at an effective rate t , where $t < 0.33$.

$$\begin{aligned} \text{income tax equivalents on GBEs} &= t(G_g - D_g - I_g) \\ &= t(V_g + R_g) \end{aligned}$$

The GBEs also pay after-tax dividends to their State governments

$$\text{dividends to State governments} = (1-t)V_g$$

So one of the effects of increasing the effective tax rate t is simply to reduce the amount of after-tax dividend income received by State governments. However, increasing t also increases the tax equivalents paid on retained earnings.

Finally, the GBEs pay interest to their State governments on that fraction ϕ of their borrowings obtained directly or indirectly (via Central Borrowing Authorities) from government sources.

$$\text{interest to State governments} = \phi I_g$$

The Commonwealth government receives an additional amount of income tax revenue on the interest payments made by State GBEs to private sector creditors.

$$\text{provisional income tax on GBEs} = 0.33(1-\phi)I_g$$

The total amount of income tax received by the Commonwealth government is therefore

$$\begin{aligned} \text{commonwealth tax take} &= 0.33(G_p - D_p) + 0.33(1-\phi)I_g \\ &= 0.33(G_p - D_p) + 0.33(G_g - D_g - V_g - R_g) - 0.33\phi I_g \\ &= 0.33(G - D) - 0.33(V_g + R_g) - 0.33\phi I_g \end{aligned}$$

where G and D are gross operating surplus and depreciation for the industry as a whole. According to this formulation, if the State GBEs were to restructure their financing so that for a given level of gross operating surplus, more were

paid as dividends or more retained, and less paid out as interest, this would reduce the Commonwealth tax take from the industry.⁴

The total State take from the industry is

$$\text{state take} = Vg + tRg + \phi Ig$$

Hence if the State governments were to restructure their financing, for a given level of gross operating surplus, this would also change the State government take from the industry.

There are two variables in the HILORANI model that can be used to capture these changes in Commonwealth and State takes arising from finance restructuring.

The first is the (percentage change in) the effective rate of Commonwealth direct tax on non-labour income (in ORANI model notation, the variable tyk or its equivalent shifter, fyk). In the notation of this section, this variable is defined in level form to be

$$\text{commonwealth tax rate} = [0.33(G-D) - 0.33(Vg+Rg) - 0.33\phi Ig]/(G-D)$$

For a given level of Gg and Dg , finance restructuring by State government GBEs that led to known percentage changes in Vg and Rg would lead to the following percentage change in the Commonwealth effective tax rate

$$\begin{aligned} \% \Delta \text{ commonwealth tax rate} = & - [0.33(1-\phi)Vg/\text{commonwealth tax take}] \cdot \% \Delta Vg \\ & - [0.33(1-\phi)Rg/\text{commonwealth tax take}] \cdot \% \Delta Rg \end{aligned}$$

There is no $\% \Delta Ig$ term in this expression, since the fact that $\Delta Vg + \Delta Rg = -\Delta Ig$ allows the interest term to be eliminated.

The second model variable that is used to capture the revenue implications of finance restructuring is a new variable added to the theoretical structure of HILORANI measuring the (percentage change in) the share of post-Commonwealth tax income accruing to State governments as interest or dividends. In the notation of this section, the variable is defined in level form to be

$$\begin{aligned} \text{GBESHRS} &= \text{state take}/(G - \text{commonwealth tax take}) \\ &= (Vg+tRg+\phi Ig)/[G - 0.33(G-D) + 0.33(Vg+Rg) + 0.33\phi Ig] \\ &= (Vg+tRg+\phi Ig)/[(1-0.33)G + 0.33D + 0.33(Vg+Rg+\phi Ig)] \end{aligned}$$

For a given level of Gg and Dg , restructuring by State government GBEs that led to known percentage changes in Vg , Rg and hence Ig or (via changes in t)

⁴ With depreciation unchanged, the change in interest would have to be equal and opposite to the change in dividends and retained earnings, but the influence of the interest component is diluted in the above formulation by the share factor ϕ .

the State take, would lead to the following percentage change in the State share of post-Commonwealth tax income

$$\begin{aligned} \% \Delta \text{GBESHRSLS} = \% \Delta \text{state take} - [0.33 Vg(1-\phi)/Z] \cdot \% \Delta Vg \\ - [0.33 Rg(1-\phi)/Z] \cdot \% \Delta Rg \end{aligned}$$

where $Z = G$ - commonwealth tax take

Once the required percentage changes in Vg , Rg and the State take are known, they can be used in these formulae to calculate the corresponding percentage changes to fyk and $gbeshrsl$ that are then fed into the model.⁵ In implementing this procedure, the statutory tax rate of 0.33 in the above formulae has been replaced by the Commonwealth's effective tax rate on non-labour income from the HILORANI model's database. The required values for Vg , Z and the Commonwealth tax take have also been taken from the HILORANI database, while unpublished data from SCNPMGTE (1994) deflated to 1986–87 gives a comparable value for Rg .

It remains to explain how the required percentage changes in Vg , Rg and the State take (which includes ϕIg) are calculated. As noted, initial values for Vg , Rg , Ig and the State dividend and tax equivalent take can be calculated from unpublished data from SCNPMGTE (1994). For each group of State GBEs, the reported earnings before interest and tax (EBIT) are equivalent to $Gg - Dg$, the reported dividends paid or provided for are taken to be equivalent to $Vg(1-t)$, the reported income tax payments are taken to be equivalent to $t(Vg + Rg)$ and the reported interest payments are taken to be equivalent to Ig . The aggregate data for the State GBEs in each industry are shown in the first four columns of Table D3.10.

⁵ In the case of the ports scenario, the shock was applied to the variable $yanonlsl$ measuring State and Local government nominal dividend revenue, rather than to $gbeshrsl$, the corresponding share variable. This is because in the services to transport industry the variable $gbeshrsl$ is endogenous, for reasons spelt out in Chapter C1.

The initial tax rate t applying to State GBE tax equivalent payments can also be recovered from the SCNPMGTE data. Given that $I_g + V_g + R_g$ by definition add up to EBIT, these relationships can also be used to derive an initial value for R_g .⁶ A value for ϕ can be obtained by deflating the 1993–94 data on interest payments to government in Table D3.8 to the year of the corresponding data in Table D3.10, and comparing the result to the figure in that table for total interest paid.

The target values are derived as follows. The requirement of equal post-tax, post-depreciation rates of return on debt and equity implies

$$I_g(1 - 0.33)/D = (V_g + R_g)(1 - t)/E$$

where D is debt and E is equity. The requirement of a 50/50 debt/equity ratio implies $D = E$. Full payment of income tax equivalents implies the target value of t is 0.33.⁷ Combining these implies $I_g = V_g + R_g$. A 75 per cent dividend payout rate implies $V_g = 3R_g$. Finally, as noted, $EBIT = I_g + V_g + R_g$.

All these relationships imply that for a given level of G_g and D_g , the target value of I_g can be calculated as $0.5 * EBIT$, the target value of V_g can be calculated as $0.375 * EBIT$ and the target value of R_g can be calculated as $0.125 * EBIT$. The target value of the State take can be calculated as the target value of $V_g + 0.33$ times the target value of $R_g + \phi$ times the target value of I_g . Note that the government share of debt financing of GBEs is assumed to be the same as before.

In commenting on a draft version of this report, several jurisdictions noted that they already set policy target dividend payout rates of 50 rather than 75 per cent for their GBEs. However, the current policy targets do not appear to be related to a requirement to follow sound commercial practice. The Commission has therefore retained 75 per cent as an estimate of what constitutes sound commercial practice.

⁶ A slightly different approach was used for the rail industry since the SCNPMGTE data give net dividend payments whereas the model's database requires gross (pre-subsidy) payments. For the rail industry, a notional initial situation was constructed by taking the ABS data on gross dividend flows from Table D3.6, data on gross interest and income tax payments from SCNPMGTE, then simply assuming that retained earnings were equal to the target share of EBIT initially. This assumption provided an initial notional value for both R_g and EBIT.

⁷ Using a target tax rate of 0.33 here for income tax equivalents is not inconsistent with using the database's effective tax rate earlier when translating the required changes in GBE dividends, retained earnings and the state tax take into the implied changes in fyk and $gbeshrsl$. This is because the translation of GBE actions into the corresponding changes in model variables needs to take account of the possible presence of non-GBE operators in the industry.

The Commission has not imposed any target on the government share of debt financing, though it has imposed a target on the total level of debt relative to equity. If debt is debt, there should be no reason to prefer borrowing from one source over another, so long as borrowing from government is on a competitively neutral basis. Most State jurisdictions have recognised this latter issue, and are now charging debt guarantee fees of up to one percentage point of outstanding debt on both GBEs and public financial institutions.

The above procedure for calculating the required changes in model variables to capture the impact of capital restructuring yields plausible results only to the extent that the 1992–93 data obtained from SCNPMGTE (1994) are in some sense typical of the current situation. For this reason, the calculations for an industry group have been done using industry data aggregated across individual GBEs but excluding those GBEs thought to be highly atypical in that year. This was done in preference to averaging the SCNPMGTE data across several years because in industries undergoing rapid structural change, only the most recent data can give a reasonable picture of the current situation. The procedure is also somewhat affected by the database's understatement of Commonwealth tax collected on interest paid by State GBEs, as noted in Section D3.2.

landscape table d3tt2.doc

Commonwealth GBEs

A similar procedure is used to model the impact of financial restructuring in Commonwealth GBEs.

Consider an industry such as telecommunications, with no significant direct foreign ownership but with a mix of private sector operators and Commonwealth GBEs.

As before, the gross operating surplus (Gp) of the private sector enterprises can be divided into four components:

- Ip = a gross allocation for interest payments
- Vp = a gross allocation for dividends
- Dp = an allocation for depreciation
- Rp = a residual, here called retained earnings (although this does not match exactly the accounting definition of the term).

The corporate income tax paid to the Commonwealth government is given by

$$\text{corporate tax on private sector} = 0.33(Gp - Dp - Ip)$$

As before, this formulation assumes that the enterprises pay corporate tax on the income subsequently issued as dividends, so that the dividends once issued are fully franked and the individuals receiving the dividend income do not have to pay personal income tax on it.

If individuals are also the ultimate creditors of these private sector enterprises, then these individuals will pay income tax to the Commonwealth at the personal income tax rate when they receive their interest payments. Assuming that the average effective tax rate paid by individuals is the same as the corporate rate, then

$$\text{provisional income tax on private sector} = 0.33Ip$$

The total income tax received by the Commonwealth from the non-labour income generated in these private sector enterprises is given by

$$\begin{aligned} \text{commonwealth income tax on private sector} &= 0.33(Gp - Dp - Ip) + 0.33Ip \\ &= 0.33(Gp - Dp) \end{aligned}$$

The gross operating surplus of the Commonwealth GBEs (Gg) can similarly be divided into four components, Ig, Vg, Dg and Rg.

Commonwealth GBEs also pay corporate income tax to the Commonwealth:

$$\text{commonwealth income tax on GBEs} = 0.33(Gg - Dg - Ig)$$

The GBEs also pay after-tax dividends to the Commonwealth

$$\text{dividends to commonwealth} = (1-0.33)Vg$$

Finally, the GBEs pay interest to the Commonwealth on that fraction ϕ of their borrowings obtained from government sources

$$\text{interest to commonwealth} = \phi I_g$$

The Commonwealth government also receives an additional amount of income tax revenue on the interest payments made by those GBEs to private sector creditors.

$$\text{provisional income tax on GBEs} = 0.33(1-\phi)I_g$$

The total amount of income tax received by the Commonwealth government is therefore

$$\begin{aligned} \text{commonwealth tax take} &= 0.33(G_p - D_p) + 0.33(G_g - D_g - I_g) + 0.33(1-\phi)I_g \\ &= 0.33(G - D) - 0.33\phi I_g \end{aligned}$$

where G and D are gross operating surplus and depreciation for the industry as a whole. According to this formulation, if the Commonwealth GBEs were to restructure their financing so that for a given level of gross operating surplus, more were paid as dividends or more retained, and less paid out as interest, this would increase the Commonwealth income tax take slightly. The total Commonwealth dividend and interest take would also be affected by financial restructuring.

As before, there are two variables in the HILORANI model that can be used to capture these changes in the Commonwealth income tax, dividend and interest take arising from finance restructuring.

The first is the (percentage change in) the effective rate of Commonwealth direct tax on non-labour income (in ORANI model notation, the variable ty_k or its equivalent shifter, fy_k). In the notation of this subsection, this variable is defined in level form to be

$$\text{commonwealth tax rate} = [0.33(G - D) - 0.33\phi I_g] / (G - D)$$

For a given level of G_g and D_g , finance restructuring by Commonwealth government GBEs that led to known percentage changes in I_g would lead to the following percentage change in the Commonwealth effective tax rate

$$\% \Delta \text{ commonwealth tax rate} = - [0.33\phi I_g / \text{commonwealth tax take}] \cdot \% \Delta I_g$$

The second model variable used to capture these implications of finance restructuring is a new variable added to the theoretical structure of HILORANI measuring the (percentage change in) the Commonwealth government share of post-Commonwealth tax income. In the notation of this section, the variable is defined in level form to be

$$\begin{aligned} \text{GBESHrf} &= \text{commonwealth div \& int take} / (\text{G} - \text{commonwealth tax take}) \\ &= [(1-0.33)Vg + \phi I_g] / [\text{G} - 0.33(\text{G}-\text{D}) + 0.33\phi I_g] \end{aligned}$$

For a given level of G_g and D_g , restructuring by Commonwealth government GBEs that led to a known percentage change in I_g or the Commonwealth dividend and interest take would lead to the following percentage change in the Commonwealth share of post-Commonwealth tax income

$$\begin{aligned} \% \Delta \text{GBESHrf} &= \% \Delta \text{commonwealth div \& int take} - [0.33\phi I_g / Z] \cdot \% \Delta I_g \\ \text{where } Z &= \text{G} - \text{commonwealth tax take} \end{aligned}$$

Once the required percentage changes in I_g and the Commonwealth dividend and interest take are known, the implied percentage changes in f_{yk} and g_{beshrf} can be calculated, using data on the effective tax rate on non-labour income (instead of 0.33), data on ϕI_g and Z , all from the HILORANI database.⁸

It remains to explain how the required percentage changes in I_g and the Commonwealth dividend and interest take are calculated. The procedure is similar to that for the State and local GBEs, and is also shown in Table D3.10. In that table, the target Commonwealth dividend and interest take is calculated as $(1-t)$ times the target dividend allocation, plus ϕ times the target interest allocation, where t is also calculated within Table D3.10.

Note that the calculations in Table D3.10 for Commonwealth GBEs are now based on 1993–94 data from annual reports, rather than from 1992–93 data from SCNPMGTE (1994) that was used in the draft version of this report. The 1992–93 data for Telecom included an abnormal tax figure for Telecom that affected the calculation of the g_{beshrf} shock in the draft.

⁸ In the case of the FAC and CAA scenario, the shock was applied to the variable $yanonlf$ measuring Commonwealth nominal dividend revenue, rather than to g_{beshrf} , the corresponding share variable. This is because in the services to transport industry the variable g_{beshrf} is endogenous, for reasons spelt out in Chapter C1.

**D4 LETTER FROM THE RESERVE BANK OF
AUSTRALIA: HILMER REFORMS AND
INFLATION**



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EC

2 March 1995

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Dear Philippa,

HILMER REFORMS AND INFLATION

I thought it would be useful to respond in writing to the issues raised on the phone with Philip Lowe on 17 February.

The Bank's inflation objective is to maintain a rate of increase in "underlying" consumer prices of around 2-3 per cent over time. The 2-3 per cent range should be interpreted as a broad central tendency for inflation. It is not a range within which the Bank feels inflation must, or necessarily can, be maintained at all times and under all circumstances. In particular, the lower edge of the band should not be seen as an objective which, if inflation were running below, would necessarily require a policy response.

If large clearly identifiable price reductions led to a fall in the CPI, monetary policy would not attempt to offset the fall. As the effect of the price reductions passed through the figures, the rate of increase in prices would return to its previous rate. If monetary policy was eased to offset the short-term effect on the inflation rate, there would be a serious risk of higher inflation, once the price falls ceased. It is also unlikely that subsequent monetary policy would be looser, for this would risk raising inflation expectation. Large clearly identifiable price reductions would be treated in the same way that once-off changes in taxes or interest rates are handled: by excluding them from the concept of "underlying" inflation, which is the basis of the inflation objective.

The second case is where the price reductions are not readily identifiable. Many factors influence the inflation rate and it is often difficult to differentiate between these. If the price reductions induced by the Hilmer reforms are not clearly identifiable, it would be difficult for monetary policy to take specific account of their effect. Unidentified price reductions will, of course, be helpful in achieving the inflation objective. At the same time, we would not see the need for a policy response if, fortuitously, the rate of inflation

2.

was below the lower end of the band. Thus, the Hilmer reforms should have some impact on the average inflation rate achieved over time. But the main impact (and benefit) of the reforms should be to increase the growth rate of the economy which is consistent with achieving the 2-3 per cent objective.

I hope that this is of some use in your deliberations. If you would like to discuss the issues further, please do not hesitate to call me.

Yours sincerely,



S.A. Grenville
Assistant Governor (Economic)

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