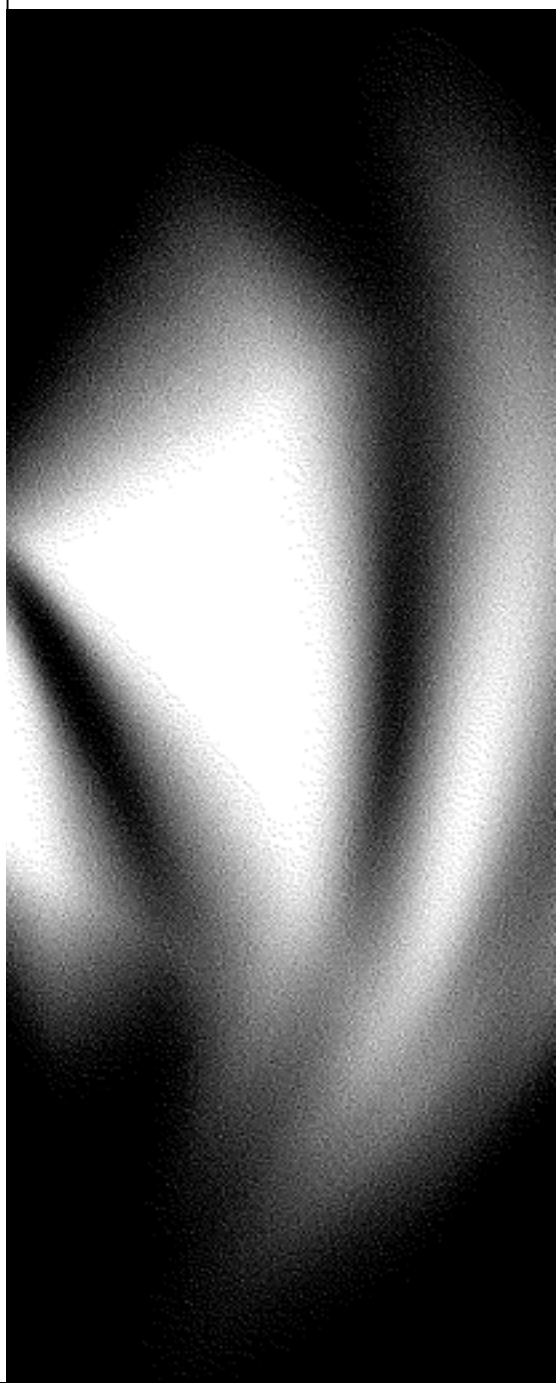
PRODUCTIVITY COMMISSION

Trends in Australian Infrastructure Prices 1990-91 to 2000-01

Performance Monitoring



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Foreword

Australia's economic infrastructure industries have experienced major structural change over the past 10-15 years. Much of this resulted from government policy reforms, motivated by the need to improve the performance of public utilities which provide vital services to business and the community.

The outcomes of the reform process have been monitored in various ways (including in the 'Red Book' exercise and in selected reviews). The present study supplements that work by providing a broader overview of trends in pricing, service quality and financial performance for key infrastructure services over the 1990s.

The findings of this study are generally consistent with the expectations and objectives of the reform programs. While there have been transitional costs, there have clearly also been considerable benefits to the community and the economy from more cost-effective services, cost-reflective prices and lower burdens on taxpayers. (A following study will analyse in more detail the income distributional impacts of these trends.) Importantly, available indicators suggest that the efficiency gains have not been achieved at the expense of service quality.

Research for the study was undertaken in the Economic Infrastructure Branch, under the guidance of Commissioner Michael Woods. The research team was assisted by many organisations and individuals, both in gathering the information for the study and in reviewing the findings. The Commission is grateful for their cooperation. Further feedback from readers would also be welcome.

Gary Banks
Chairman

Contents

Abbreviations

AAV	Assessed Annual Value
ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ACA	Australian Communications Authority
ACCC	Australian Competition and Consumer Commission
ACD	Agreed Commitment Date
AGA	Australian Gas Association
AN	Australian National
ARG	Australian Railroad Group
ARTC	Australian Rail Track Corporation
AUSTEL	Australian Telecommunications Authority
AWB	Australian Wheat Board
BCC	Brisbane City Council
BT	Brisbane Transport
CAIDI	Customer Average Interruption Duration Index
CCNCO	Commonwealth Competitive Complaints Tribunal
CoAG	Council of Australian Governments
CPI	Consumer Price Index
CRU	Communications Research Unit
CSG	Customer Service Guarantee
CSO	Community Service Obligation
DHS	Department of Human Services
EBIT	Earnings Before Interest and Tax
ESAA	Electricity Supply Association of Australia Limited
GBE	Government Business Enterprise
GJ	Gigajoule

GL	Gigalitre
GST	Goods and Services Tax
GT	Gross Tonnage
GTEs	Government Trading Enterprises
GWh	Giga (10^9) Watt hour
ICRC	Independent Competition and Regulatory Commission (ACT)
IPART	Independent Pricing and Regulatory Tribunal (NSW)
ISDN	Integrated Services Digital Network
Kbps	Kilo bits per second
Kl	Kilolitre
Km	Kilometres
kWh	Kilo (10^3) Watt hour
LPG	Liquefied Petroleum Gas
MPA	Melbourne Port Authority
mm	millimetre
MPC	Melbourne Port Corporation
MSB	Maritime Services Board
MWh	Mega (10^6) Watt hour
NCC	National Competition Council
NCP	National Competition Policy
NEM	National Electricity Market
NMU	Non-Major Urban Water Utility
NRC	National Rail Corporation
ntkm	net freight tonne kilometre
ORG	Office of the Regulator-General (Victoria)
PC	Productivity Commission
PICI	Port Interface Cost Index
PSTN	Public Switched Telephone Network
QR	Queensland Rail

RAC	Rail Access Corporation
RSA	Rail Services Australia
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SCA	Sydney Catchment Authority
SECWA	State Energy Commission of Western Australia
SPC	Sydney Port Corporation
SRA	State Rail Authority
SSTS	School Student Transportation Scheme
STA	State Transit Authority
TBR	Total Business Revenue
TEU	Twenty Foot Equivalent Unit
TJ	Tera (10^{12}) joule
TSR	Total Sales Revenue
USO	Universal Service Obligation
VCA	Victorian Channels Authority
WACC	Weighted Average Cost of Capital
WSAA	Water Services Association of Australia

Key messages

- Government trading enterprises (GTEs) and former GTEs that dominate economic infrastructure industries — electricity, gas, water and sewerage, urban transport, ports, railways and telecommunications — underwent significant reform over the last decade.
- Governments initiated these reforms to improve productivity, reduce financial burdens on the community and make prices more reflective of the cost of providing services to different customers. The underlying goal was to improve community living standards.
- Subsequent trends in prices and other aspects of financial performance have generally been consistent with government objectives. Prices in some industries have fallen. For example, electricity prices — particularly those to the business sector — have fallen markedly. In industries where prices were too low — urban transport, for example — they have risen, reducing the drain of poor financial performance on taxpayers.
- The direction and magnitude of price trends were generally similar for metropolitan and non-metropolitan areas. Price trends were also found to be similar for concession and non-concession customers.
- Price reductions and other improvements in financial performance have not been achieved at the expense of service quality, which has not changed markedly over the study period.
- While profitability and returns on assets generally improved, some GTEs — in the water and sewerage sector, for example — still do not cover the cost of capital. Only in some cases may this be a result of assets being over-valued.
- The direct impact of price changes has been greatest in absolute terms for those on the highest incomes. As a proportion of household expenditure, however, such price impacts have been greatest for low income households.
- Only direct price outcomes were examined in this study. The indirect impacts on households of changes in the prices of final products and services will be examined in a forthcoming study.

Overview

Economic infrastructure industries — electricity, gas, water and sewerage, urban transport, ports, railways and telecommunications — play a pivotal role in Australia's economic and social development. The efficient provision and use of infrastructure — its location, availability, quality and pricing — contribute to living standards of the whole community.

Although the services provided by these industries directly account for only some 5 per cent of consumer spending, this understates the importance that the community attaches to them —many being services that are essential to daily life.

Businesses also rely on these services to produce and market their outputs and to innovate. Indeed, 70 per cent of the total demand for economic infrastructure services comes from Australian businesses.

Reform of government trading enterprises (GTEs) and former GTEs that dominate these industries began in the 1980s and accelerated during the 1990s. In this period, governments aimed to:

- increase productivity and pass on cost savings in the form of reduced prices and increase shareholder returns (via commercialisation, corporatisation and privatisation), without reducing the quality of service;
- achieve higher levels of cost recovery by increasing prices in some industries to reduce subsidies from the public purse (user-pays);
- remove cross-subsidies by making prices more reflective of the relative costs of providing the service (rebalancing tariffs);
- impose factor market disciplines and ensure competitive neutrality by requiring GTEs to pay dividends, tax-equivalent payments and debt guarantee fees (competitive neutrality);
- improve accountability for performance through the introduction of governance arrangements for GTEs that correspond to those applying to private sector managers; and
- remove regulatory functions from service providers.

Government payments to GTEs to offset revenue short-falls in delivering community service obligations were made explicit. Governments established arrangements for price oversight because of the potential conflict of interest with governments as shareholders of GTEs. Governments also improved reporting standards to increase accountability through transparency and established a nationally consistent performance monitoring regime.

From the mid-1990s, the Hilmer reforms served to increase competition further. This involved ensuring competitive neutrality by removing the last vestiges of any cost advantages enjoyed by GTEs and opening up many services to competitive bidding. Most GTEs were financially restructured. Some integrated enterprises were broken up into separate businesses to promote competition in at least part of the production chain.

Outline of the study

The Commission has examined pricing and other financial performance changes that have taken place over the last decade, to assess whether they have been consistent with the reform objectives of governments.

Changes in the prices of, and household expenditure on, a wide range of economic infrastructure services over the decade 1990-91 to 2000-01 were estimated in both nominal and real terms. Real price trends reveal how prices for each infrastructure service moved relative to the price of consumer goods and services in general.

For each infrastructure service, estimates were also made of the direct impact of price changes on real household expenditure. Also estimated, on a limited case study basis, were changes to business and concession holder prices. This was undertaken to examine the consequences of tariff rebalancing.

Changes to quality of service were examined to assess whether lower prices and higher cost recovery had been achieved by reducing service levels. Changes to profitability were also examined to identify whether price reductions had been achieved at the expense of dividends to the community as shareholders.

Clearly there are factors other than reform that contribute to price changes. These factors include technological progress, changes to input costs, gains from scale economies as demand increases and the costs of regulation.

That said, the price series in this report provide useful insights into the reform process. In particular, they reveal whether price movements have been consistent with the expected outcomes. For example, it was expected that electricity industry

reform would produce lower prices and that the internal cross-subsidies from business to household customers would be unwound. This appears to have been the case.

In urban transport, on the other hand, the reforms were expected to lead to higher prices as government subsidisation was wound back. The evidence in this report confirms that outcome. In water supply, price reform was in part motivated by environmental concerns about over-consumption. There is evidence that *per capita* consumption has fallen.

General findings

Over the study period, trends in prices and financial performance have generally been consistent with government objectives. These trend outcomes have regard for costs such as voluntary redundancy payments, together with higher wages negotiated in return for improved work practices and increased productivity.

The direction and magnitude of household price trends have been generally similar for metropolitan and non-metropolitan areas within each jurisdiction. Also, price trends were similar for concession and non-concession customers.

Trends in business prices have often diverged markedly from those for households. In the past, governments tended to keep prices to household customers low relative to business prices, even when the unit cost of supplying household customers was considerably higher. Part of the reform process has been to realign prices more closely with costs (thus improving consumption and investment decisions) and this has often led to rebalancing price relativities between the two customer groups.

An assessment of the distributional consequences of the price trends indicates that the direct impact on household consumption has been greatest in absolute terms for the highest income earners but has been greatest in proportional terms for low income households.

Generally, quality of service outcomes have been no worse or better than before reform. However, it should be noted that there were only a few consistent indicators available to measure service quality changes over the period of the study.

Profitability and returns on assets improved over the study period, but comparisons based on estimates of asset values have to be interpreted with care. For a number of utilities, there have been significant changes in asset values as a result of capital restructures, asset transfers, revaluations and changes in asset valuation methodologies.

Tariff 'rebalancing,' to reduce business prices relative to household prices, is likely to have benefited customers indirectly. For example, business input cost savings from lower infrastructure prices flow through to some extent as lower prices for other products and services. Also, substantial falls in real rail and port charges would have assisted exports (such as grain and minerals) from regional Australia. These broader changes in prices and the distributional consequences will be examined in a forthcoming Productivity Commission research study.

Price trends by industry

Reform outcomes could be expected to vary by industry, depending on the circumstances of individual industries at the time. For example, the outcomes for GTEs that had operated on a near user-pays basis were likely to be different to those for industries that were heavily supported with large subsidies.

It should be noted that household price changes, with the exception of those for water and sewerage, include the effect of the GST which inflated prices in the final year of the reporting period. However, the effect of the GST has generally been excluded from business prices reported in the study — in recognition of the tax being rebated for inputs such as infrastructure services.

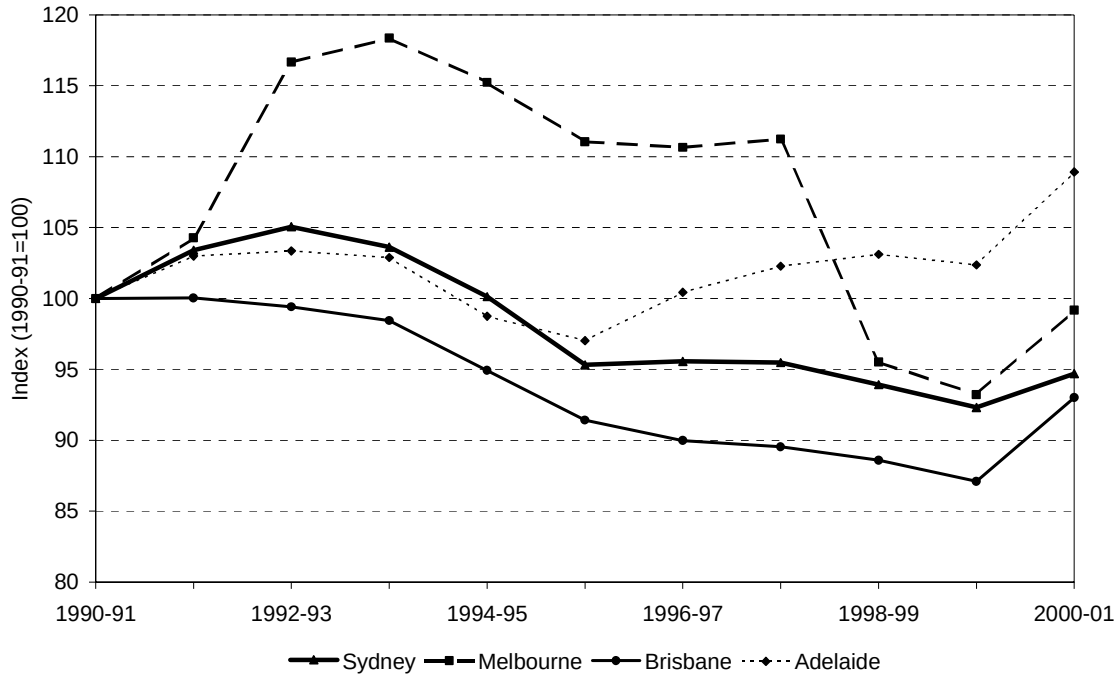
Electricity

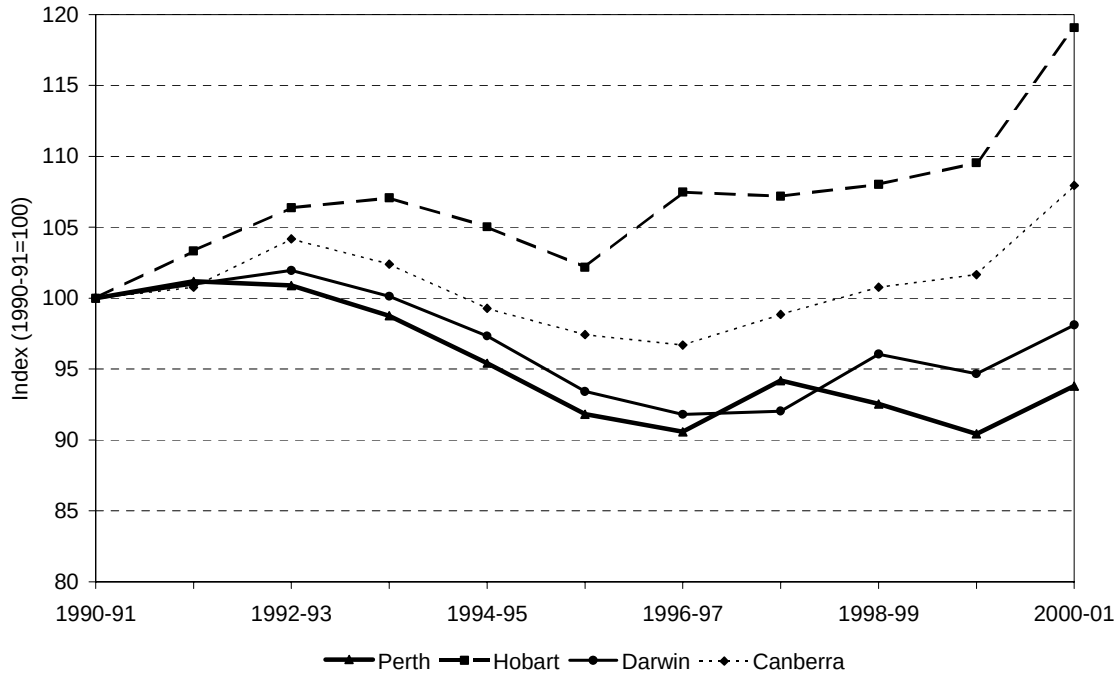
Electricity GTEs were corporatised and placed on a commercial footing in the first wave of governance reform. Cost structures were examined and substantial savings were realised. Prices were rebalanced to reflect more closely the costs of supply.

Later, there were far-reaching reforms to increase competition. In most jurisdictions, the industry was vertically disaggregated into separate generation, transmission, distribution and retail businesses, and in some instances, horizontally disaggregated as well. Privatisation occurred in Victoria in particular. A national electricity market was established to encourage competition among generating businesses in the Eastern States. The system of franchised customers was dismantled to allow electricity to be purchased from competing wholesalers and retailers.

Real household electricity prices fell over the study period in all capital cities, except Hobart, Canberra and Adelaide, with falls ranging from 1 per cent in Melbourne to 7 per cent in Brisbane (see figure 2.1, p. 17, reproduced as figure 1 below).

Figure 1 **Real electricity price trends — metropolitan households**
1990-91 to 2000-01





Note For notes refer to figure 2.1.

Business prices fell even more sharply, providing second round benefits to customers indirectly if passed on in the form of lower prices for final products and

services. For example, in the two jurisdictions studied in greater detail — NSW and WA — the business prices of the two case study utilities fell by between 30 and 60 per cent (see figures 2.4 and 2.5, p. 26 and p. 27 respectively, with the NSW trends reproduced as figure 2 below).

Gas

Gas GTEs were corporatised and then privatised over the study period. The industry faces significant competition from electricity, as an alternative source of energy in many uses.

Real household gas prices rose in most capital cities over the 1990s, ranging from 3 per cent in Melbourne to 15 per cent in Adelaide and Canberra (see figure 3.1, p. 52). The exceptions were Brisbane and Perth, where prices fell by 7 and 10 per cent respectively.

In metropolitan areas of WA and Victoria, prices to tariff customers (mainly small business) fell by between 4 and 25 per cent (see figures 3.6 and 3.5, p. 63 and p. 62 respectively). There is some evidence that prices negotiated by large customers have remained constant in real terms.

Financial performance has been satisfactory (see figure 3.12, p. 74) and there has been no definite deterioration in the quality of service (see figures 3.10 and 3.11, p. 70 and 71 respectively).

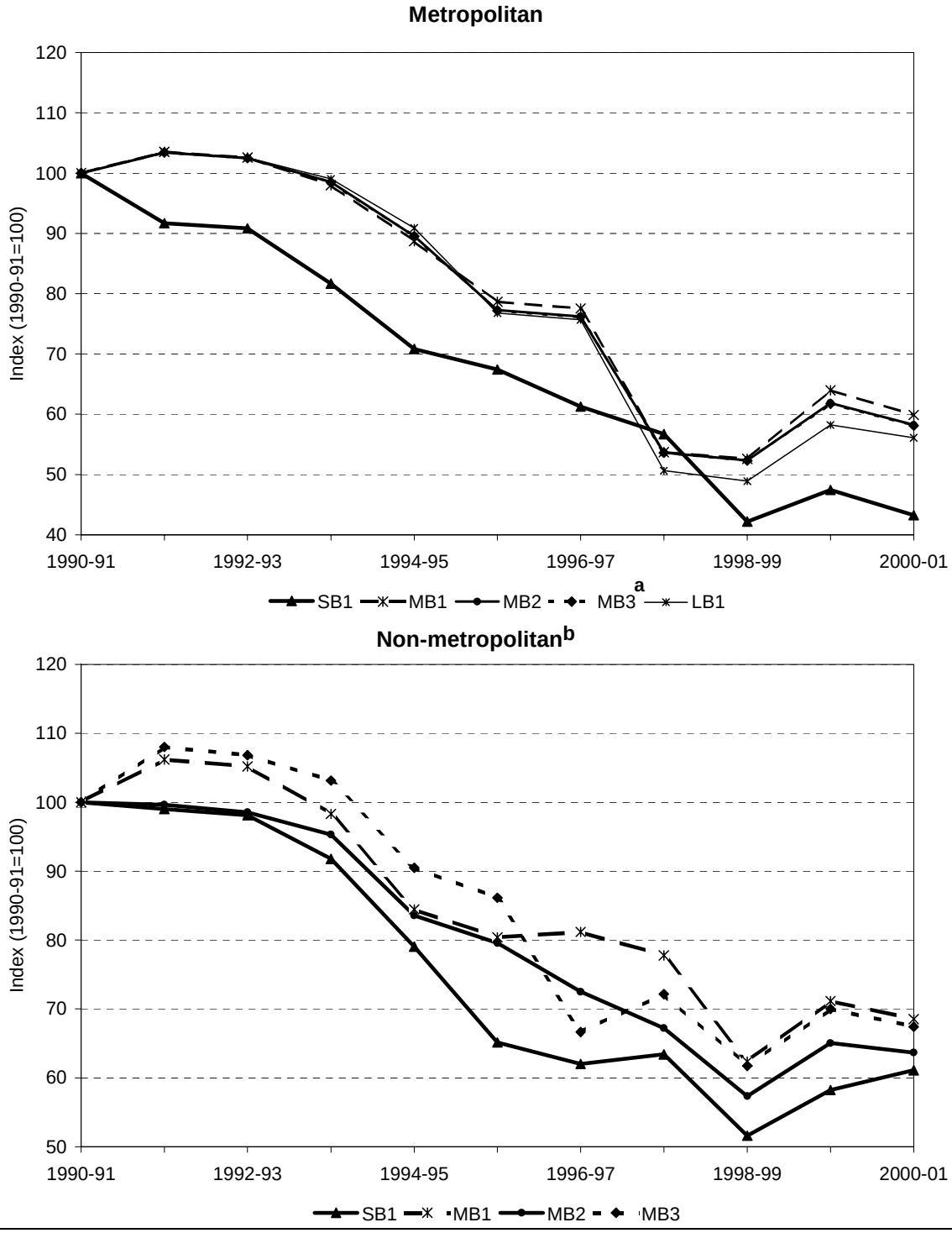
Water and sewerage

Like other GTEs, most metropolitan water and sewerage utilities were corporatised during the study period. Pricing reforms were also introduced, often involving a change from property-based to consumption-based charges and a rebalancing between household and business prices.

Unlike other GTEs, the water and sewerage utilities have generally not been opened up to competition — with the exception of SA where service provision has been franchised. However, most are subject to price regulation. In addition, operating licences remain a key mechanism to impose service quality requirements.

Real household prices for water and sewerage rose over the study period in all capital cities except Melbourne and Hobart (see figure 4.1, p. 93, reproduced as figure 3 below). These increases are consistent with the policy objective of making charges more cost-reflective.

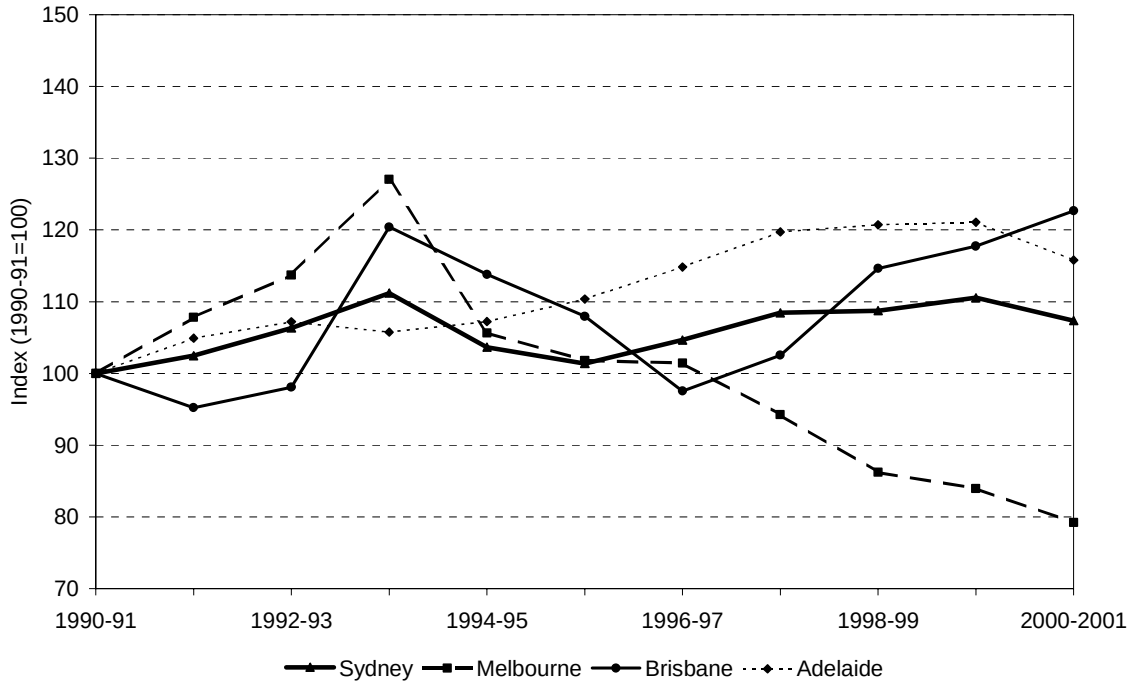
Figure 2 **Real electricity price trends — business, selected NSW retailers**
1990-91 to 2000-01

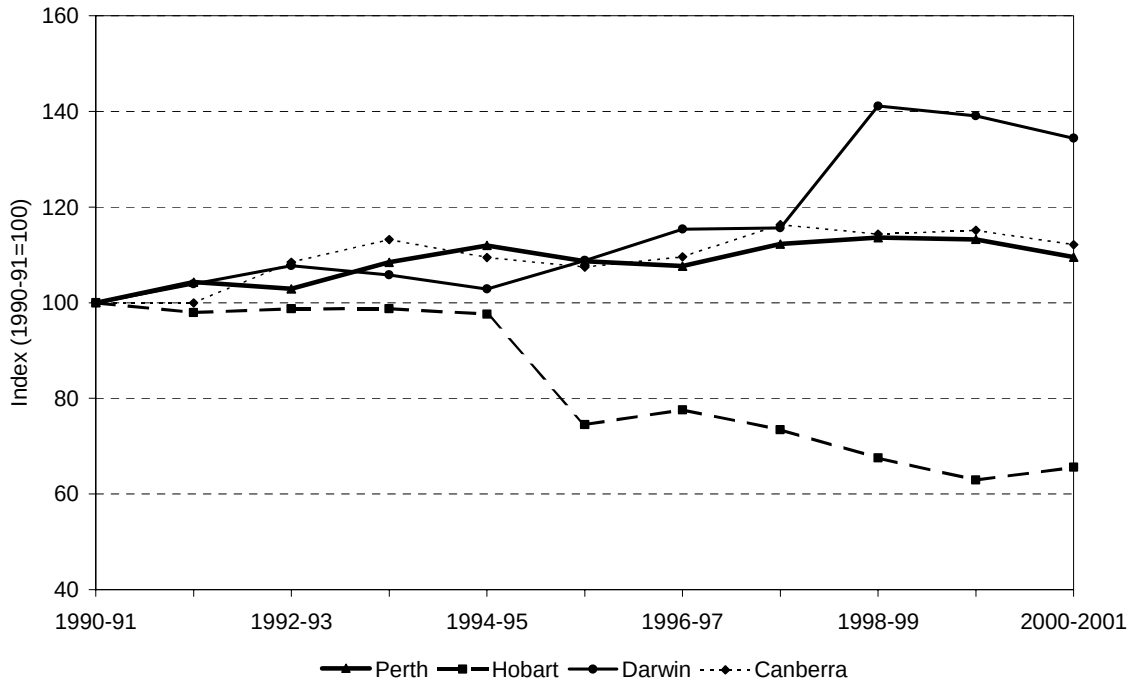


Note For notes refer to figure 2.4.

Figure 3 **Real water and sewerage price trends — metropolitan households**

1990-91 to 2000-01





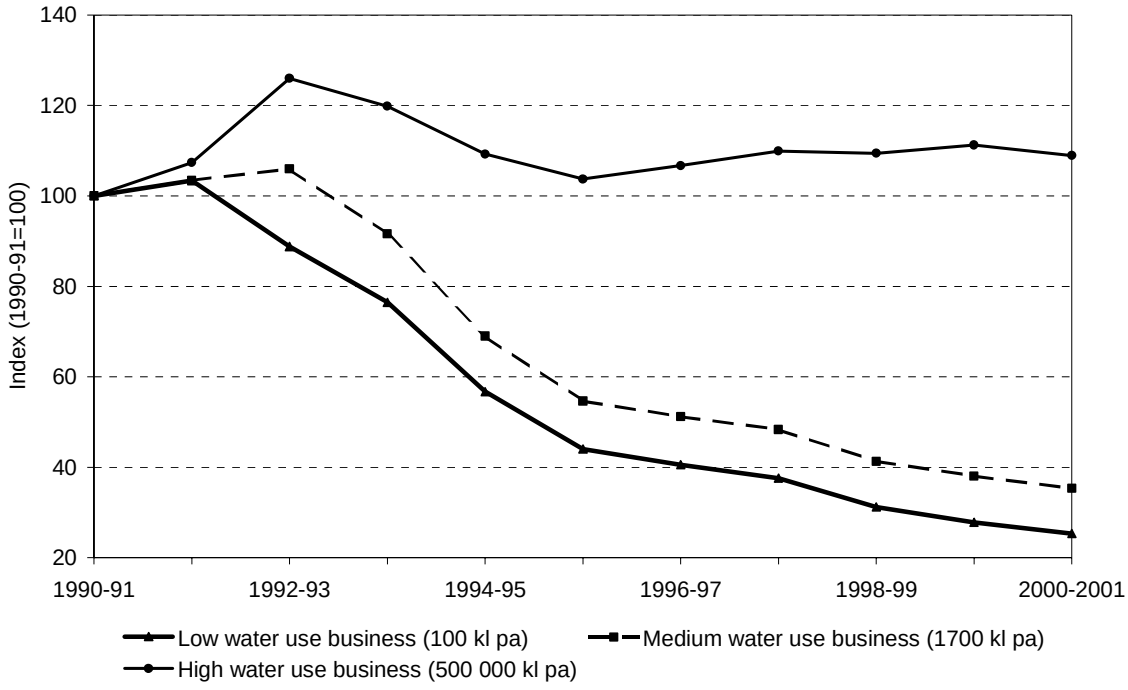
Note For notes refer to figure 4.1.

Another objective was to promote conservation through improved demand-management. This has been achieved successfully, with *per capita* consumption declining by approximately 17 per cent in major urban supply areas over the study period. This has in turn delayed the need to augment water supplies, producing significant capital savings as well as environmental benefits.

It was difficult to identify a consistent trend in business prices. Business charges for water depend on the particular utility, connection features and volume consumed (for example, see figure 4.7 p. 108, reproduced as figure 4 below).

Notwithstanding a trend toward full cost recovery, some water GTEs are still not earning 'commercial' rates of return on their assets (see figure 4.13, p. 118). This implies that the community may have to contribute to the renewal of assets through taxes in the future, unless prices are increased further or productivity is improved.

Figure 4 **Real water and sewerage price trends — business, Sydney Water Corporation (NSW)**
1990-91 to 2000-01



Note For notes refer to figure 4.7.

Urban transport

The main emphasis of urban transport reform has been to improve productivity and cost recovery, given poor performance of the services and significant implicit subsidies.

Governments made managers more accountable for productivity through corporatisation, and exposed GTEs to competition in some areas by franchising services and requiring the GTEs to bid for the contracts. GTEs in some jurisdictions were privatised.

Real urban transport prices, averaged over public and private modes — including trains, trams, buses, ferries and taxis — increased in all capital cities from 22 per cent in Sydney to 43 per cent in Perth over the decade (see figure 5.1, p. 146).

The increases in urban transport prices were slightly higher when private taxi prices were excluded as they generally rose by less than the other transport modes (see figure 5.3, p. 153).

There is some evidence of enhancement of service quality, such as the introduction of new rolling stock and air-conditioned buses. However, in Sydney and Brisbane, punctuality and reliability remained generally unchanged (see figure 5.7 and 5.8, p. 163 and 165 respectively).

Real price increases were not sufficient to allow 'commercial' financial targets to be met in some jurisdictions.

NSW State Transit Authority implicit subsidies and explicit government funding has declined over the study period.

Ports

Most ports in Australia have been corporatised or privatised. In the process they have shed regulatory responsibilities and control of ancillary marine services and cargo handling facilities, reducing them largely to landlord managers of infrastructure.

For this study, only port authority charges were examined. These include a number of ship-based and cargo-based charges levied by port authorities, some elements of which include a time-in-port component. As such, they do not cover port-related costs such as stevedoring.

Real port charges on container ships fell by between 62 per cent in Melbourne and 17 per cent in Burnie (see figure 6.1, p. 196). For bulk ships, price changes were similar, with real prices falling by 52 per cent in Melbourne and 17 per cent in Burnie (see figure 6.2, p. 198).

The reductions in real charges for containerised and bulk traffics do not appear to have reduced rates of return on port assets to below 'commercial' levels (see figures 6.3 and 6.4, p. 201 and 203 respectively).

Rail freight

Initially, railways were corporatised to strengthen accountability for performance. This brought about a major rationalisation of services and activities. Recent reforms have been aimed at encouraging competition and private sector investment, by restructuring railways into separate track infrastructure and train operation businesses. Some railways have been privatised. Others have been franchised to the private sector on a competitive basis.

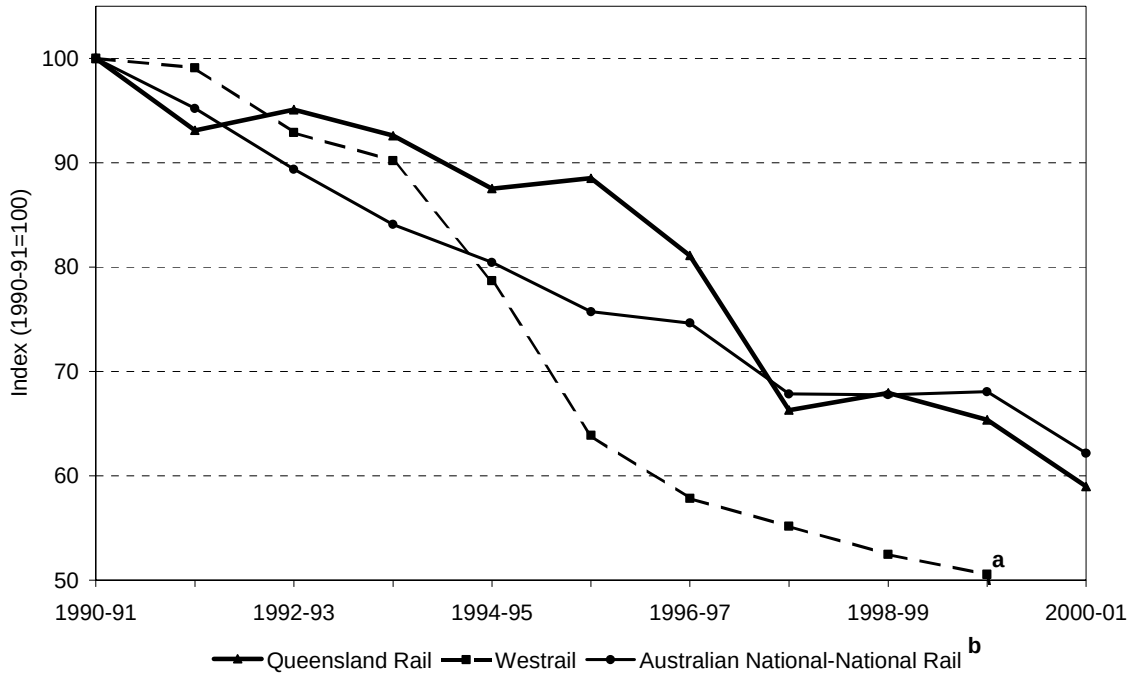
Notwithstanding commercial-in-confidence limitations, available information indicates that freight rates decreased significantly in real terms over the study period, averaging around 40 per cent in all jurisdictions.

Between 1996-97 and 2000-01, average rail freight charges for the transport of wheat to ports fell in real terms by between 22 per cent in NSW and 9 per cent in WA (see figure 6.8, p. 211). Over the same period, average rail freight rates for the transport of coal have fallen in real terms in NSW by 52 per cent and in Queensland by 26 per cent (see figure 6.9, p. 212).

Most rail freight rates are negotiated and are confidential. However, a real price index of general freight prices showed similar trends to those for wheat and coal (see figure 6.11, p. 214, reproduced as figure 5 below).

Shareholder outcomes, as measured by return on assets, dividend payout and dividend to equity ratios, have been variable over the study period, reflecting significant restructuring and transition (see figures 6.12, 6.13 and 6.14, p. 216, 218 and 219 respectively). Most rail authorities earned rates of return at or slightly above the risk free rate. Generally, rail authorities have been able to deliver real falls in freight charges without unduly reducing profitability.

Figure 5 **Real rail freight price trends — general freight**
1990-91 to 2000-01 (per ntkm)



Note For notes refer to figure 6.11.

Telecommunications

Telstra's predecessor, Telecom, was corporatised in the late 1980s. Limited competition was introduced by the establishment of a duopoly, with Optus as the alternative carrier. The market was subsequently opened up to full competition and Telstra was partially privatised. Regulation was introduced (Parts XI A, B and C of the *Trade Practices Act 1974*) to facilitate access to the incumbent's infrastructure by third parties.

Real household prices for a consumption basket of telecommunications services, including rental, fixed line and mobile calls, fell by around 20 per cent over the study period (see figure 7.1, p. 239). Changes in technology have contributed to this trend. Since 1996-97, household and business prices decreased at broadly similar rates (see table 7.7, p. 244).

While prices fell significantly, most aspects of service quality, except fault clearance times, improved (see figures 7.2 to 7.8, p. 247 to 253). Fault clearance performance deteriorated for most of the ten year period. From mid-1998, fault

clearance has been improving. However, the overall trend cannot be determined because of changes in the basis of measurement.

Telstra paid a dividend in each year over the study period (see figure 7.10, p. 256). During the period of part private ownership (1997-98 to 2000-01), return on assets has averaged 21 per cent, compared with 13 per cent under full public ownership (see figure 7.9, p. 255).

1 Introduction

Over the last decade or so, economic infrastructure industries — electricity, gas, water and sewerage, urban transport, ports, railways, and telecommunications — have been reformed to strengthen competition and performance. Governments initiated these reforms to bring about productivity improvements that would lower prices, improve services, raise profitability in some cases and reduce reliance on government subsidies in other cases.

This is a study of the prices charged, quality of service delivered, and financial performance of economic infrastructure industries and the extent to which the trends are consistent with the reform objectives. The study period — 1990-91 to 2000-01 — spans the period in which most of the reform took place.

1.1 Study objectives

The study objectives of the project are to report on:

1. Prices paid by household customers over the last decade and the effect of price trends on household expenditure for a range of income groups.
2. The extent of differences in price trends between:
   (a) metropolitan and non-metropolitan areas;
   (b) household and business customers; and
   (c) concession and non-concession customers.
3. Changes in quality of service.
4. Returns to government (on the assets of government trading enterprises) and their significance in relation to price trends in the relevant industries.

1.2 Purpose

The purpose of the study was to examine real changes to prices and profitability, along with absolute changes in service indicators, to see whether the changes are consistent with the stated aims of the reforms that were undertaken prior to and during the study period.

The Commission recognises that there are factors other than reform measures that will affect prices. These factors include technological progress, changes to input costs, gains from scale economies as demand increases and the costs of regulation. Further, the reform process is dynamic and there are ongoing implementation costs and second round effects.

That said, the price series in this report provide useful insights about the reform process. In particular, they reveal whether price movements have been consistent with the expected outcomes when the reforms were implemented. The study comprises four components that mirror the study objectives. The purpose of each of these components is outlined below.

Price trends and their effects on household expenditure

The direct effects of infrastructure price changes on the household expenditure of different income groups are reported, to gauge their distributional impact.

The consequences of price changes on business costs and their indirect effect on customers is the subject of a forthcoming Productivity Commission research study. The study will examine the distributional consequences of changes to business prices, using a regional general equilibrium model of the economy.

Variations in price trends

Information is reported on relative price trends between metropolitan and non-metropolitan areas to provide a basis for examining locational variations across Australia. Price variations between concession and non-concession customers were also examined to determine whether there had been any change in the relative prices paid by these two groups. Variations between household and business prices were reported to examine the consequences of tariff rebalancing.

Changes in quality of service

Changes in quality of service indicators are reported to reveal whether the public interest has been protected. Of particular concern was the issue of whether price reductions or increased profitability have been achieved by lower quality of service.

Returns to government in relation to price trends

The purpose of this component of the study was to report on the financial performance of utilities and the relationship to price trends. The benefits of reform can be taken in different ways — as a reduction in customer prices, or as an improvement in financial performance and the returns made to shareholders — or some combination of the two.

Financial performance was also examined because one thrust of the reform process was to replicate financial market disciplines on utilities and require full cost recovery.

1.3 Microeconomic reform of economic infrastructure services

Microeconomic reform encompasses a range of government policies which change the incentives facing private and public sector producers. In relation to government trading enterprises (GTEs), microeconomic reform is intended to provide greater customer satisfaction via an improved mix of price and service quality outcomes. The specific reform measures can be thought of as falling into four broad categories:

1. Commercialisation;
2. Corporatisation;
3. Introduction of factor market disciplines; and
4. Competition policy.

Commercialisation

In the early part of the 1990's, governments began to place greater emphasis on clarifying their objectives for GTEs. This was in response to ambiguities concerning the various competing demands on GTEs — providing essential services to all, keeping prices low, reducing their call on the budget and being good corporate

sponsors. In an attempt to resolve some of these ambiguities, GTEs were encouraged to adopt a more commercial approach to service provision and pricing decisions. User-pays policies were refocussed on requiring GTEs to achieve full cost recovery.

Policies of competitive tendering and contracting out were introduced to expose large areas of public provision to competition from the private sector. Capital projects once undertaken in-house by GTEs were contracted out and subject to competitive tender.

Governments reassessed the way in which community service obligations (CSOs) were delivered. They introduced direct and more transparent budget funding of CSOs.

There were also concerns that GTE control of regulatory functions could create conflicts of interest, with the same organisations being responsible for both service delivery and its regulation. This led to GTE regulatory functions being transferred to independent regulators. The resulting relationships between GTEs and these independent regulators are still evolving.

During this period, most GTEs continued to be under close government supervision and subject to Ministerial direction in the areas of pricing and financial management.

Corporatisation

During the 1990s, corporatisation established GTEs as more autonomous entities, with commercially-oriented Boards, which have greater responsibility and accountability for financial performance. Under this model, GTEs pursued commercial objectives without ministerial interference in day-to-day management decisions.

Regimes were established to monitor and report on their financial and non-financial performance at the same time as new standards of performance and accountability were introduced. Another purpose of these regimes was to foster ‘yardstick competition’.

Governments introduced independent price regulation. This was intended to separate price regulation from Ministerial control and avoid perceptions of a conflict of interest whereby governments could be accused of using their power over prices as a taxing mechanism.

Factor market disciplines

In the past, GTEs were able to compete unfairly because of advantages not enjoyed by their prospective, private sector competitors — for example, not paying dividends to their shareholders. However, government policies that seek to replicate capital market disciplines by requiring GTEs to earn a 'commercial' rate of return on their assets and pay dividends to their owner governments, are now commonplace among GTEs.

Competition policy

Australian governments agreed to the National Competition Policy Agreement in 1995. This resulted in a more nationally focused and systematic approach to ongoing regulation review and infrastructure reform. Electricity (through the establishment of the national electricity market) and gas competition (through pipeline access regimes), were areas of substantial reform.

A key thrust of competition policy reform was to facilitate the entry of new private sector providers and replace the previous arrangements whereby GTEs were the sole providers of infrastructure services.

Governments created new regulatory frameworks and institutions to promote and regulate price competition. These institutions include the National Competition Council (NCC), the Australian Competition and Consumer Commission (ACCC), the New South Wales Independent Pricing and Regulatory Tribunal (IPART), and the Victorian Office of the Regulator-General (ORG).

1.4 Study scope

Price trends and their impact on household expenditure — the first of the four components of the study — were examined for all jurisdictions. Only the direct effects of these trends on household expenditure were measured in this study — sometimes referred to as first round effects. As indicated earlier, the indirect effects will be the subject of a forthcoming study.

The remaining three components of the study — variations in prices, service quality and financial performance — were examined as case studies within selected jurisdictions only.

The study covered services supplied by mainly public but some private businesses.

Price trends and direct impacts on household expenditure

In this component of the study, the price trends examined were those paid by metropolitan households in Australia's eight capital cities, over a 10 year time period, from 1990-91 to 2000-01. Price trends are presented as a real price index over 11 price points, beginning with the June quarter 1991 and ending with the June quarter of 2001.

Data published by the Australian Bureau of Statistics (ABS) was primarily used for this component of the study. Price data was extracted from the consumer price index (CPI) collection for electricity, gas, urban transport and telecommunications.

The first component of the study also includes an evaluation of the distributional impact of price trends on different household income groups. Households on lower incomes tend to spend a higher proportion of their expenditure on infrastructure services, because these services are basic necessities. Consequently, any changes in the real price of these services can have a greater (proportional) impact on lower income households.

Variations in price trends

The relationship between metropolitan and non-metropolitan prices, concession and non-concession prices, and between business and household prices, were examined for NSW or Victoria (the two largest jurisdictions), plus one other (smaller) jurisdiction. The two jurisdictions selected were determined primarily by the availability of data.

The prices paid by businesses of different sizes were collected. Business prices are often confidential and the business price data presented in the study was drawn from a number of different sources.

Household price trends were compared with price trends for business. These comparisons enabled identification of any rebalancing between business and household prices, designed to make prices more reflective of differences in supply costs and demand characteristics.

Changes in quality of service

Quality of service measures were collected for most of the industries covered in the study. The service quality measures differ according to the industry under consideration and according to the availability of consistent and reliable data

covering all or much the study period. Wherever possible, the effects that capital investment trends may have had on service quality were considered.

Returns to government in relation to price trends

Return on assets and payments to government were examined for selected GTEs in each of two jurisdictions. The payments reported include dividend payments and the dividend to equity ratio, both of which are discussed in the chapters.

In certain cases, the discussions extend beyond these two measures to provide a more comprehensive picture of the financial performance of GTEs, for instance, to indicate whether governments are providing subsidies.

1.5 Approach

The approach taken was to report prices as indexes, together with service quality indicators and financial measures over time.

Real price trends and impacts on household expenditure

Indexes of real prices paid by metropolitan households for utility services were obtained by deflating nominal prices by the CPI (All groups) for each capital city, which is indicative of trends in the general price level. ABS data were expressed as index numbers, with the base year 1989-90=100. These index numbers were rebased to the study base year 1990-91=100.

The price data for individual government services is collected by the ABS for inclusion in the CPI. It reflects the prices paid by metropolitan households only. A brief description of the procedures used in compiling the CPI is outlined below, but a more comprehensive description is available (ABS 1996).

The CPI price data for government services is collected by the ABS at the end of each quarter. Average prices pertaining to a quarter are calculated by collecting, at the end of the quarter, information about the actual dates of effect for all price changes that occurred during the quarter.

For this study, prices are reported for the June quarter of each year.

Prior to the September quarter 1998, the reference population sample used by the ABS to compile the CPI was restricted to households of wage and salary earners. Expansion of the population coverage at that time to include all households, drew in

social security beneficiaries and superannuants, and increased the coverage from 29 per cent to 64 per cent of all Australian private households. Within this expanded coverage, the prices collected for the CPI included a greater proportion of households that were eligible for concessions.

In compiling the CPI, price trends for the different components are combined using weights representing the relative importance of each of the components in the total expenditure of the CPI population group. The CPI is compiled using expenditure weights (ABS 1996).

The CPI is a Laspeyres index, compiled using price trends with a fixed consumption assumption. For a Laspeyres index, it is assumed that the levels of consumption are the same at the end of the period as at the beginning. The CPI is constructed as a series of short-term Laspeyres indexes, that are each chained together into one long-term index, by adjusting weights every few years to allow for changes in expenditure patterns (ABS 1996).

Some of these expenditure weight changes have been significant during the study period (see table 1.1). The changes incorporated by the ABS using chain linking, maintain the CPI as a continuous index.

Table 1.1 **Expenditure weights in the CPI**

Contribution to the CPI (All groups), per cent

CPI Expenditure category	*12th series CPI June quarter 1992*	*14th series CPI June quarter 2000*
Electricity	1.75	1.66
Gas	0.53	0.70
Other household fuel[a]	0.06	**n.r.**
Water and sewerage[b]	2.19	0.87
Urban transport fares	1.21	0.85
Telecommunications[c]	1.55	2.73

a This category was combined with gas for the 14th CPI series. **b** For the earlier 12th CPI series, water and sewerage was included in the broader category known as 'local government rates and charges'. **c** This expenditure category was known as 'Telephone services' in the 12th CPI series. **n.r.** Not relevant.

Sources: ABS (*Information paper: Introduction to the 14th series Australian Consumer Price Index*, Cat. no. 6456.0); ABS (*The Australian Consumer Price Index: Concepts, Sources and Methods, 12th Series*, Cat. no. 6461.0).

Taxes and GST

The Goods and Services Tax (GST), introduced in July 2000, was included in the nominal price series for household customers with the exception of water and

sewerage services. This tax is embodied in the CPI (All groups) index used to deflate nominal prices to real prices.

The ABS has concluded that it is impossible to systematically quantify the effects of the GST on CPI prices (ABS 2000b). Accordingly, the GST effect cannot be netted out of household price trends to obtain a 'net of GST' price series.

In contrast with household prices, the effect of the GST was generally excluded from the nominal price series for business customers, because businesses are able to claim a GST rebate on their inputs. Business prices were collected directly from utility tariff schedules, which are net of GST.

Direct effects of price trends on household expenditure

For each infrastructure service, estimates were also made of the direct impact of changes in its price over the decade on real household expenditure. Actual expenditure on the service in 2000-01 was multiplied by the difference between the change in its nominal price and the change in CPI between 1990-91 and 2000-01.

Actual household expenditure in 2000-01 was derived by taking the proportion of total household expenditure that was spent on an infrastructure service by households in the 1998-99 Household Expenditure Survey (ABS 2000a). This proportion or expenditure weight was then multiplied by total household expenditure on the service in 1998-99 and inflated to 2000-01 prices using the CPI deflator, to obtain an estimate of actual household expenditure on the service in 2000-01. For this calculation, the effects of price changes on consumption (such as reducing demand, in favour of substitute services, if prices have risen) were ignored.

Measuring the distributional impact of utility price changes

The impact of infrastructure price changes on average household expenditure in 2000-01 was estimated as the average effect in dollars per household for each household expenditure quintile. This was done for each capital city where appropriate.

Variations in price trends

Price indexes were constructed using representative baskets of consumption. The consumption baskets represent typical consumption patterns by household and

business customers. For each infrastructure industry, the reasons for selecting particular baskets are discussed in the relevant chapter of this report.

Information on the prices paid by those eligible for concessions was usually obtained from the State government department responsible for administering the concession scheme. Business price trends were obtained from published sources where possible, or from businesses using infrastructure services. For example, rail freight rates were obtained from the Wheat Board.

Changes in quality of service

Quality of service data was mostly obtained from publications issued by regulators and by the relevant utilities. The general approach was to select recognised service quality measures, for which data was available over all or much of the study period.

Returns to government in relation to price trends

Data on returns to government were drawn from the database compiled by the Productivity Commission as part of its ongoing program of monitoring the performance of GTEs.

Implicit subsidies, organisational restructuring and different approaches to the valuation of assets were examined to determine whether they had a significant impact on the return on assets. The relationship between prices and return on assets is also discussed.

1.6 Report Outline

Each of the industry chapters, beginning with electricity in chapter 2, contains a discussion of price, service quality and financial outcomes, as well as an introductory section on the history of economic reform in the relevant industry.

The infrastructure industries covered are, in order — electricity, gas, water and sewerage, urban transport, ports and rail freight and telecommunications. The format of the chapters is similar, such that each is a ‘stand alone’ analysis of that industry.

2 Electricity

Key outcomes

- In most capital cities, real metropolitan household electricity prices were lower in 2000-01 than they were in 1990-91. The exceptions to this were Adelaide, Hobart and Canberra.
- Declines in real electricity prices represent real savings on household expenditure. As a proportion of total household expenditure, the savings were most significant for those households in the lowest income bracket. Total savings made by all households across all capital cities in the last financial year approximated $70 million dollars.
- In NSW and WA (examined as case studies), declines in real household prices occurred in metropolitan and non-metropolitan areas. In NSW, the fall in real household prices was larger in non-metropolitan areas than in metropolitan areas.
- In both States, the real price change for concession households was the same as for non-concession households.
- Falls in real business prices have been larger than the declines in real household prices. Real business electricity prices in NSW and WA declined by 30 to 50 per cent.
- These was no evidence to suggest that the falls in real household and business prices in NSW and WA have come at the expense of declining quality of service or inadequate rates of return on assets.

The Australian electricity industry has undergone extensive reform since 1990-91. The reforms have included the corporatisation or privatisation of utilities and the restructuring of the industry to increase competition.

Reforms can influence the prices paid by household customers for electricity services, and the amounts that different household income classes spend on those services. Further, as tariff rates are rebalanced to be more reflective of the costs of supplying customers, observed price trends may vary between households situated in different areas, and between household and business customers.

In this chapter, trends in real prices paid by household customers for electricity services are presented for the period 1990-91 to 2000-01. The impact of these real

price trends on household expenditure for a range of income groups is also examined.

Using a case study approach, differences in price trends between metropolitan and non-metropolitan customers, between household and different-sized business customers, and between concession and non-concession customers are presented.

Quality of service measures were examined to determine whether any declines in real prices over the period have been associated with lower service quality. Finally, the financial performance of the case study utilities was examined to see if price declines have been associated with falling rates of return.

2.1 Industry reforms

Reform of Government Trading Enterprises (GTEs) generally was described in chapter 1. The major reforms in the electricity industry over the last ten years have included:

- changes to the governance structures of electricity utilities;
- the introduction of competitive neutrality measures;
- changes to the market structure; and
- reform of tariff structures.

The combination of these reforms led to reduced employment levels and more flexible work practices within the industry. Changes in costs brought about by downsizing and contracting out affects the final prices paid by customers.

The fundamental change to governance structures was to corporatise electricity utilities to make managers accountable for performance. The utilities were given clear and non-conflicting objectives so that they could operate at arms-length from government.

Competitive neutrality measures required that governments directly fund utilities for the provision of community service obligations (CSOs). Utilities were also required to make dividend and tax-equivalent payments and pay debt guarantee fees.

Market reforms

Market structure reforms had the purpose of improving the efficiency and cost-competitiveness of the electricity industry through the introduction of competitive disciplines.

The reforms primarily consisted of the separation of the contestable elements of the market — generation and retailing — from the non-contestable elements — transmission and distribution. The contestable elements were then exposed to competition.

The outcome was the introduction of a market for electrical energy, where prices are determined by demand and supply conditions, while the prices charged for the delivery of that energy across the monopoly elements of the network remained regulated.

Governments introduced competition into the supply and retailing of electrical energy in stages, starting with the largest users and progressively deregulating the prices paid by users with smaller loads.

By June 2001, the end of the study period, each State was at a different stage of deregulation. Businesses in NSW and Victoria that purchased 100 MWh or more annually have had their electricity prices determined in the National Electricity Market (NEM). The threshold in Queensland was 200 MWh, while in the ACT and SA, the threshold was 100 MWh and 160 MWh respectively.[1]

In WA, businesses that purchased 8760 MWh or more annually could choose their own retailer, while, in the NT, the threshold was 2 GWh. Tasmanian electricity retailing had not been deregulated at June 2001.

The NEM is operated as a trading pool linking generators, retail authorities and wholesale end use customers.[2] Energy is traded in a spot market, where generators bid to supply electricity at half-hourly intervals and purchasers buy the energy at the spot price.

The prices paid by customers with annual loads of less than the deregulation threshold (principally small business and household customers) remained subject to regulation by State and Territory governments or State-based independent regulators over the period.

Under arrangements established to assist in the transition to a fully competitive market, distributor–retailers purchased the proportion of their load still subject to retail price controls through vesting contracts with generators. Vesting contracts —

1 Very large business users — usually those customers taking supply at the transmission or subtransmission level of the network — often buy their supply directly from generators. The price is negotiated between the parties and settled through contracts.

2 The NEM is administered by the National Electricity Code Administrator and operated by the National Electricity Market Management Company. The National Electricity Code sets out the market rules, procedures and information systems which support them.

later replaced by hedging contracts in Victoria and the Electricity Tariff Equalisation Fund in NSW — were designed to minimise the financial risk to the distributor–retailer of fluctuating wholesale prices (Victorian Department of Treasury 1994).

With structural reform, regulation of transmission and distribution service charges was introduced to ensure non-discriminatory access to the existing network and to facilitate competition between generators. Within the NEM, the prices charged for transmission services are regulated by the Australian Competition and Consumer Commission (ACCC), while those charged by distributors for use of their distribution networks are regulated by State regulators.

The extent to which these reforms have been implemented varies among States and Territories. Structural reforms have been implemented in NSW, Victoria, Queensland and SA, and the utilities in these States now function as part of the NEM. While structural reform has also occurred in Tasmania, the utilities in this State will not trade in the NEM until the completion of BassLink.

WA and the NT are not party to the NEM because of the large distances and lack of a physical interconnection link between these jurisdictions and the eastern and southern States where the NEM functions. However, WA has introduced choice in electricity supplier for large users and provided for third party access to Western Power's transmission network under its commitments to National Competition Policy.

Tariff reforms

With the introduction of full cost recovery requirements, some restructuring of retail electricity tariffs has occurred for the purpose of realigning retail prices with the true cost of supply.

Electricity utilities are sometimes required to fulfil certain CSOs because of the essential service nature of electricity. Generally, CSOs require the utilities to supply electricity to certain customer classes at prices that are below their direct (short-run marginal) cost of supply. In order to meet the costs of these CSOs, utilities often increased prices to other customer classes above their direct (short-run marginal) cost of supply.

Electricity tariff structures are typically made up of access charges and usage charges. The access charge, which is independent of the amount of electricity used, covers the cost of connecting a customer to the electricity network and maintaining

the network. Usage charges cover the amount of electrical energy used by the customer and are accrued on a kWh basis.

In some jurisdictions, rebalancing of the relative weights given to access and usage charges within a tariff has occurred. For example, a restructure of Victorian retail tariffs in 1992 increased the access charge for households and reduced the usage charge (Department of Natural Resources and Environment, Melbourne, pers. comm., 18 September 2001).

Another reform to tariff structures has been the introduction of time-of-use tariffs. Time-of-use tariffs consist of an access charge and a usage charge that varies with the time of day. Under these tariffs, the usage charge — and less frequently the access charge — is set higher during those times of the day when demand is greatest. By charging higher prices during peak times, time-of-use tariffs are used to moderate demand peaks by encouraging customers to reduce their peak time consumption.

To a varying degree, time-of-use tariffs have an indirect effect on consumption patterns and supply decisions at any point in time. Most customers, particularly households and small businesses, do not observe the price they pay until they receive their periodic electricity bill. In the longer term, households make decisions to change their usage patterns in order to minimise costs. This has been encouraged by the wide-spread availability of off-peak hot water tariffs.

Large businesses, particularly large scale manufacturing or industrial operations, may be more aware of price changes because of the affect that electricity prices may have on their cost base.

A further reform has been the creation of independent price regulators in some States and Territories. This has subjected the tariff rates set by utilities to price or revenue controls imposed by the regulator, whereas previously, rates had been subject to the approval of the responsible Minister.

2.2 Price outcomes for metropolitan households

In constructing its capital city price series for electricity, the Australian Bureau of Statistics (ABS) develops a household price using the retail prices charged by the incumbent supplier. In most capital cities, there is only one supplier to household customers, although additional suppliers are included by the ABS if they supply a significant quantity of electricity.

The Goods and Services Tax (GST), introduced in July 2000, was included in the nominal household price series for 2000-01 because households incur the full cost of this tax.

In most capital cities, average real electricity prices paid were lower in 2000-01 than they were in 1990-91 (see figure 2.1). Real prices fell by 5 per cent in Sydney, 1 per cent in Melbourne, 7 per cent in Brisbane, 6 per cent in Perth and 2 per cent in Darwin. Between 1999-2000 and 2000-01, real prices trended upwards in all capital cities largely because of the introduction of the GST.

The fluctuations in Melbourne's real price index were caused by changes in the structure of household tariffs and retail price controls. Real prices rose in 1992-93 following a restructure of domestic tariff rates that increased access charges, reduced usage charges and had the impact of increasing average prices. Domestic prices were then frozen between July 1993 and 30 June 1996, representing a reduction in real terms of around 9 per cent relative to 1992-93 (Department of Natural Resources and Environment, Melbourne, pers. comm., 18 September 2001).

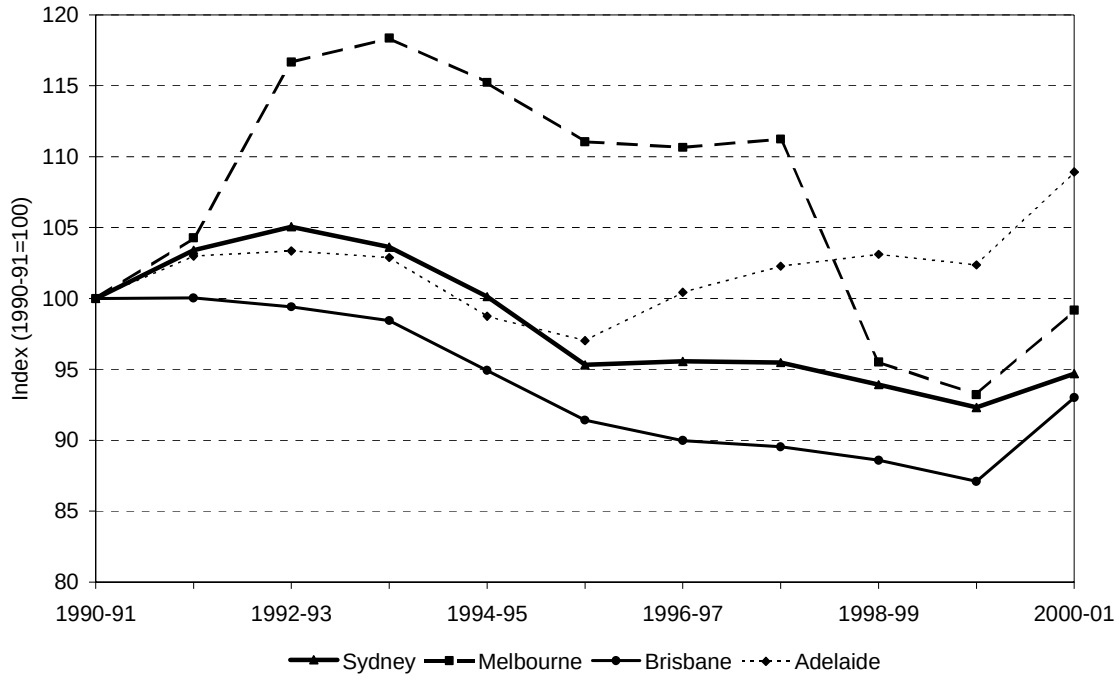
The sudden decrease in the Melbourne electricity price index in 1998-99 was a result of the introduction of the Winter Power Bonus[3] and the Winter Energy Concession[4] (Australian Bureaus of Statistics, Melbourne, pers. comm., 18 September 2001).

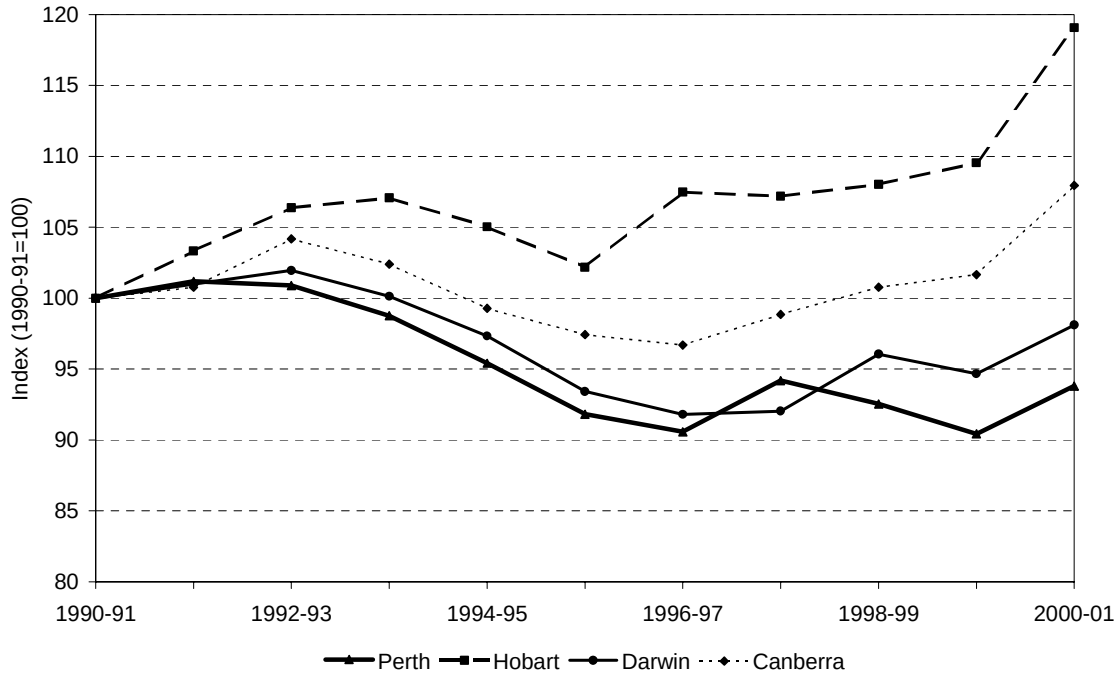
Real prices increased by around 9 per cent in Adelaide, 19 per cent in Hobart and 8 per cent in Canberra. In Hobart and Canberra, real household prices increased due to a rebalancing of tariff rates between household and business customers (Government Prices Oversight Commission, Hobart, pers. comm., 26 September 2001 and ACT Energy and Water Charges Commission 1997).

3 The Winter Power Bonus was introduced in 1998 and applied in each year between 1998-99 and 2000-01. The effect of its introduction was that a fall of $60 was recorded between the June and September quarters of 1998 in the annual cost of electricity for Melbourne households. Its removal in the September quarter of 2001 will result in a rise of $60 between the June and September quarters of 2001.

4 The Winter Energy Concession has applied in Victoria for a number of years. However, it was not until the September quarter of 1998 that its impact was measured in the CPI. This corresponded with the introduction of the 13th series CPI when the population coverage was expanded beyond just wage and salary earning households to include all private households. This meant that concession card holders were now included in the CPI target population and the effects of the Winter Energy Concession had to be factored into the CPI.

Figure 2.1 **Real electricity price trends — metropolitan households**
1990-91 to 2000-01





Note The real price index for each capital city was obtained by rebasing the CPI (electricity) price indexes to a base year of 1990-91 and then deflating the rebased indexes by the rebased CPI (All groups) price index for each capital city. The CPI (electricity) price indexes for 2000-01 include the Goods and Services Tax.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0).

Real prices rose in Adelaide between 1995-96 and 1998-99 for a number of reasons. Contributing factors were a rebalancing of tariff structures between access and usage, and changes in the price escalation methodologies resulting in overestimates of the consumer price index (CPI) upon which household price increases were based. In 1999-2000, a below CPI price increase resulted in a decline in the real price index (Department of Treasury and Finance, Adelaide, pers. comm., 4 October 2001).

Implications for household expenditure

Electricity prices have a direct effect on household expenditure. They also have an indirect effect when changes in electricity prices paid by businesses, are passed on to customers in the form of higher or lower prices for final products and services. These indirect effects will be examined in a forthcoming Productivity Commission research study.

The direct impact of changes in the price of electricity over the decade on real household expenditure in 2000-01, was estimated. This was done by multiplying the actual household expenditure on electricity in 2000-01, by the difference between the movement in its price over the ten years to 2000-01 and the movement in the CPI over the same ten year period. For this calculation, the impact of price changes on consumption was ignored.

In 2000-01, total expenditure by capital city households on electricity was around $3.3 billion.[5]

Electricity price trends were such that prices generally declined faster than the CPI (All groups) in most capital cities. Accordingly, household expenditure decreased relative to the expenditure that would have occurred, if prices had changed by the CPI (All groups) (see table 2.1).

The expenditure changes, arising from price changes over the previous decade and measured in dollars per year per household, were largest for households in the highest income quintile (see table 2.1). However, the changes were more significant, when measured as a percentage of household expenditure per year, for those households in the lowest income quintile (see table 2.2).

[5] Actual household expenditure in 2000-01 was derived by taking the proportion of total household expenditure that was spent on electricity in the 1998-99 Household Expenditure Survey (ABS 2000a). The proportion or expenditure weight from the survey was then multiplied by total household expenditure in 1998-99 and inflated to 2000-01 prices using the CPI deflator, to obtain an estimate of actual household expenditure on electricity in 2000-01.

Table 2.1 **Real changes to household electricity expenditure arising from price changes over the previous decade, by income quintile**

$ per capital city household, 2000-01

Income quintile	*Sydney*	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*	*Canberra*
Lowest 20%	-30.21	-4.42	-35.72	43.57	-29.39	125.69	-16.72	32.75
Second	-39.10	-5.27	-39.69	50.71	-41.23	148.39	-17.56	51.79
Third	-41.32	-5.71	-44.96	68.97	-43.38	163.01	-19.84	47.18
Fourth	-45.19	-6.16	-54.70	72.52	-48.13	187.42	-23.32	59.31
Highest 20%	-53.57	-6.76	-58.62	90.46	-63.08	209.58	-28.09	82.26
All households	-43.29	-5.78	-46.60	63.30	-45.01	162.83	-23.00	60.19

Note A negative sign means that households incurred a real decrease in electricity expenditure because real prices declined over the period.

Source: PC estimates based on ABS (*Household Expenditure Survey Australia 1998-99*, Cat. no. 6535.0).

Table 2.2 **Real changes to household electricity expenditure arising from price changes over the previous decade, as a proportion of total expenditure**

Per cent per capital city household, 2000-01

Income quintile	*Sydney*	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*	*Canberra*
Lowest 20%	-0.15	-0.02	-0.20	0.27	-0.15	0.68	-0.06	0.21
Second	-0.13	-0.02	-0.15	0.21	-0.15	0.57	-0.06	0.19
Third	-0.11	-0.02	-0.12	0.20	-0.11	0.48	-0.05	0.12
Fourth	-0.09	-0.01	-0.12	0.16	-0.10	0.40	-0.05	0.12
Highest 20%	-0.07	-0.01	-0.09	0.14	-0.10	0.31	-0.04	0.11
All households	-0.09	-0.01	-0.12	0.18	-0.12	0.45	-0.05	0.12

Note A negative sign means that households incurred a real decrease in electricity expenditure because real prices declined over the period.

Source: PC estimates based on ABS (*Household Expenditure Survey Australia 1998-99*, Cat. no. 6535.0).

The real decrease in household electricity expenditure across all capitals was approximately $70 million in 2000-01 (see table 2.3). The largest decrease was for households in Sydney (approximately $65 million per year) and the largest increase was for households in Adelaide (approximately $27 million per year).

Table 2.3 **Total change to household electricity expenditure arising from price changes over the previous decade**

Capital city households, 2000-01

	Households[a]	*Change per household*	*Total change*
	No.	$	$
Sydney	1 507 189	-43.29	-65 239 918
Melbourne	1 330 406	-5.78	-7 692 005
Brisbane	549 387	-46.60	-25 602 724
Adelaide	436 065	63.30	27 603 341
Perth	456 010	-45.01	-20 524 973
Hobart	89 751	162.83	14 614 495
Darwin	38 530	-23.00	-886 217
Canberra	125 561	60.19	7 557 066
Total	**4 532 899**		**-70 170 935**

Note A negative sign means that households incurred a real decrease on electricity expenditure because real prices declined over the period. **a** Household numbers in each capital city were calculated by multiplying the proportion of households in each capital city as reported in ABS (1996) by the total number of capital city households reported in ABS (2000a).

Sources: ABS (*The Australian Consumer Price Index-Concepts, Sources and Methods*, Cat. no. 6461.0); ABS (*Household Expenditure Survey Australia 1998-99*, Cat. no. 6535.0).

2.3 Price variations

Selected utilities in NSW and WA were used as case studies to examine whether prices have varied according to customer location and eligibility for concessions, and also how business prices have trended over the period. Specifically, the utilities included were EnergyAustralia and Great Southern Energy in NSW, and Western Power in WA.[6]

The different environments in which these three utilities operate, mean that price trends over the period are not directly comparable between utilities. There are a range of cost factors over which utilities have no control, for example the number of customers per kilometre of line and the density of load, that can limit reductions in prices relative to other utilities (Sayers and Shields 2001).

6 EnergyAustralia and Great Southern Energy were formed in 1995 following the amalgamation of 25 NSW distribution businesses into 6 distribution businesses. Orion Energy and Sydney Electricity were amalgamated to form EnergyAustralia, and Great Southern Energy evolved from an amalgamation of a number of non-metropolitan businesses, including Southern Riverina. In order to present prices over a ten year period, Sydney Electricity's prices and Southern Riverina's prices were used for the period prior to 1995. In July 2001, Great Southern Energy amalgamated with NorthPower and Advance Energy to form Country Energy. The new entity's prices were not included in the calculation of the price index as it falls outside the study period.

Location

Real household price indexes for metropolitan and non-metropolitan areas of NSW and WA were constructed using a representative household consumption bundle for each jurisdiction. The price indexes for NSW were constructed using an average annual household consumption of 7048 kWh, while an annual average household consumption of 4938 kWh was used for WA.

These consumption bundles are the geometric mean of the level of household consumption in NSW and WA near the beginning and end of the study period.[7] In NSW, average annual household consumption rose from 6900 kWh in 1991-92 to 7200 kWh in 2000-01, while, in WA, consumption increased from 4600 kWh in 1991-92 to 5300 kWh in 2000-01 (see figure 2.2).

Figure 2.2 **Average annual household electricity consumption**
1991-92 to 1999-2000 (kWh)

Data sources: ESAA (2001 and previous issues).

Real household prices in metropolitan and non-metropolitan NSW have fallen over the period (see figure 2.3).

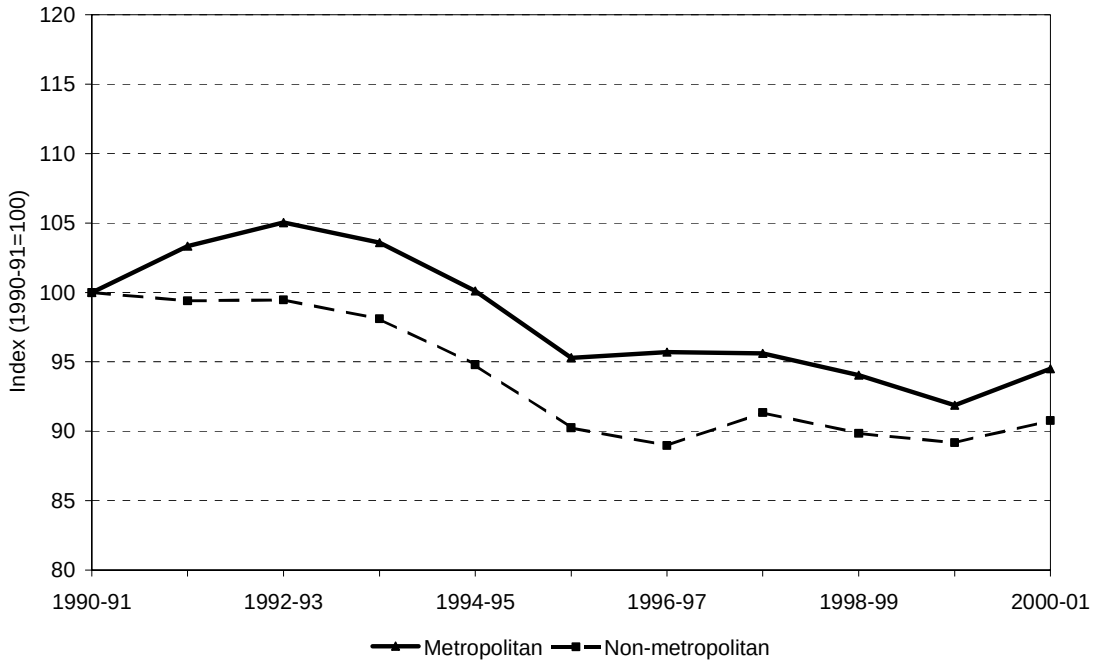
The trend in WA's real household prices is the same as that observed for Perth using the ABS CPI series (see figure 2.1). The concordance between the two series

7 The geometric mean is known as the Fisher ratio. It is calculated by taking the square root of the product of the consumption levels in 1991-92 and 2000-01. Data on average annual residential electricity consumption in 1990-91 was unavailable.

arises for two reasons. First, Western Power is the only supplier of electricity to WA household customers. Therefore, the ABS electricity CPI series will replicate variations in Western Power's household tariffs. Second, there is no locational variation in household prices in WA as household customers pay uniform tariff rates.

Figure 2.3 **Real electricity price trends — households, selected NSW retailers**

1990-91 to 2000-01



Note Real price indexes were calculated using the standard domestic tariff applicable to the customer's location upon a total annual consumption of 7048 kWh. Prices were deflated by the CPI (All groups) for Sydney. The nominal price series for 2000-01 include the Goods and Services Tax. EnergyAustralia and Sydney Electricity's tariff schedules were used to calculate metropolitan household prices, while non-metropolitan prices were calculated using Great Southern Energy, Energy South and Southern Riverina's urban household tariff schedules.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Department of Energy and Utilities NSW, pers. comm., 2 October, 2001; ESAA (2000 and previous issues); Great Southern Energy, Sydney, pers. comm., 2 October 2001.

Concessions

Pensioner concessions account for most of the electricity concessions available in NSW and WA in terms of the amount of electricity supplied. Other concessions, such as life support rebates, are available, but are not considered here because of the small amount of electricity consumption they represent.

In NSW and WA, pensioners receive a dollar amount as a rebate on their total electricity supply bill. In both States, the adjustment to this dollar amount over time has been such that the real price change for pensioners is the same as for non-concession households.

Business prices

Real business price changes are presented for a range of different business consumption patterns representing small, medium and large businesses. Five business bundles with varying annual consumption were used — one for small business, three for medium business and one for large business (see table 2.4). The bundles are a subset of those used by the Electricity Supply Association of Australia Limited (ESAA) in the calculation of its price comparisons.

The GST was excluded from the nominal price series for business customers because businesses are able to claim a GST rebate on their inputs. However, GST is included in the CPI (All groups) index used to deflate nominal prices to real prices.

Business types represented by bundle SB1 include small retailers and councils. Bundles MB1 and MB2 are representative of supermarket chains, hospitals, small and large food processors and universities. While MB3 and LB1 are likely to be representative of medium and large scale industrial operations, such as cement manufacturers and engineering firms.

Table 2.4 **Business consumption bundles**

Bundle	*Annual consumption*	*Off-peak usage*	*Load factor*	*Peak demand*
	MWh	Per cent	Per cent	kW
SB1	526	46.5	60	100
MB1	1314	46.5	60	250
MB2	5256	46.5	60	1000
MB3	13 140	46.5	60	2500
LB1	52 560	46.5	60	10 000

Source: ESAA (2000).

In NSW, businesses with consumption patterns similar to MB1, MB2, MB3 and LB1 became contestable in 1996-97, while businesses represented by SB1 became

contestable in 2000-01.[8] In WA, only bundles LB1 and MB3 became contestable over the period at 1 July 1998 and at 1 January 2000 respectively.

For each bundle, the tariff that minimised the cost of the bundle to the customer was used to determine average prices paid. Following the introduction of contestability, indicative contestable retail prices as reported by the ESAA in its publication *Electricity Prices in Australia* (ESAA 2000 and previous issues) were used for each of the bundles. These contestable prices were used where they were lower than the average price calculated using the tariff schedule that the customer would have remained on had contestability not been introduced. Average prices were converted into a price index and deflated by the ABS CPI (All groups) price index for Sydney and Perth.

Contestable prices comprise network charges and energy charges. The ESAA uses the tariff schedule for each utility to calculate the network charge component, whereas the energy charge is estimated.[9]

The ESAA estimates the energy charge for different distribution regions based upon specific assumptions about load profile, consumption levels, pool prices and retail margins. Consequently, the prices presented may not necessarily reflect the actual prices paid in the market. The retail price paid by a contestable customer is a result of contractual negotiations and prices can vary significantly between customers, depending on the terms and conditions of the contract.

The assumptions made in regard to a customer's load profile and consumption level are those that define the parameters of the consumption bundles used (see table 2.4). The pool price used by the ESAA is the 12 month average pool price for each State in each financial year, while a 5 per cent retail margin on the overall charge is assumed.

A price trend for LB1 in non-metropolitan areas of NSW could not be constructed. This was because Great Southern Energy does not publish tariff rates, and nor does the ESAA publish contestable prices, for businesses the size of LB1 — no such large businesses operated within Great Southern Energy's service territory over the study period.

8 Contestable means that customers have a choice over which electricity supplier they use, or alternatively they may purchase their supply directly from a generator. In NSW, customers also have the option of purchasing their supply on the NEM spot market.

9 Within a utility's service territory, the total cost of using the network may vary with customer size as low voltage customers (typically small businesses) use more of the network than high voltage (medium businesses) or subtransmission customers (large business).

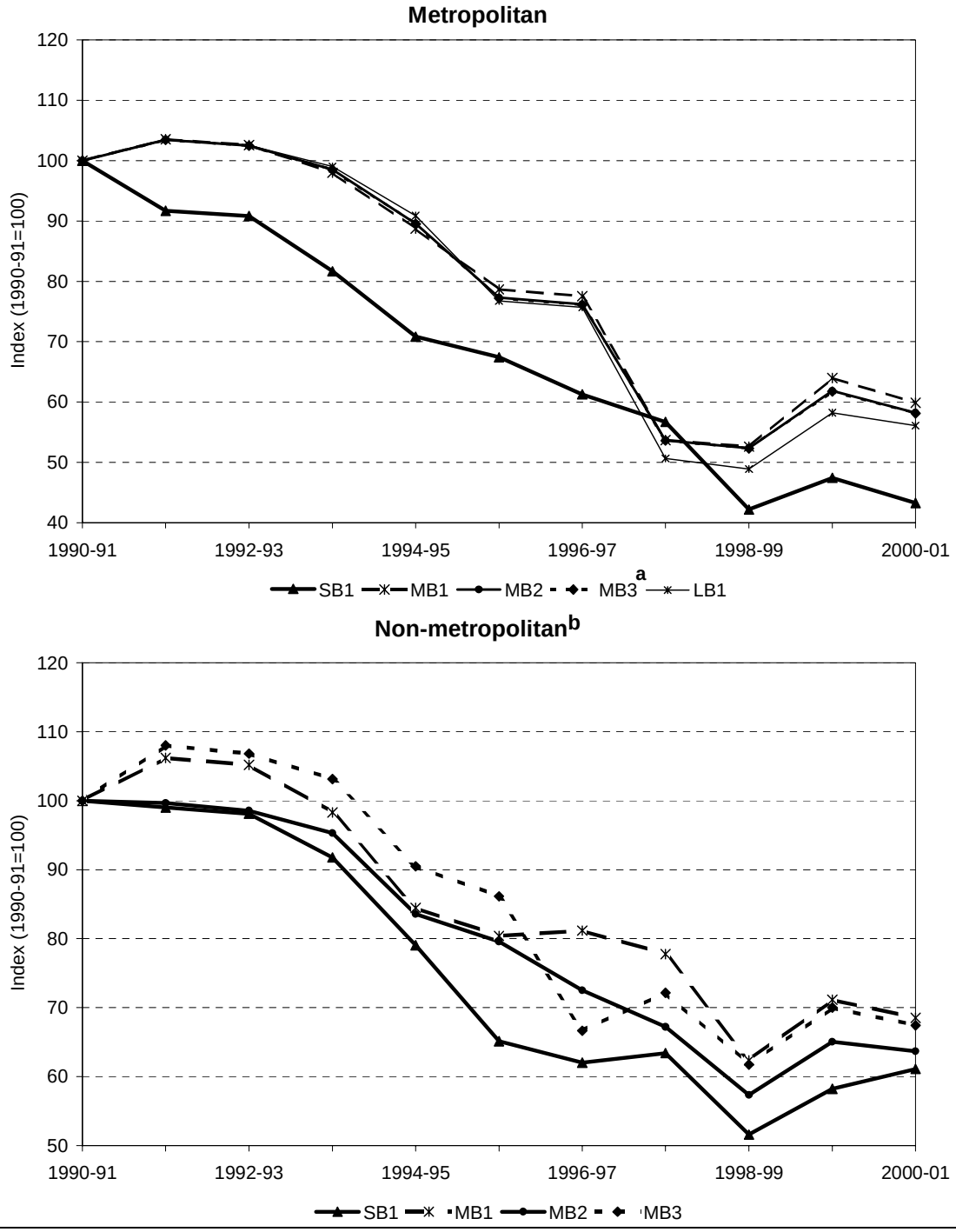
Further, the ESAA did not publish indicative contestable prices for Western Power. The average price for MB3 in 2000-01 was calculated using the existing tariff, and therefore may be the maximum price that a contestable customer would pay. The average price paid by businesses characterised by LB1 in 1999-2000 and 2000-01 could not be calculated as the associated tariff had been abolished.

The real prices paid by small, medium and large businesses in NSW have fallen by between 30 and 60 per cent in metropolitan and non-metropolitan areas between 1990-91 and 2000-01 (see figure 2.4).

Real prices declined markedly in 1997-98 because retailers aggressively marketed themselves in this year, in preparation for the start of the NEM. Many of these retailers offered unsustainably low prices to their customers in order to establish themselves in the market. The increase in real prices in the year 1999-2000 followed moves by NSW retailers to increase prices to more sustainable levels (EnergyAustralia, Sydney, pers. comm., 25 September 2001).

In WA, real business prices fell by between 30 and 50 per cent over the period (see figure 2.5). The decline in real prices for MB3 may be understated as the average price paid in 2000-01 was calculated using existing tariffs rather than indicative contestable prices.

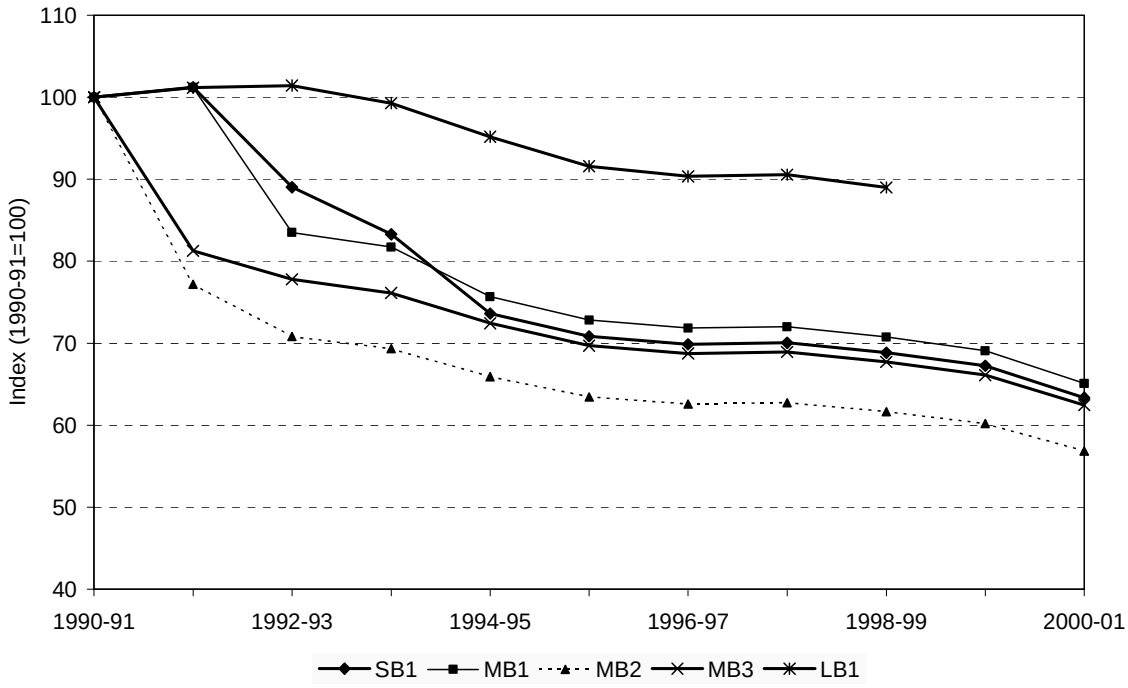
Figure 2.4 **Real electricity price trends — business, selected NSW retailers**
1990-91 to 2000-01



Note Price indexes were calculated using the tariff that minimised the cost of the representative business bundles. The nominal price series for 2000-01 exclude the Goods and Services Tax. Prices include the NSW Distribution Levy where applicable. **a** The trend line for MB3 is not visible as it follows the same trend as MB2. **b** There is no price trend for LB1 as there are no customers of this size in Great Southern Energy's service territory. Consequently, Great Southern Energy does not publish tariffs for customers of this size.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Department of Energy and Utilities NSW, pers. comm., 2 October, 2001; ESAA (2000 and previous issues); Great Southern Energy, Sydney, pers. comm., 2 October 2001.

Figure 2.5 **Real electricity price trends — business, Western Power (WA)**
1990-91 to 2000-01



Note Price indexes were calculated using the tariff that minimised the cost of the bundle. Retail prices for businesses of the size of LB1 became contestable in 1999-2000, while MB3 became contestable in 2000-01. Indicative contestable prices for both bundles were unavailable. The average price for MB3 in 2000-01 was calculated using the existing tariff, while the average price paid by businesses characterised by LB1 in 1999-2000 and 2000-01 could not be calculated as the associated tariff had been abolished. The nominal price series for 2000-01 exclude the Goods and Services Tax.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0).; Western Power, Perth, pers. comm., 27 August 2001.

Estimating the effect of price changes on business costs

As with households, trends in real electricity prices indicate whether expenditure on electricity as a business input cost is greater or less than it would have been if electricity prices had increased at the same rate as general inflation.

Trends in the price of electricity purchased by businesses have been such that electricity prices have declined in nominal terms in most jurisdictions, with an even greater decline in real terms.

An approximation of the real change in business costs in 2000-01 was derived for the case study utilities (see box 2.1). For this calculation, the impact of price changes on consumption of port authority services was ignored.

Box 2.1 **Estimating the gains to business of electricity price changes**

Calculating the change in business costs is equivalent to calculating the change in electricity revenues earnt from the utilities' business customers.

An approximation of the real change in business costs was obtained by multiplying current utility revenues from business customers by the ratio of the CPI (All groups) index number and the real price index number for electricity in the relevant capital city.

There are a number of simplifications in the calculations, such as overlooking the effects of changes in demand. Therefore, the estimate is indicative only of the general magnitude of the change in business costs that would have occurred if electricity prices rose not as they did, but by a rate equal to the CPI (All groups).[a]

The utilities take different approaches to identifying their revenues from business and non-business customers. Western Power supplied the Commission with business revenue figures for 1999-2000. For EnergyAustralia and Great Southern Energy however, estimates of total business revenues were derived as outlined below (these estimates were also for 1999-2000 — the latest year for which some of the necessary data were available).

In 1999-2000, total sales revenue (TSR) included revenues earned from franchised customers (Rf) — residents and small businesses — and those earned from contestable customers (Rc) — medium and large businesses. Hence:

$$TSR = Rf + Rc$$

Rc included revenue earned from the sale of electrical energy, the sale of network services, and the collection of the NSW Distribution Levy.[b,c]

To calculate total business revenue (TBR), the revenue earned from franchised customers, as reported by the New South Wales Independent Pricing and Regulatory Tribunal (IPART), was deducted from total sales revenue to derive an estimate of the total revenue earned from contestable customers:

$$Rc = TSR - Rf$$

Only business customers were contestable in 1999-2000, consequently, it is assumed that total contestable revenue comprises only that revenue earned from business.

IPART also published revenue figures for urban and rural franchised businesses (Rfb). These amounts were added to the revenues from contestable customers to give a combined total business revenue (TBR) figure. Hence:

$$TBR = Rc + Rfb$$

Total business revenue was then multiplied by the difference between the price index number for each of the four business consumption bundles and the CPI (All groups) Groups index number in 1999-2000 and an unweighted average taken.

[a] This calculated change in expenditure, is predicated on the assumption that consumption would be the same for prices equal to the CPI (All groups). [b] Contestable customers are able to choose who they purchase their electricity from. The electricity prices paid by contestable customers are determined as a result of negotiation with their supplier. [c] The NSW Distribution Levy is paid by the six State-owned licensed distributors to protect the State-owned generators from losses resulting from any substantial falls in electricity prices.

In NSW, the business revenues earned by the two case study utilities in 1999-2000 would have been approximately $1 billion higher if business prices, rather than falling, had risen in line with inflation. It appears that businesses supplied by EnergyAustralia accrued most of this saving (approximately $800 million) (PC estimate).

In WA, the decline in business costs approximated $550 million (PC estimate).

For the NSW utilities, the preceding estimates of business cost reductions in 1999-2000 suggest that costs were around 55 per cent lower than if prices had risen at the general inflation rate. In WA, costs were around 40 per cent lower for Western Power in the same year.

There was insufficient data to estimate how the reductions in business costs were distributed across different-sized businesses.

2.4 Service quality

Quality of service was examined to see if price trends might be explained by changes in the quality and reliability of services. Lower prices can be achieved by lowering expenditure below that required to maintain service standards. However, lower service standards may take some time to manifest themselves.

Poor quality of service may impose costs on customers as it can result in lost production or damaged equipment. The majority of supply reliability problems are associated with the distribution network. Statistics indicate that over 85 per cent of supply interruptions occur because of distribution system outages (Sanghvi 1990).

Quality of service measures tend to focus upon the reliability of service — that is, the ability of a distribution network to deliver electric power to all points of consumption. Measures of the reliability of distribution services are only available on the frequency and duration of power interruptions.

The following indexes are the most commonly used for reliability measurement:

- *System Average Interruption Duration Index (SAIDI)* — the average duration a customer is without power in a year, expressed in minutes.
- *System Average Interruption Frequency Index (SAIFI)* — indicates the average number of interruptions that customers experience in a year.
- *Customer Average Interruption Duration Index (CAIDI)* — the average duration of outage for customers who experience an interruption.

The SAIDI, SAIFI and CAIDI values for the case study utilities in NSW and WA indicate that there has been no marked decline in service quality over the period (see figures 2.6 and 2.7). This suggests that for these utilities the declines in real electricity prices over the period have not been at the expense of quality of service.

That said, there may be a lag before discernible declines in quality of service become apparent. Quality of service problems sometimes only begin to manifest themselves as assets age and poor maintenance leads to deterioration in these assets. Consequently, investments in the maintenance and upgrading of supply systems must be made to maintain, or improve upon, existing quality of service levels.

The values of SAIDI, SAIFI and CAIDI for the three case study utilities fluctuated from year to year. Reliability, and thus the values of SAIDI, SAIFI and CAIDI, are affected by factors, such as the weather and motor vehicle accidents, that are intermittent and beyond the control of the utilities.

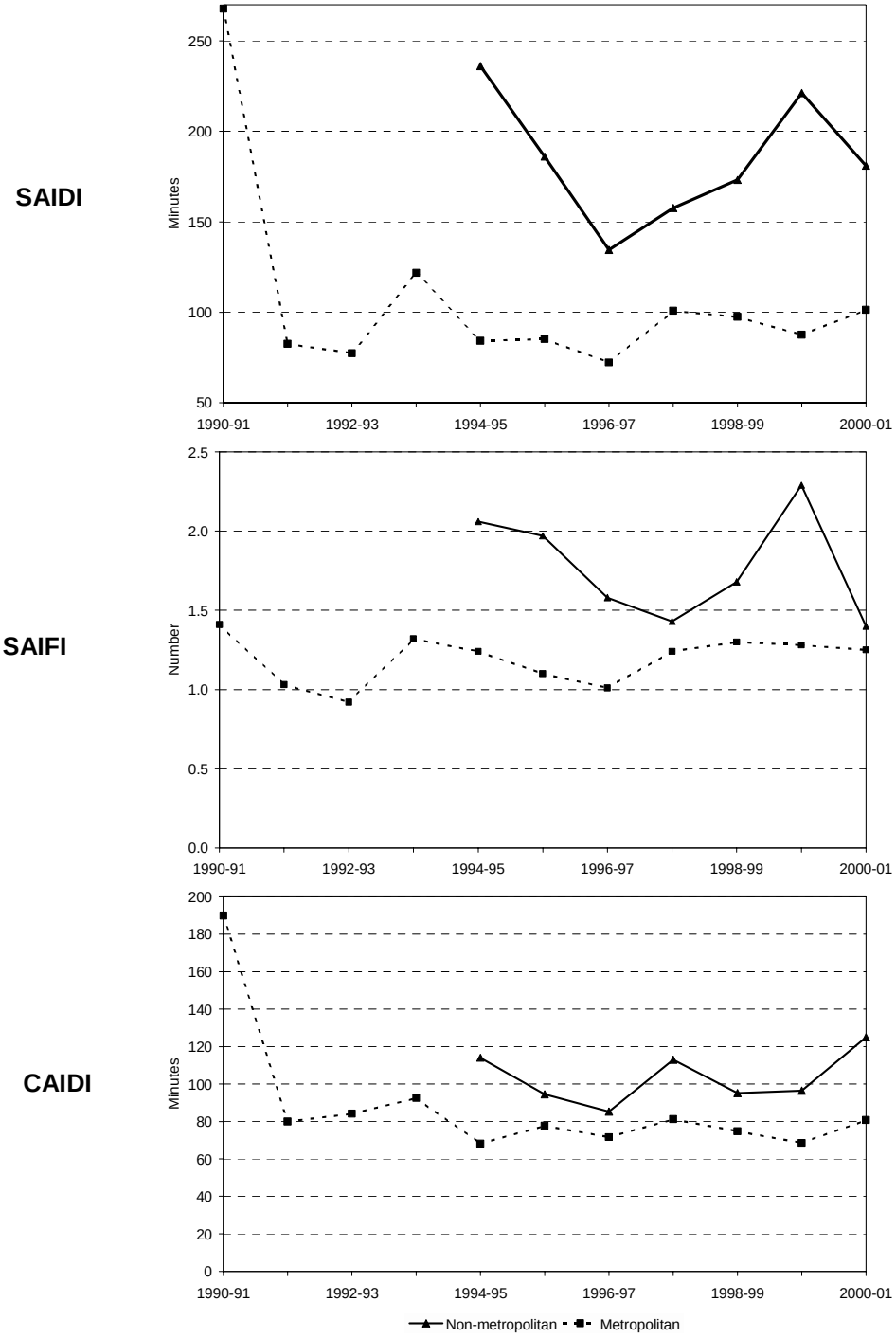
To some extent, utilities can control the average duration of any particular outage (CAIDI) as it partly depends on a utility's supply restoration procedures. However, they do not possess the same degree of control over the frequency of outages (SAIFI).

In NSW, the values of SAIDI, SAIFI and CAIDI were higher in non-metropolitan areas than in metropolitan areas. The frequency of outages is usually higher in non-metropolitan areas because longer lengths of above-ground cabling is often used. This increases the risk that motor vehicle accidents or severe weather conditions will damage power lines.

Further, the duration of outages may be longer because it takes a longer period of time to locate faults that occur in the network. On the other hand, outage duration times can also be lengthened by the understaffing of maintenance services, reducing the response times of maintenance crew.

For these reasons, it is expected that the values for SAIDI, SAIFI and CAIDI would also vary between the metropolitan and non-metropolitan areas of Western Power's supply areas. However, only one value for each measure is published, disguising any locational variation.

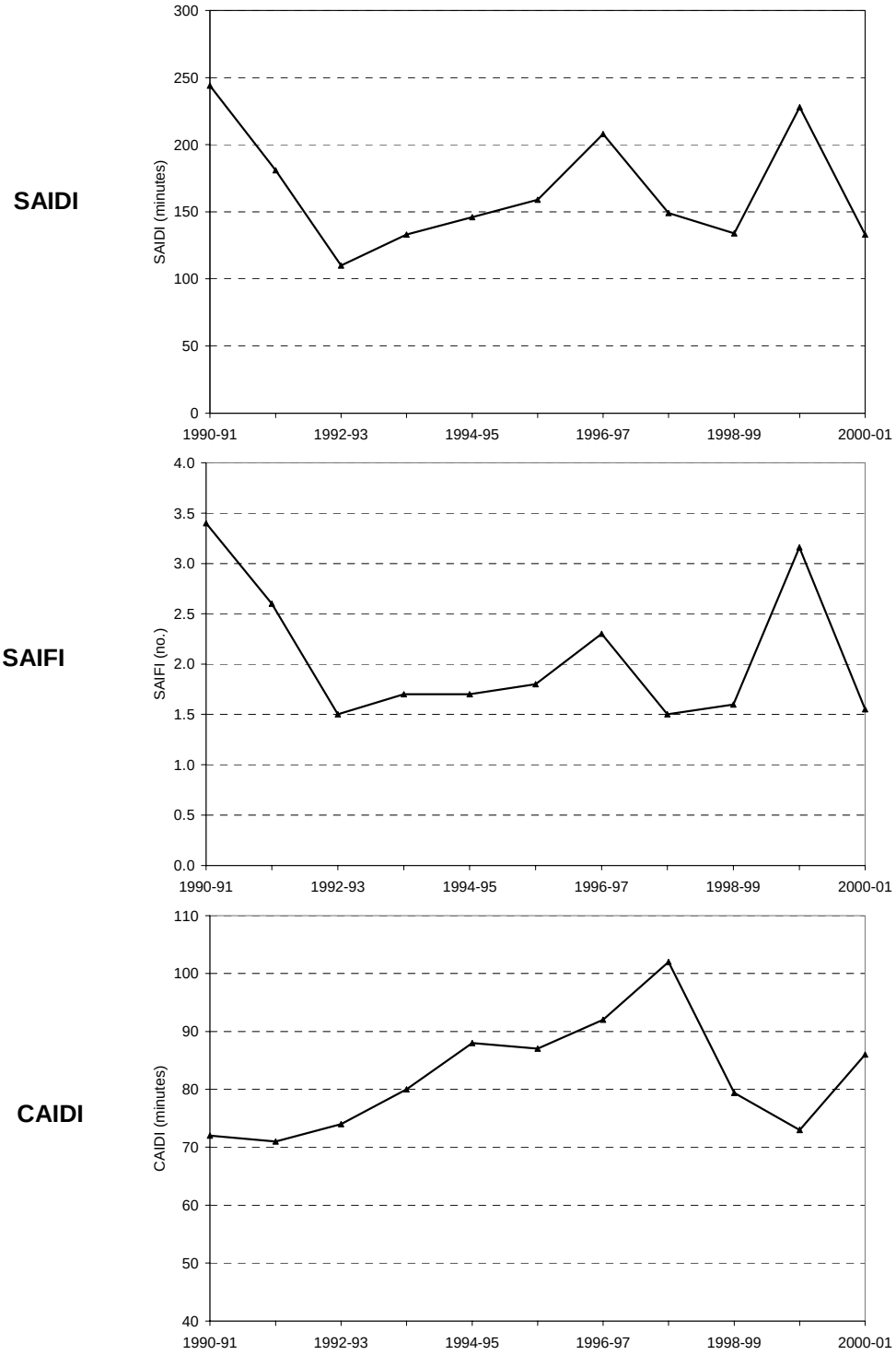
Figure 2.6 **Quality of service measures — selected NSW retailers**
1990-91 to 2000-01



Note SAIDI is the total number of customers affected, multiplied by duration of outage, divided by total number of customers served. SAIFI is the number of customers interrupted, multiplied by the number of interruptions, divided by the total number of customers served. CAIDI is the sum of customer interruption duration, divided by total number of customers interrupted. The indexes exclude interruptions caused by storms. Figures were unavailable for the Southern Riverina district. Consequently, data for non-metropolitan areas prior to 1994-95 were unavailable.

Data sources: EnergyAustralia, Sydney, pers. comm., 7 September 2001; Great Southern Energy (2001 and previous issues).

Figure 2.7 **Quality of service measures — Western Power (WA)**
1990-91 to 2000-01



Note SAIDI is the total number of customers affected, multiplied by duration of outage, divided by total number of customers served. SAIFI is the number of customers interrupted, multiplied by the number of interruptions, divided by the total number of customers served. CAIDI is the sum of customer interruption duration, divided by total number of customers interrupted. The indexes exclude interruptions caused by storms.

Data sources: Western Power (2001 and previous issues).

2.5 Shareholder outcomes

The financial performance of the case study utilities was examined to provide information on the relationship between price trends and financial outcomes, such as the return on assets.

Low prices relative to costs may not achieve a satisfactory return on assets, nor provide sufficient revenue to maintain and replace long-lived infrastructure assets. If services are to be maintained, the community, as owners of the utility, will have to provide financial support in the form of subsidies. Further, low prices may affect the viability of the business and possibly expose the community to financial risks.

The data used in calculating the shareholder outcomes presented in this section were generally taken from two sources:

- Steering Committee on National Performance Monitoring of Government Trading Enterprises; and
- Productivity Commission reports on Financial Performance of Government Trading Enterprises.

There may be inconsistencies between these two data sets and the information published in the annual reports of electricity utilities. These inconsistencies arise because of definitional differences.

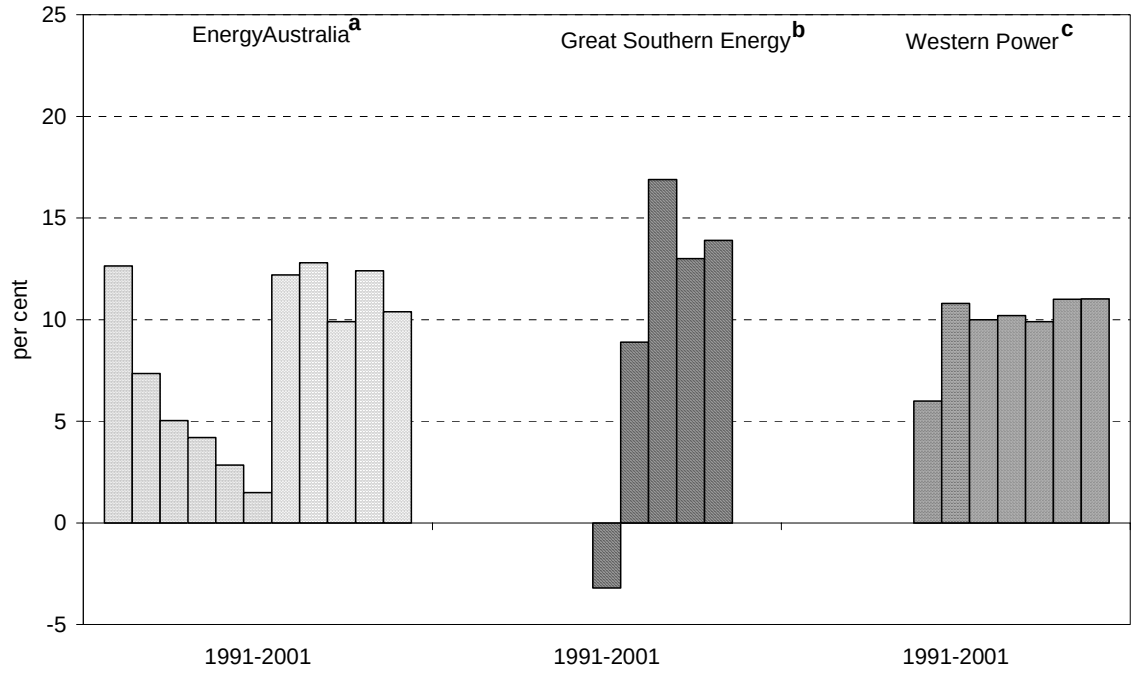
In addition, there have been changes in accounting policies over the study period. In particular, there were changes in how contributed assets were recognised in financial statements.

Profitability

EnergyAustralia, Great Southern Energy and Western Power have earned a return on assets of around 10 per cent since the mid-1990s (see figure 2.8). This suggests that declining real prices have not come at the expense of returns on government assets.

Comparisons of performance over time that are based on indicators that include an estimate of asset values, have to be interpreted with care. Differences in asset valuation procedures and changes in the size of the asset base can affect the return on assets. Over the study period, there have been significant changes in asset values as a result of asset transfers, revaluations and changes in asset valuation methodologies.

Figure 2.8 **Return on assets — selected NSW retailers and Western Power (WA)**
1990-91 to 2000-01



Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. **a** Data for EnergyAustralia prior to the year 1994-95 were only an estimate of the returns that EnergyAustralia may have earned had it been in existence. The figures were calculated using the earnings and total assets values of Sydney Electricity and Shortland/Orion Energy. **b** An estimate of returns to assets could not be made for Great Southern Energy in the years prior to 1995-96 as data for its predecessor organisations were unavailable. Data for the year 2000-01 were unavailable. **c** Returns on assets prior to 1994-95 were unavailable because SECWA, Western Power's predecessor organisation, did not publish separate data for its electricity and gas services.

Data sources: EnergyAustralia (2001); PC (2000; 2001a); SCNPMGTE (1998 and previous issues); Western Power (2001).

Payments to government

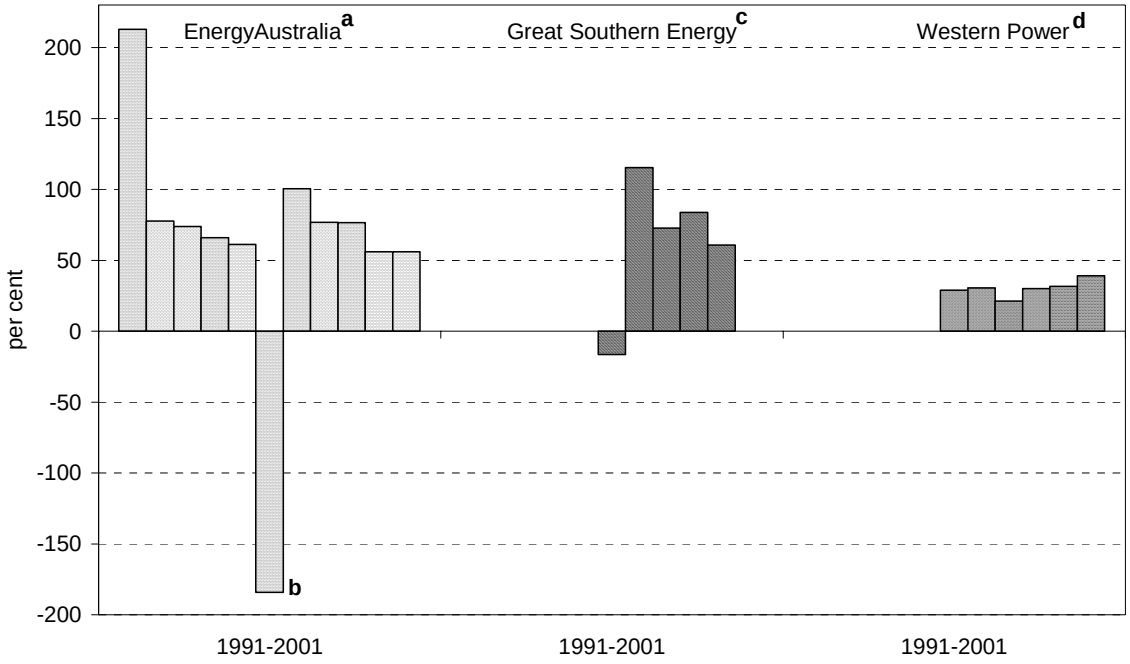
Publicly-owned electricity utilities are often required to return some of their earnings to their owner-governments in the form of dividend payments. This is justified on competitive neutrality and cost recovery grounds.

Where a utility is not required to pay dividends, it has proportionately more funds available for re-investment into its business, either for the development of new services or the improvement of existing ones. Further, a utility need not rely on debt-financing to the extent that its rivals must, and thus incurs lower overall operating costs.

The case study utilities have been required to pay dividends since at least 1995-96 (see figures 2.9 and 2.10). In most years, the dividend payout ratios of the three utilities examined have corresponded with the payout rates of the private sector utility firms. In 1999-2000, the dividend payout ratios of private sector utility firms averaged around 47 per cent, and ranged between around 27 and 56 per cent (PC 2001a).

Figure 2.9 **Dividend payout ratio — selected NSW retailers and Western Power (WA)**

1990-91 to 2000-01



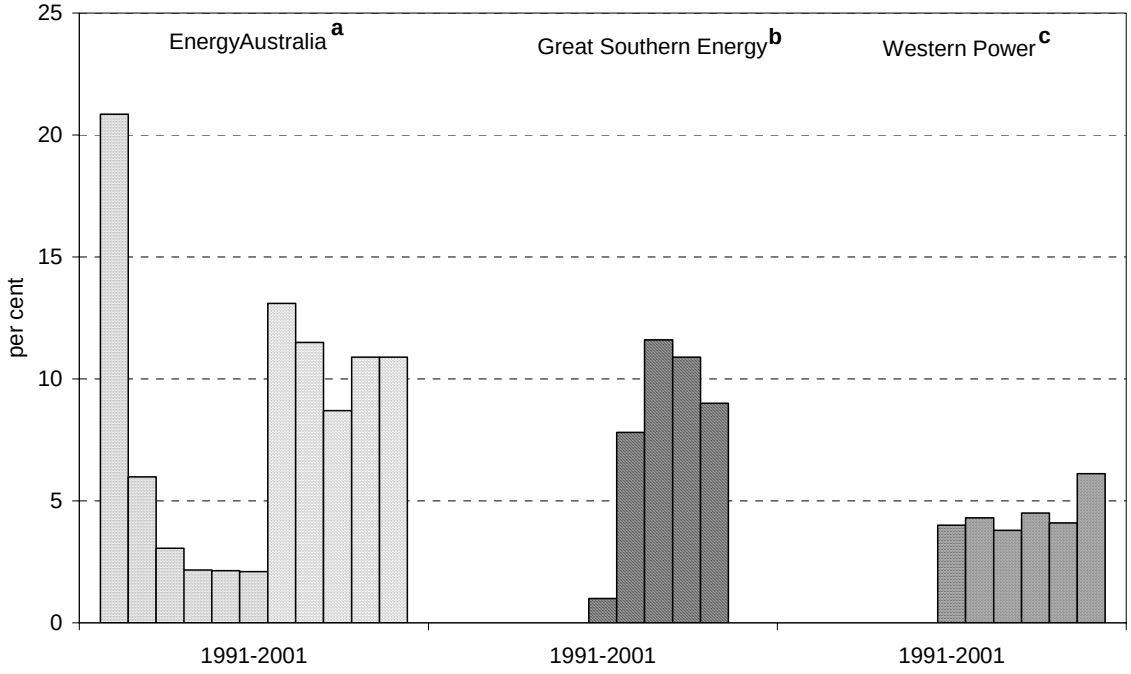
Note Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. **a** Data for EnergyAustralia prior to the year 1994-95 were only an estimate of the returns that EnergyAustralia may have earned had it been in existence. The figures were calculated using the earnings and total asset values of Sydney Electricity and Shortland/Orion Energy. **b** EnergyAustralia incurred a large abnormal expense in 1995-96 associated with the restructuring of the NSW distribution businesses. Abnormal expenses are included in the calculation of dividend payout ratios, creating a large negative dividend payout ratio in 1995-96. **c** Estimates of dividend payout ratios for Great Southern Energy in the years prior to 1995-96 could not be made as data for its predecessor organisations were unavailable. **d** Data prior to 1994-95 were unavailable because SECWA, Western Power's predecessor organisation, did not publish separate data for its electricity and gas services.

Data sources: EnergyAustralia (2001); PC (2000; 2001a); SCNPMGTE (1998 and previous issues); Western Power (2001).

The level of dividends paid — broadly in the 5 to 10 per cent range since 1995-96 — appears similar to that of private companies operating in the utilities market. In 1999-2000, for example, the dividend to equity ratio of private sector utility firms

averaged around 5 per cent, but ranged between around 2 and 10 per cent (PC 2001a).

Figure 2.10 **Dividend to equity ratio — selected NSW retailers and Western Power (WA)**
1990-91 to 2000-01



Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. **a** Data for EnergyAustralia prior to the year 1994-95 were only an estimate of the returns that EnergyAustralia may have earned had it been in existence. The figures were calculated using the earnings and total asset values of Sydney Electricity and Shortland/Orion Energy. **b** Estimates of dividend to equity ratios for Great Southern Energy in the years prior to 1995-96 could not be made as data for its predecessor organisations were unavailable. **c** Data prior to 1994-95 were unavailable because SECWA, Western Power's predecessor organisation, did not publish separate data for its electricity and gas services.

Data sources: EnergyAustralia (2001); PC (2000; 2001a); SCNPMGTE (1998 and previous issues); Western Power (2001).

Although there are limitations in valuing assets, the indicators presented here suggest that the substantial real price reductions over the last ten years have been achieved without affecting financial performance.

Attachment A — Data tables

Table A2.1 **Real electricity price trends — metropolitan households**

1990-91 to 2000-01 (index 1990-91=100)

	Sydney	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*	*Canberra*
1990-91	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991-92	103.4	104.3	100.0	103.0	101.2	103.3	101.0	100.8
1992-93	105.1	116.7	99.4	103.3	100.9	106.4	101.9	104.2
1993-94	103.6	118.3	98.4	102.9	98.8	107.1	100.1	102.4
1994-95	100.1	115.2	94.9	98.7	95.4	105.0	97.3	99.3
1995-96	95.3	111.1	91.4	97.0	91.8	102.2	93.4	97.4
1996-97	95.6	110.7	90.0	100.4	90.6	107.5	91.8	96.7
1997-98	95.5	111.2	89.5	102.3	94.2	107.2	92.0	98.8
1998-99	93.9	95.5	88.6	103.1	92.5	108.0	96.1	100.8
1999-00	92.3	93.2	87.1	102.4	90.4	109.5	94.7	101.7
2000-01	94.7	99.2	93.0	108.9	93.8	119.1	98.1	107.9

Note The real price index for each capital city was obtained by rebasing the CPI (electricity) price indexes to a base year of 1990-91 and then deflating the rebased indexes by the rebased CPI (All groups) price index for each capital city. The CPI (electricity) price indexes for 2000-01 include the Goods and Services Tax.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0).

Table A2.2 **Average annual household electricity consumption**

1990-91 to 2000-01 (kWh)

Year	*Australia*	*NSW*	*WA*
1990-91	**n.a.**	**n.a.**	**n.a.**
1991-92	6100	6900	4600
1992-93	6200	7000	4500
1993-94	6000	6800	4500
1994-95	6100	6900	4800
1995-96	6200	7000	4700
1996-97	6350	7100	4800
1997-98	6500	7200	4900
1998-99	6550	7200	5100
1999-00	6600	7200	5300
2000-01	**n.a.**	**n.a.**	**n.a.**

n.a. Not available.

Sources: ESAA (2001 and previous issues).

Table A2.3 **Real electricity price trends — households, selected NSW retailers**

1990-91 to 2000-01 (index 1990-91=100)

	Metropolitan[a]	*Non-metropolitan*[b]
1990-91	100.0	100.0
1991-92	103.3	99.4
1992-93	105.0	99.5
1993-94	103.6	98.1
1994-95	100.1	94.8
1995-96	95.3	90.2
1996-97	95.7	89.0
1997-98	95.6	91.3
1998-99	94.0	89.8
1999-00	91.9	89.2
2000-01	94.5	90.8

Note Real price indexes were calculated using the standard domestic tariff applicable to the customer's location upon a total annual consumption of 7 048 kWh. Prices were deflated by the CPI (All groups) for Sydney. The nominal price series for 2000-01 include the Goods and Services Tax. [a] EnergyAustralia and Sydney Electricity's tariff schedules were used to calculate metropolitan household prices. [b] Non-metropolitan prices were calculated using Great Southern Energy, Energy South and Southern Riverina's urban residential tariff schedules.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Department of Energy and Utilities NSW, pers. comm., 2 October, 2001; ESAA (2000 and previous issues); Great Southern Energy, Sydney, pers. comm., 2 October 2001.

Table A2.4 **Real electricity price trends — pensioner concessions, selected NSW retailers**

1990-91 to 2000-01 (index 1990-91=100)

	Metropolitan[a]	*Non-metropolitan*[b]
1990-91	100.0	100.0
1991-92	103.3	98.9
1992-93	105.0	98.8
1993-94	103.6	97.5
1994-95	100.1	94.2
1995-96	95.3	89.7
1996-97	95.5	88.4
1997-98	95.5	91.0
1998-99	93.9	89.5
1999-00	91.7	89.0
2000-01	94.3	91.4

Note Real price indexes were calculated using the standard domestic tariff and pensioner rebates available upon a total annual consumption of 7 048 kWh. Prices were deflated by the CPI (All groups) for Sydney. The nominal price series for 2000-01 include the Goods and Services Tax. [a] EnergyAustralia and Sydney Electricity's tariff schedules were used to calculate metropolitan prices. [b] Non-metropolitan prices were calculated using Great Southern Energy, Energy South and Southern Riverina's urban residential tariff schedules.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Department of Energy and Utilities NSW, pers. comm., 2 October, 2001; ESAA (2000 and previous issues); Great Southern Energy, Sydney, pers. comm., 2 October 2001.

Table A2.5 **Real electricity price trends — business, selected NSW retailers**
1990-91 to 2000-01 (index 1990-91=100)

	SB1	*MB1*	*MB2*	*MB3*	*LB1*
Metropolitan					
1990-91	100.0	100.0	100.0	100.0	100.0
1991-92	91.7	103.5	103.4	103.4	103.5
1992-93	90.8	102.6	102.5	102.5	102.6
1993-94	81.7	98.0	98.5	98.5	99.0
1994-95	70.8	88.7	89.6	89.5	90.9
1995-96	67.4	78.6	77.3	77.2	76.8
1996-97	61.2	77.5	76.2	76.1	75.7
1997-98	56.7	53.7	53.6	53.6	50.6
1998-99	42.2	52.6	52.3	52.3	48.9
1999-00	47.4	64.0	61.8	61.7	58.2
2000-01	43.3	59.9	58.2	58.1	56.1
Non-metropolitan					
1990-91	100.0	100.0	100.0	100.0	**n.a.**
1991-92	99.0	106.2	99.7	108.0	**n.a.**
1992-93	98.1	105.2	98.6	106.8	**n.a.**
1993-94	91.8	98.3	95.3	103.1	**n.a.**
1994-95	79.1	84.4	83.6	90.5	**n.a.**
1995-96	65.1	80.4	79.5	86.1	**n.a.**
1996-97	62.0	81.2	72.5	66.6	**n.a.**
1997-98	63.4	77.8	67.2	72.1	**n.a.**
1998-99	51.6	62.4	57.3	61.7	**n.a.**
1999-00	58.2	71.2	65.0	70.0	**n.a.**
2000-01	61.1	68.5	63.6	67.4	**n.a.**

Note Price indexes were calculated using the tariff that minimised the cost of the representative business bundles. The nominal price series for 2000-01 exclude the Goods and Services Tax. Prices include the NSW Distribution Levy where applicable. **n.a.** Not available.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Department of Energy and Utilities NSW, pers. comm., 2 October, 2001; ESAA (2000 and previous issues); Great Southern Energy, Sydney, pers. comm., 2 October 2001.

Table A2.6 **Real electricity price trends — business, Western Power (WA)**
1990-91 to 2000-01 (index 1990-91=100)

	SB1	*MB1*	*MB2*	*MB3*	*LB1*
1990-91	100.0	100.0	100.0	100.0	100.0
1991-92	101.2	101.2	77.2	81.3	101.2
1992-93	89.0	83.5	70.8	77.8	101.4
1993-94	83.3	81.7	69.3	76.1	99.3
1994-95	73.6	75.7	65.9	72.4	95.2
1995-96	70.8	72.8	63.4	69.7	91.6
1996-97	69.9	71.8	62.6	68.7	90.3
1997-98	70.0	72.0	62.7	68.9	90.6
1998-99	68.8	70.8	61.6	67.7	89.0
1999-00	67.3	69.1	60.2	66.1	**n.a.**
2000-01	63.4	65.1	56.8	62.4	**n.a.**

Note Price indexes were calculated using the tariff that minimised the cost of the bundle. Retail prices for businesses of the size of LB1 became contestable in 1999-2000, while MB3 became contestable in 2000-01. Indicative contestable prices for both bundles were unavailable. The average price for MB3 in 2000-01 was calculated using the existing tariff, while the average price paid by businesses characterised by LB1 in 1999-2000 and 2000-01 could not be calculated as the associated tariff had been abolished. **n.a.** Not available.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Western Power, Perth, pers. comm., 27 August 2001.

Table A2.7 **Quality of service measures — selected NSW retailers**

1990-91 to 2000-01

	SAIDI	*SAIFI*	*CAIDI*
	Minutes	Number	Minutes
Metropolitan			
1990-91	268	1.41	190
1991-92	83	1.03	80
1992-93	77	0.92	84
1993-94	122	1.32	92
1994-95	84	1.24	68
1995-96	85	1.10	78
1996-97	72	1.01	72
1997-98	101	1.24	81
1998-99	97	1.30	75
1999-00	88	1.28	69
2000-01	101	1.25	81
Non-metropolitan			
1990-91	**n.a.**	**n.a.**	**n.a.**
1991-92	**n.a.**	**n.a.**	**n.a.**
1992-93	**n.a.**	**n.a.**	**n.a.**
1993-94	**n.a.**	**n.a.**	**n.a.**
1994-95	236	2.06	114
1995-96	186	1.97	95
1996-97	134	1.58	85
1997-98	158	1.43	113
1998-99	173	1.68	95
1999-00	221	2.29	96
2000-01	181	1.40	125

Note SAIDI is the total number of customers affected, multiplied by duration of outage, divided by total number of customers served. SAIFI is the number of customers interrupted, multiplied by the number of interruptions, divided by the total number of customers served. CAIDI is the sum of customer interruption duration, divided by total number of customers interrupted. The indexes exclude interruptions caused by storms. Figures were unavailable for the Southern Riverina district. Consequently, data for non-metropolitan areas prior to 1994-95 were unavailable. **n.a.** Not available.

Sources: EnergyAustralia, Sydney, pers. comm., 7 September 2001; Great Southern Energy (2001 and previous issues).

Table A2.8 **Quality of service measures — Western Power (WA)**

1990-91 to 2000-01

	SAIDI	*SAIFI*	*CAIDI*
	Minutes	Number	Minutes
1990-91	244	3.40	72
1991-92	181	2.60	71
1992-93	110	1.50	74
1993-94	133	1.70	80
1994-95	146	1.70	88
1995-96	159	1.80	87
1996-97	208	2.30	92
1997-98	149	1.50	102
1998-99	134	1.60	79
1999-00	228	3.16	73
2000-01	133	1.55	86

Note SAIDI is the total number of customers affected, multiplied by duration of outage, divided by total number of customers served. SAIFI is the number of customers interrupted, multiplied by the number of interruptions, divided by the total number of customers served. CAIDI is the sum of customer interruption duration, divided by total number of customers interrupted. The indexes exclude interruptions caused by storms.

Sources: Western Power (2001 and previous issues).

Table A2.9 **Return on assets — selected NSW retailers and Western Power (WA)**

1990-91 to 2000-01 (per cent)

	NSW[a]		
	EnergyAustralia	*Great Southern Energy*	*Western Power*[b]
1990-91	12.6	**n.a.**	**n.a.**
1991-92	7.4	**n.a.**	**n.a.**
1992-93	5.0	**n.a.**	**n.a.**
1993-94	4.2	**n.a.**	**n.a.**
1994-95	2.8	**n.a.**	6.0
1995-96	1.5	-3.2	10.8
1996-97	12.2	8.9	10.0
1997-98	12.8	16.9	10.2
1998-99	9.9	13.0	9.9
1999-00	12.4	13.9	11.0
2000-01	10.4	**n.a.**	11.0

Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. **a** Data for EnergyAustralia prior to the year 1994-95 were only an estimate of the returns that EnergyAustralia may have earned had it been in existence. The figures were calculated using the earnings and total assets values of Sydney Electricity and Shortland/Orion Energy. A similar estimate of returns to assets could not be made for Great Southern Energy in the years prior to 1995-96 as data on its predecessor organisations were unavailable. Data for both organisations for the year 2000-01 were unavailable. Returns on assets prior to 1994-95 were unavailable because SECWA, Western Power's predecessor organisation, did not publish separate data for its electricity and gas services. **n.a.** Not available.

Sources: EnergyAustralia (2001); PC (2000; 2001a); SCNPMGTE (1998 and previous issues); Western Power (2001).

Table A2.10 **Dividend payout ratio — selected NSW retailers and Western Power (WA)**

1990-91 to 2000-01 (per cent)

	NSW		
	EnergyAustralia[a]	*Great Southern Energy*[c]	*Western Power*[d]
1990-91	212.9	**n.a.**	**n.a.**
1991-92	77.6	**n.a.**	**n.a.**
1992-93	73.8	**n.a.**	**n.a.**
1993-94	66.0	**n.a.**	**n.a.**
1994-95	61.1	**n.a.**	0.0
1995-96	-184.3[b]	-16.4	29.0
1996-97	100.4	115.4	30.4
1997-98	76.6	72.8	21.2
1998-99	76.5	83.8	30.0
1999-00	56.0	60.8	31.5
2000-01	56.0	**n.a.**	39.0

Note Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for include normal and special dividends and special levies on profits and revenues [a] Data for EnergyAustralia prior to the year 1994-95 were only an estimate of the returns that EnergyAustralia may have earned had it been in existence. The figures were calculated using the earnings and total asset values of Sydney Electricity and Shortland/Orion Energy. [b] EnergyAustralia incurred a large abnormal expense in 1995-96 associated with the restructuring of the NSW distribution businesses. Abnormal expenses are included in the calculation of dividend payout ratios, creating a large negative dividend payout ratio in 1995-96. [c] Estimates of dividend payout ratios for Great Southern Energy in the years prior to 1995-96 could not be made as data for its predecessor organisations were unavailable. [d] Data prior to 1994-95 were unavailable because SECWA, Western Power's predecessor organisation, did not publish separate data for its electricity and gas services. **n.a.** Not available.

Sources: EnergyAustralia (2001); PC (2000; 2001a); SCNPMGTE (1998 and previous issues); Western Power (2001).

Table A2.11 **Dividend to equity ratio — selected NSW retailers and Western Power (WA)**

1990-91 to 2000-01 (per cent)

	NSW		
	EnergyAustralia[a]	*Great Southern Energy*[b]	*Western Power*[c]
1990-91	20.9	**n.a.**	**n.a.**
1991-92	6.0	**n.a.**	**n.a.**
1992-93	3.1	**n.a.**	**n.a.**
1993-94	2.2	**n.a.**	**n.a.**
1994-95	2.1	**n.a.**	0.0
1995-96	2.1	1.0	4.0
1996-97	13.1	7.8	4.3
1997-98	11.5	11.6	3.8
1998-99	8.7	10.9	4.5
1999-00	10.9	9	4.1
2000-01	10.9	**n.a.**	6.1

Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. **a** Data for EnergyAustralia prior to the year 1994-95 were only an estimate of the returns that EnergyAustralia may have earned had it been in existence. The figures were calculated using the earnings and total asset values of Sydney Electricity and Shortland/Orion Energy. **b** Estimates of dividend to equity ratios for Great Southern Energy in the years prior to 1995-96 could not be made as data for its predecessor organisations were unavailable. **c** Data prior to 1994-95 were unavailable because SECWA, Western Power's predecessor organisation, did not publish separate data for its electricity and gas services. **n.a.** Not available.

Sources: EnergyAustralia (2001); PC (2000; 2001a); SCNPMGTE (1998 and previous issues); Western Power (2001).

3 Gas

Key outcomes

- In most capital cities, real average metropolitan household gas prices were higher in 2000-01 than they were in 1990-91. The exceptions were Perth and Brisbane.
- Increases in real gas prices added to overall household expenditure. As a proportion of total household expenditure, the increases were most significant for those households in the lowest income bracket. The real increase in household expenditure across all capital cities where natural gas was available in 2000-01 was about $36 million.
- Victoria and WA were examined as case studies. In WA, real household prices declined in metropolitan areas but rose elsewhere. In Victoria, real household prices were higher in metropolitan and non-metropolitan areas in 2000-01 compared with 1990-91.
- In Victoria, where pensioners receive a concession on gas bills, real price trends were similar for both concession and non-concession households.
- Real prices for business tariff customers in Victoria and WA have declined by between 4 per cent and 25 per cent. Prices for small business in non-metropolitan WA, increased by around 5 per cent over the study period.
- Real average prices for (mainly large) business contract customers, also appear to have declined in Victoria and WA. The trends for individual contract customers will depend on the extent of their unique transmission, distribution and retail charges.
- In the case studies, there was no clear evidence to suggest that changes in real household and business prices have been influenced by changes to quality of service. Nor was there evidence of unsatisfactory financial performance by gas utilities.

Not all households in Australia are connected to natural gas. This reflects the historical development of transmission and distribution networks in each State and cost factors that work against gas distribution in less densely populated areas. By 1999-2000, around 47 per cent of Australian households were connected to natural gas. The proportion of households connected and the consumption of natural gas per

household varies between jurisdictions.[1] For example, in 1999-2000, about 85 per cent of households in Victoria were connected to natural gas and consumed on average 60 GJ per year. In Queensland, around 10 per cent of households were connected and consumed on average 13 GJ per year (AGA 2001).

In this chapter, trends in real prices paid by household customers for gas services are presented for the period 1990-91 to 2000-01. Their impact on household expenditure for a range of income groups is also examined.

Price trends were compared for metropolitan and non-metropolitan customers, households and different-sized business customers, and for concession and non-concession customers.

Quality of service measures were examined to determine whether any declines in real prices over the study period have been associated with lower service quality. Finally, the financial performance of the case study utilities was examined to see if price declines have been associated with falling rates of return.

3.1 Industry reforms

Historically, natural gas has been produced by private businesses and supplied by geographically based, vertically integrated utilities, with little interstate trading. Governments have been involved in regulating all parts of the gas supply chain in all jurisdictions (IC 1995).

In the past, government ownership of gas assets has varied across jurisdictions. In some jurisdictions, government-owned utilities controlled transmission pipelines, distribution networks and retail businesses. In others, governments had no direct involvement.

Reform of the gas industry was initiated by the Council of Australian Governments (CoAG) in 1994. The CoAG members made a commitment to 'free and fair trade in natural gas' with three specific objectives:

- remove policy and regulatory impediments to retail competition;
- remove restrictions on interstate trade; and

[1] There is no natural gas distribution system in Tasmania, and gas consumption is from bottled liquefied petroleum gas. In the Northern Territory, a small number of household customers in Alice Springs and business customers in Alice Springs and Darwin are supplied by natural gas.

- develop a nationally integrated and competitive natural gas market by establishing a national regulatory framework for third party access to natural gas pipelines and facilitating the interconnection of pipeline systems (Calvert 1998).

The CoAG commitment included an agreement to corporatise government-owned gas utilities. Where government-owned transmission and distribution activities were vertically integrated, these were to be separated with the introduction of legislation to 'ring fence' transmission and distribution activities.[2]

An outcome of gas reforms has been the accelerated expansion of natural gas networks into non-metropolitan areas (PC 1999a). For example, the Mildura region in north-west Victoria was connected to natural gas transported from SA in 1999 (ORG 2000a).

Structural reforms have resulted in changes in employment levels and work practices in the industry. Between 1992 and 1997, the six major gas distributors reduced their workforce by more than 3400 employees (PC 1999a). The loss of direct employment in the industry was offset to some extent by greater contracting out of services by the gas utilities. Cost savings brought about by downsizing and contracting out reduce the final prices paid by customers.

Market reforms

Following on from the 1994 CoAG agreement, a further agreement in 1997 set out:

- a uniform national framework (national access code) for access to natural gas transmission and distribution pipelines;
- timetables for the phase-in of competition, and other transitional arrangements and derogations agreed among jurisdictions; and
- agreed franchising and licensing principles (NCC 2001a).

Legislation giving effect to the national access code has been passed in each of the States and Territories that have reticulated natural gas.

Structural reform and ownership changes in each jurisdiction have varied, depending in part on the initial extent of government involvement. In the last decade, several transmission pipelines have been sold by governments to the private sector and distribution activities have been either 'ring fenced' from retail businesses or operated as separate businesses.

2 'Ring fencing' involves separating the elements or activities of an integrated business that are not subject to strong competitive pressures from those subject to competitive pressures (IPART 2000a).

Governments have phased in competition in the retailing of gas, starting with the largest businesses. By December 2001, only large consumers of gas could choose their retailer in most jurisdictions.[3]

The prices paid by customers not able to choose their retailer (principally small business and household customers), have remained subject to regulation by State and Territory Governments, or State-based independent regulators.

In 1990-91, increases in the price of natural gas to customers generally required government approval. For example, price increases for gas customers in Queensland required ministerial approval (*Gas Industry Act 1965* (Qld)). An exception was NSW, where the Gas Council used a price control formula based on changes in the consumer price index (CPI) and efficiency incentives to limit price increases (Gas Council of New South Wales 1995).

In 2000-01, ministerial approval for gas price increases was still required in SA, WA and Queensland. However, State-based independent price regulators have set maximum prices for customers in NSW since 1997, in Victoria since 1999 and in the ACT since 2001.

The prices charged for the use of transmission pipelines are now mostly regulated by the Australian Competition and Consumer Commission (ACCC). Prices charged for access to distribution networks are mainly regulated by State-based regulators (AGA 2001).[4]

Tariff reforms

Gas tariffs are typically made up of access charges and usage charges. In 1990-91, there were no fixed access charges, although in some jurisdictions a minimum charge was levied. However, by 2000-01, natural gas retailers in NSW, WA, Victoria and Queensland had replaced minimum charges and introduced fixed access charges.

The access charge covers the cost of connecting and maintaining a customer's connection to the gas network. The access charge is independent of the amount of gas used.

3 At 1 July 2001, the threshold annual level of consumption for retail choice was 1 TJ in Victoria and the ACT, 10 TJ in NSW and 100 TJ in WA. All non household customers in SA were able to choose their retailer in July 2000. No customers in Queensland could choose their retailer (AGA 2001).

4 Transmission pipelines in WA are regulated by the Office of Gas Access Regulation. The distribution network in the Northern Territory is regulated by the ACCC.

Over the study period, all household and business tariffs incorporated 'block tariff' usage charges. Generally, under a block tariff, unit charges for amounts consumed above a threshold level (or levels) fall. In Victoria in 1998-99, a seasonal component to unit charges was introduced, with higher unit charges applying between June and September.

There have also been several reforms to the structure of usage charges in most jurisdictions since 1990-91. Some of these reforms reflect a rebalancing of tariffs between different types of customers. Tariff rebalancing between customer classes has been undertaken so that tariffs are more reflective of the costs of supplying different customer types and the price sensitivity of their demand.

3.2 Price outcomes for metropolitan households

In constructing its capital city price series for gas, the Australian Bureau of Statistics (ABS) developed a household price index using the retail prices charged by the incumbent supplier. In most capital cities, there is only one supplier to household users. However, additional suppliers are included by the ABS if they supply a significant quantity of gas.[5]

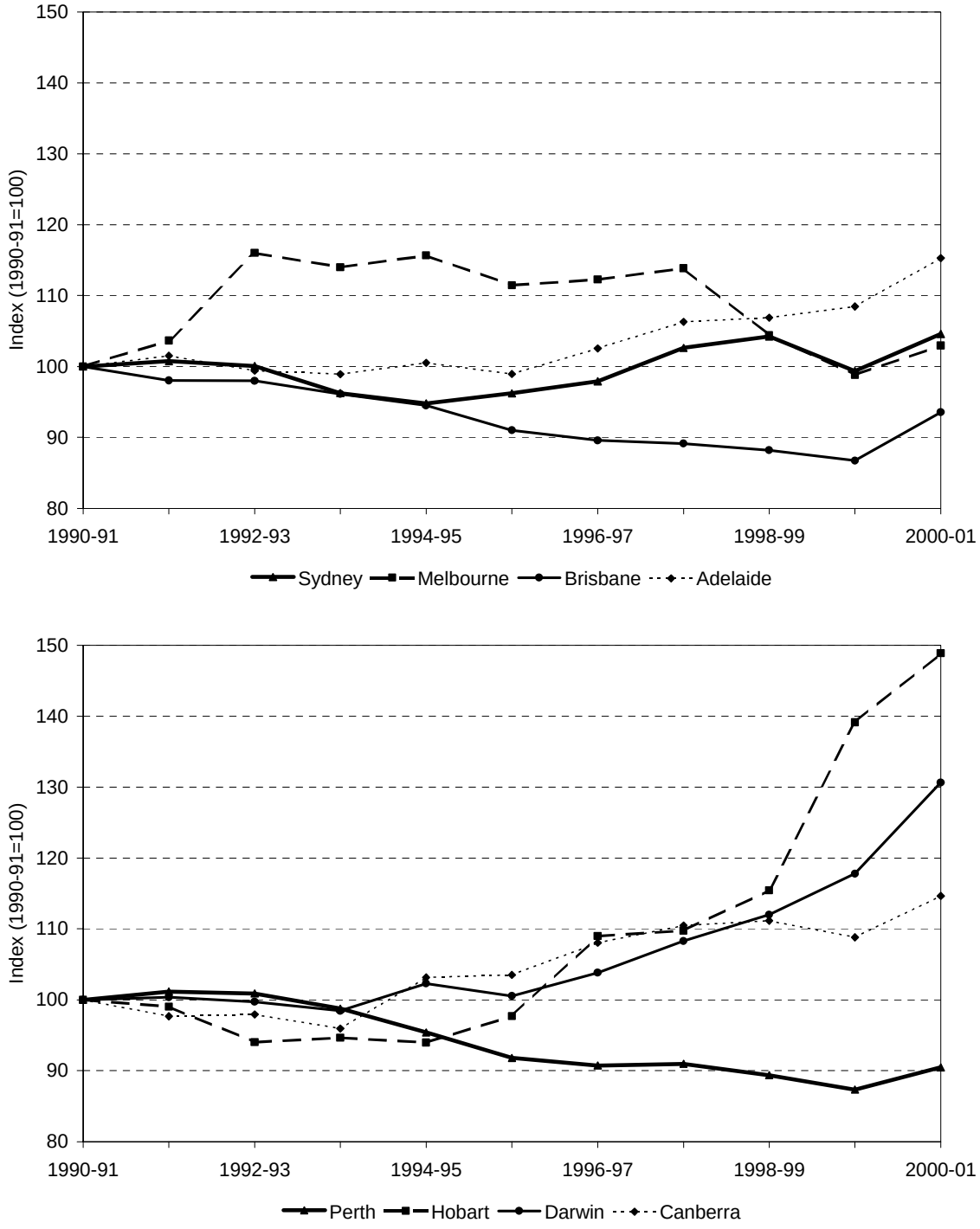
The Goods and Services Tax (GST) introduced in July 2000 was included in the nominal household price series for 2000-01 because households incur the full cost of this tax.

Real gas prices increased in most Australian capital cities over the study period (see figure 3.1).[6] In Adelaide and Canberra, they increased by 15 per cent. Real prices increased by 5 per cent in Sydney and 3 per cent in Melbourne. Metropolitan prices in Perth and Brisbane decreased in real terms, falling by 10 and 7 per cent respectively.

5 In Melbourne, gas is supplied to household customers by TXU Retail, Origin Energy and Pulse Energy. Each utility supplies a separate geographical area. The ABS may use prices applying to different consumption levels in capital cities where several tariffs are offered or where there are different usage patterns.

6 The ABS CPI index for gas includes changes in the price of natural gas and bottled gas. In 2000-01, the composition of the CPI was revised and 'other household fuels', such as wood and kerosene were combined with gas (ABS 2000c). However, this change is likely to have a small effect on the price series as gas accounts for around 80 per cent of the combined category.

Figure 3.1 **Real gas price trends — metropolitan households**
1990-91 to 2000-01



Note The real price index for each capital city was obtained by rebasing the CPI (gas) price indexes to a base year of 1990-91 and then deflating the rebased indexes by the rebased CPI (All groups) price index for each capital city. The CPI (gas) price indexes for 2000-01 include the Goods and Services and Tax. Other household fuels (such as wood and kerosene) were included in the gas CPI index with the introduction of the 14th CPI series in September 2000. As a result, prices for 2000-01 are not directly comparable with previous years.

Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0).

Real prices trended up in all capital cities between 1999-2000 and 2000-01, largely because the introduction of the GST increased the price of gas by more than the CPI.[7]

In Hobart and Darwin, where gas consumption is drawn from bottled rather than reticulated natural gas, the increases in real gas prices reflect an increase in world liquefied petroleum gas (LPG) prices.[8]

The sharp rise in gas prices in Melbourne in 1993-94 was the result of a 10 per cent increase in gas tariff unit prices. The rate of increase of gas prices in Melbourne declined after 1997-98 following the January 1999 Victorian Gas Industry Tariff Order. Part of the decline may also be due to changes implemented by the ABS in conducting the CPI survey.[9]

Increases in the rate of price rises in Canberra and Sydney since 1994-95 are due to a change in the price regulation formula used in both jurisdictions. Under the changes, a higher proportion of CPI increases were passed through into gas prices. The decline in the rate of real price increases in both cities in 1999-2000 was due to a 15 per cent reduction in unit charges.

Implications for household expenditure

Gas prices have a direct effect on household expenditure. They also have an indirect effect when changes in gas prices paid by businesses, are passed on to customers in the form of higher or lower prices for final products and services. These indirect effects will be examined in a forthcoming Productivity Commission research study.

The direct impact of changes in the price of gas over the decade on real household expenditure in 2000-01, was estimated. This was done by multiplying the actual

7 Gas utilities passed on to customers part of the GST from July 2000, depending on the extent of cost savings, additional expenditure and cash flow benefits associated with the introduction of the new tax system. In all jurisdictions, gas charges increased by almost 10 per cent. For example, in Victoria, the Office of the Regulator-General determined that gas prices would increase by between 9.86 per cent and 10 per cent (ORG 2000b). The increase in the CPI from June 2000 to June 2001, was 6.1 per cent (ABS 2001a).

8 LPG is a traded good and its price is based on supply and demand conditions in foreign markets. Over the period 1996-97 to 2000-01, the world LPG price increased by over 200 per cent (APL 2001).

9 The introduction of the 13th series CPI by the ABS expanded population coverage beyond wage and salary earners to include all private households. As a result, an energy concession paid to eligible pensioners (the Winter Energy Concession) had to be factored into the CPI. The effect was an apparent fall in the average price of gas paid by Victorian households (ABS, Melbourne, pers. comm., 18 September 2001).

household expenditure on gas in 2000-01, by the difference between the movement in its price over the ten years to 2000-01 and the movement in the CPI over the same ten year period. For this calculation, the impact of price changes on consumption was ignored.

In 2000-01, total expenditure by capital city households on gas was around $1.2 billion.[10]

Gas price changes were such that prices generally increased faster than the CPI (All groups) in all capital cities except Perth and Brisbane.

The expenditure change in 2000-01 arising from price changes over the previous decade and measured in dollars per household, was largest for households in the highest income quintile (see table 3.1). However, the changes were more significant, when measured as a percentage of household expenditure per year, for most households in the lowest income quintile (see table 3.2).

Table 3.1 **Real changes to household gas expenditure arising from price changes over the previous decade, by income quintile**

$ per capital city household, 2000-01

Income quintile	*Sydney*	*Melbourne*	*Brisbane*[a]	*Adelaide*	*Perth*	*Canberra*[a]
Lowest 20%	3.48	11.70	-3.09	24.72	-22.53	28.69
Second	4.70	13.14	-1.78	36.36	-23.71	30.93
Third	6.31	15.06	-2.67	41.89	-25.95	43.47
Fourth	6.91	15.50	-2.71	42.71	-34.20	29.12
Highest 20%	7.28	19.08	-3.87	38.90	-35.38	59.98
All households	5.96	15.28	-2.78	36.07	-28.42	40.37

Note A negative sign means that households incurred a real decrease in gas expenditure because real prices declined over the period. Gas expenditure relates to mains gas consumption only. As a result, Hobart and Darwin are excluded. [a] The expenditure changes for some income quintiles in Brisbane and Canberra, include calculations using estimates that are statistically unreliable and should be interpreted with care.

Source: PC estimates based on ABS (*Household Expenditure Survey Australia 1998-99*, Cat no. 6535.0).

10 Actual household expenditure in 2000-01 was derived by taking the proportion of total household expenditure that was spent on gas by households in the 1998-99 Household Expenditure Survey (ABS 2000a). That proportion or expenditure weight was then multiplied by total household expenditure in 1998-99 and inflated to 2000-01 prices using the CPI deflator, to obtain an estimate of actual household expenditure on gas in 2000-01.

Table 3.2 **Real changes to household gas expenditure arising from price changes over the previous decade, as a proportion of total expenditure**

Per cent per capital city household, 2000-01

Income quintile	*Sydney*	*Melbourne*	*Brisbane*[a]	*Adelaide*	*Perth*	*Canberra*[a]
Lowest 20%	0.02	0.06	-0.02	0.15	-0.11	0.18
Second	0.02	0.05	-0.01	0.15	-0.09	0.11
Third	0.02	0.04	-0.01	0.12	-0.07	0.11
Fourth	0.01	0.03	-0.01	0.09	-0.07	0.06
Highest 20%	0.01	0.03	-0.01	0.06	-0.06	0.08
All households	0.01	0.04	-0.01	0.10	-0.07	0.08

Note A negative sign means that households incurred a real decrease in gas expenditure because real prices declined over the period. Gas expenditure relates to mains gas consumption only. As a result, Hobart and Darwin are excluded. [a] The expenditure changes for some income quintiles in Brisbane and Canberra, include calculations using estimates that are statistically unreliable and should be interpreted with care.

Source: PC estimates based on ABS (*Household Expenditure Survey Australia 1998-99*, Cat no. 6535.0).

The real increase in household gas expenditure across all capitals was approximately $36 million in 2000-01 (see table 3.3). The largest decrease was for households in Perth (approximately $13 million per year) and the largest increase for households in Melbourne (approximately $20 million).

Table 3.3 **Total change to household gas expenditure arising from price changes over the previous decade**

Capital city households, 2000-01

	Households	*Change per household*	*Total change*
	No.	$	$
Sydney	1 507 189	5.96	8 986 933
Melbourne	1 330 406	15.28	20 334 201
Brisbane	549 387	-2.78	-1 529 344
Adelaide	436 065	36.07	15 726 892
Perth	456 010	-28.42	-12 961 160
Hobart	89 751	**n.r.**	**n.r.**
Darwin	38 530	**n.r.**	**n.r.**
Canberra	125 561	40.37	5 068 838
Total[a]	**4 532 899**		**35 626 360**

Note A negative sign means that households incurred a real decrease in gas expenditure because real prices declined over the period. Household numbers in each capital city were calculated by multiplying the proportion of households in each capital city as reported in the ABS (1996) by the total number of capital city households reported ABS (2000a). [a] Excludes Hobart and Darwin. **n.r.** Not relevant.

Sources: ABS (*The Australian Consumer Price Index: Concepts, Sources and Methods*, Cat no. 6461.0); ABS (*Household Expenditure Survey Australia 1998-99*, Cat no. 6535.0).

3.3 Price variations

Utilities in Victoria and WA were selected as case studies to illustrate how prices have varied according to customer location and eligibility for concessions, and also how business prices have trended over the study period. The utilities examined were TXU Retail in Victoria and AlintaGas in WA.

In Victoria, TXU Retail supplied gas to around 423 000 household customers and 13 000 business customers in 2000. The other gas retailers, Origin Energy and Pulse Energy, supply the remaining 993 000 household customers and 26 000 business customers in the State (ORG 2001). Household consumption accounts for around half of total sales in Victoria (AGA 2001). Business gas consumption is dominated by a relatively small number of customers, with around 145 businesses in Victoria accounting for around 37 per cent of total gas sales (ORG 2001).

In WA, AlintaGas supplied gas to around 416 000 households and 7800 business customers in 1999-2000. Household consumption accounts for a relatively small share of sales, with the largest 250 business contract customers consuming around 82 per cent of total sales, with the remaining business tariff customers accounting for 3 per cent (AlintaGas 2000).[11]

In order to present prices over a 10 year period, prices for predecessor utilities were used. Until 1997 in Victoria, the operations of TXU Retail were part of Gascor, a government-owned utility that distributed and retailed natural gas.[12] Gascor's prices were used between 1990-91 and 1997-98. In WA, the gas operations of the State Energy Commission of Western Australia (SECWA) were assumed by AlintaGas in 1995. The prices charged by SECWA were used between the period 1990-91 to 1995-96.

Price trends over the study period are not directly comparable between utilities because of the different environments in which gas utilities operate. There are a range of cost factors that affects costs and, hence, prices, over which utilities have little control. For example, the length of gas transmission pipeline, the number of customers per kilometre of gas distribution mains and the density of consumption that can affect prices relative to other utilities.

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11 AlintaGas sales account for around 22 per cent of gas sold to domestic customers in the State (PC estimates based on AGA 2001 and AlintaGas 2000). The remaining share is sold directly by producers to customers, with around 42 per cent of gas being used in the generation of electricity (Office of Energy 2001).

12 The Gas and Fuel Corporation was disaggregated in December 1994. Transmission activities were undertaken by the Gas Transmission Corporation. Gascor was responsible for the distribution and retail of natural gas.

Location

Real household price indexes for metropolitan and non-metropolitan areas of Victoria and WA were constructed using a representative household consumption bundle for each jurisdiction. The level of consumption differs, reflecting the higher average household consumption in Victoria because of the climate and higher penetration of gas space heating and water heating compared with WA (AGO 2001).

The price indexes for Victoria were based on an average annual consumption of 57.8 GJ, while 18.4 GJ was used in WA. These consumption quantities are the geometric mean of the level of household consumption in Victoria and WA at the beginning and end of the study period.[13] In Victoria, average annual household consumption increased from 55.6 GJ in 1990-91 to 60.0 GJ in 2000-01, while, in WA, consumption remained stable around 18 GJ.

In both cases it was assumed that 55 per cent of annual gas consumption occurred during the period June to September.[14]

Price trends for metropolitan household consumers were calculated using published tariff schedules and the consumption bundles described above. The calculated trends may differ from the real price trends for the gas component of the CPI as reported in figure 3.1. For reasons of confidentiality, the ABS does not reveal all the data used in its calculations.

Differences between the ABS and the approach used in this section would be due to the ABS sampling methodology used for the CPI. This may result in several scenarios of consumption being included in estimates for one utility or, where a city is serviced by more than one utility, the inclusion of prices for several utilities in the sample.[15] Timing differences between the two series may also explain part of the difference, because prices are recorded in June each year for the CPI (see figure 3.1), whereas prices calculated using tariff rates incorporate price changes as they occurred through each year in calculating an annual price change.[16]

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13 Due to the widespread use of gas for heating appliances, consumption can vary from year-to-year depending on weather conditions.

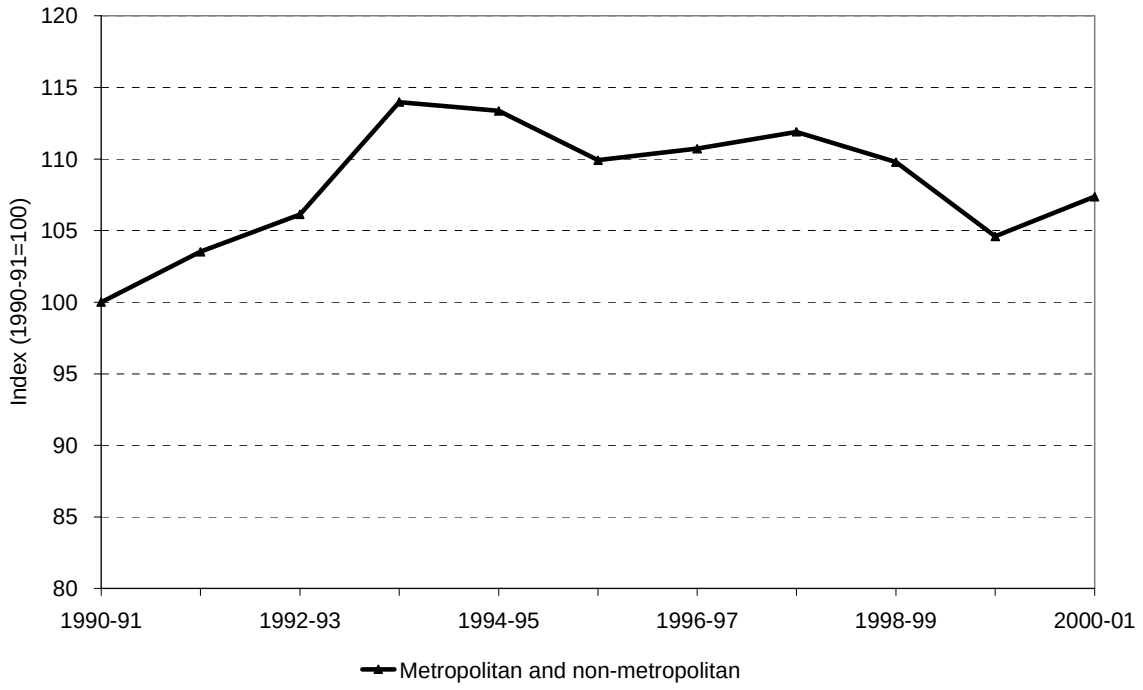
14 This is consistent with methodology used by the Office of the Regulator-General in its analysis of household prices in Victoria (ORG 2001).

15 For example, since 1996-97 gas customers in Melbourne have been served by three gas retailers operating in separate geographic areas of the city.

16 The ABS CPI survey is conducted quarterly. In this study, only price index observations for each June quarter were used.

Household customers serviced by TXU Retail pay uniform tariff rates, and therefore, prices do not vary between metropolitan and non-metropolitan locations. Real household prices charged by TXU Retail and its predecessors have increased by around 5 per cent over the ten year study period (see figure 3.2).

Figure 3.2 **Real gas price trends — households, TXU Retail (Victoria)**
1990-91 to 2000-01



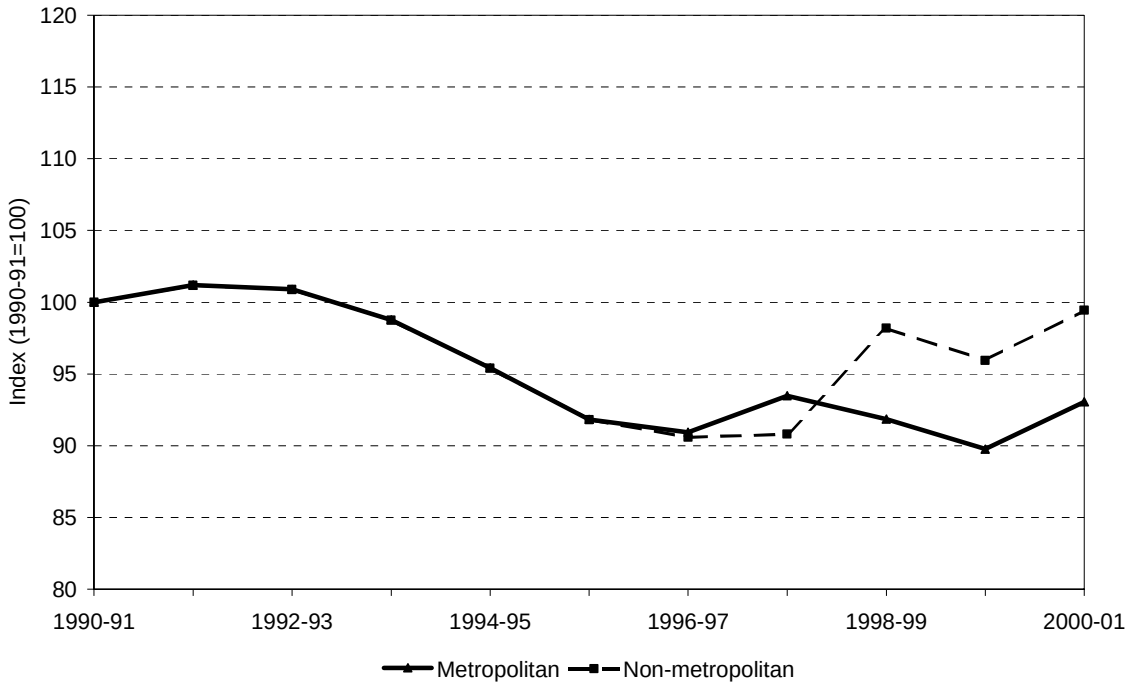
Note Real price indexes were calculated using the tariff applicable to average annual consumption of 57.8 GJ. Consumption during the winter months June to September was assumed to be 55 per cent of annual consumption. Tariffs were deflated by the CPI (All groups) for Melbourne. The nominal price series for 2000-01 includes the Goods and Services Tax. Prior to January 1999, prices were based on Gas and Fuel Corporation tariffs.

Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); Victoria Government Gazette (1997 and previous issues); Victoria Government Gazette (1998).

In WA, real prices for metropolitan customers declined by 7 per cent over the study period. Pricing policies differed between regions.[17] In Albany (non-metropolitan), real prices in 2000-01 were similar to those paid in 1990-91 (see figure 3.3). The real price trend for metropolitan households was similar to that observed for Perth using the ABS CPI series (see figure 3.1).

17 Non-metropolitan prices apply to customers in Albany and in Kalgoorlie-Boulder. Supply of natural gas to Kalgoorlie-Boulder commenced in 1997. Customers in other non-metropolitan areas such as Geraldton and Bunbury are charged the same rates as customers in Perth.

Figure 3.3 **Real gas price trends — households, AlintaGas (WA)**
1990-91 to 2000-01



Note Real price indexes were calculated using the tariff applicable to the customer's location and an average annual consumption of 18.4 GJ. Consumption during the months June to September was assumed to be 55 per cent of annual consumption. Prices were deflated by the CPI (All groups) for Perth. The nominal price series for 2000-01 include the Goods and Services Tax. Prior to 1996-97, prices were based on State Energy Commission of Western Australia tariffs. Separate prices apply to customers in Albany and Kalgoorlie-Boulder. Supply of natural gas to Kalgoorlie-Boulder commenced in 1997. Customers in other non-metropolitan areas such as Geraldton and Bunbury are charged the same rates as customers in Perth.

Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); WA Government Gazette (2000 and previous issues); Western Power Perth, pers. comm., 7 August 2001.

Concessions

In WA, there is no tariff concession available for household gas customers.

In Victoria, the Department of Human Services (DHS) administers a gas concession program. The concession provides eligible customers with a discount of 17.5 per cent for three gas bills and two electricity bills issued between mid-May and mid-November (DHS 2001). Eligibility for the concession is restricted to holders of Pensioner Concession Cards, Health Care Cards and Gold Cards.

Since 1990-91, real price changes experienced by concession holders in Victoria have been similar to non-concession holders. The real value of the concession was

around $41 per year in 1990-91, based on annual gas consumption of 57.8 GJ.[18] A rise in the rebate from 15 per cent to 17.5 per cent in 1993-94 increased the real value of the rebate to $53 per year. Since then, the real value of the rebate steadily declined to $45 per year in 2000-01.

Business prices

Natural gas in Australia is used for the generation of electricity, in petroleum refining and as an energy source for business and household customers. In 1999-2000, around 40 per cent of gas available for domestic consumption was used in electricity generation (Dickson et al 2001). The share of gas as a fuel in electricity generation in each jurisdiction varied from 1 per cent in NSW to 51 per cent in WA (Office of Energy 2001).

Business customers consume around 78 per cent of domestic gas not consumed in electricity generation. Household customers account for most of the remainder. However, within each State and Territory, the share of gas sold to business (commercial and industrial) customers varies. For example, business customers in WA account for a greater share of gas consumed than in Victoria (see figure 3.4).

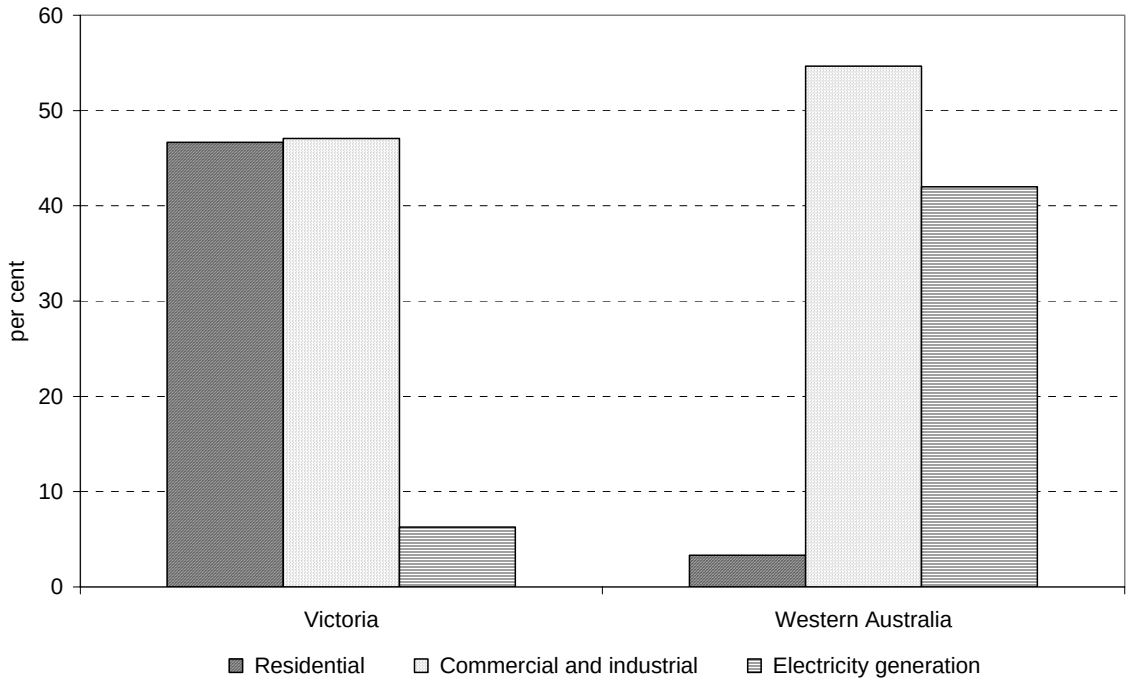
Historically, gas prices for businesses using relatively small quantities of gas, were determined by published tariffs. Larger businesses negotiated prices under long-term contracts with utilities.[19] The largest industrial gas consumers have been able to purchase gas directly from producers and may not be gas utility customers. In 1999-2000, direct purchases of gas by businesses (including electricity generation) from producers, accounted for around 11 per cent of total gas sales in Victoria and 78 per cent in WA (AGA 2001).[20]

18 The real value of the concession changes in direct proportion to the quantity of gas consumed. For example, if concession holders consume 46.2 GJ, or 20 per cent less than average consumption, the real value of the concession is 20 per cent less than its value at the average consumption level of 57.8 GJ.

19 In Victoria, customers using more than 10 000 GJ per year were typically 'contract' customers, that negotiated prices with Gascor rather than paying tariff rates (SCNPMGTE 1993).

20 In 1990-91, direct sales accounted for 19 per cent of total sales in Victoria and 20 per cent in WA. The increase to 78 per cent in WA by 1999-2000, is largely due to the unbundling of gas supply contracts in 1995, following the disaggregation of SECWA, and the choice of supplier that large gas business customers have had since 1997 (ACIL Consulting 1999). The decrease to 11 per cent in the direct sales share of total sales in Victoria, is due to limited opportunities for the main producer to sell directly to businesses (VAGO 1997).

Figure 3.4 **Natural gas consumption by sector — Victoria and WA**
1999-2000



Data source: PC estimates based on Office of Energy (2001) and AGA (2001).

Business tariff customers

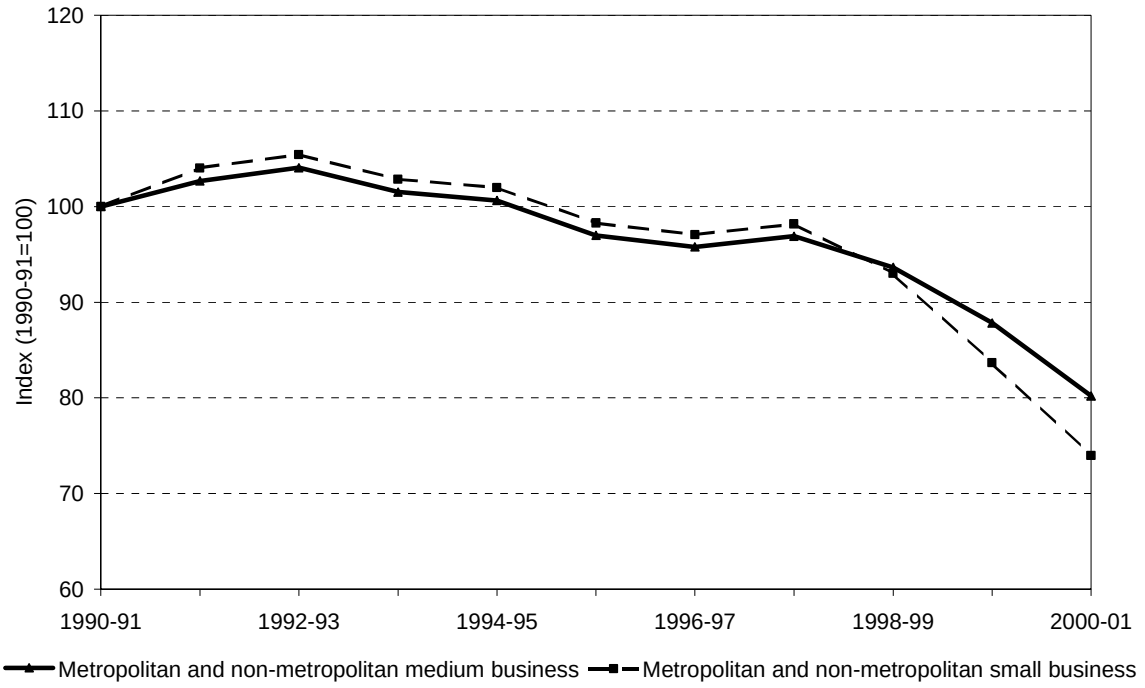
Two levels of gas consumption were used to construct real price indexes over the study period for business tariff customers in Victoria and WA. Annual consumption of 500 GJ was used to construct an index of prices for small business customers, and 10 000 GJ for medium sized businesses.[21]

The GST was excluded from the nominal price series for business customers because businesses are able to claim a GST rebate on their inputs. However, GST is included in the CPI (All groups) index used to deflate nominal prices to real prices.

In Victoria, real prices for small businesses fell by around 25 per cent over the study period (see figure 3.5). Medium sized business prices declined by 20 per cent.

21 These two consumption levels equate to average annual gas bills in Victoria in 2000-01 of around $4 500 for a small business such as a small restaurant, and $50 000 for a medium sized business such as a bakery (ISR 2001 and ORG 2001). In Victoria, there were approximately 39 000 non household customers in 1999 (ORG 2000a). Around 30 000 consumed less than 500 GJ per year, and around 8 000 consumed between 500 GJ and 10 000 GJ per year (ORG 1998a, 1998b, 1998c).

Figure 3.5 **Real price trends — business, TXU Retail (Victoria)**
1990-91 to 2000-01



Note Price indexes were calculated using an annual consumption level of 500 GJ for a small business and 10 000 GJ for a medium sized business. The pattern of consumption is assumed to be uniform throughout the year. Prices were deflated by the CPI (All groups) for Melbourne. The nominal price series for 2000-01 exclude the Goods and Services Tax. Business prices do not vary between metropolitan and non-metropolitan areas because uniform tariffs apply throughout TXU Retail's franchise area. Prior to January 1999, prices were based on Gas and Fuel Corporation tariffs.

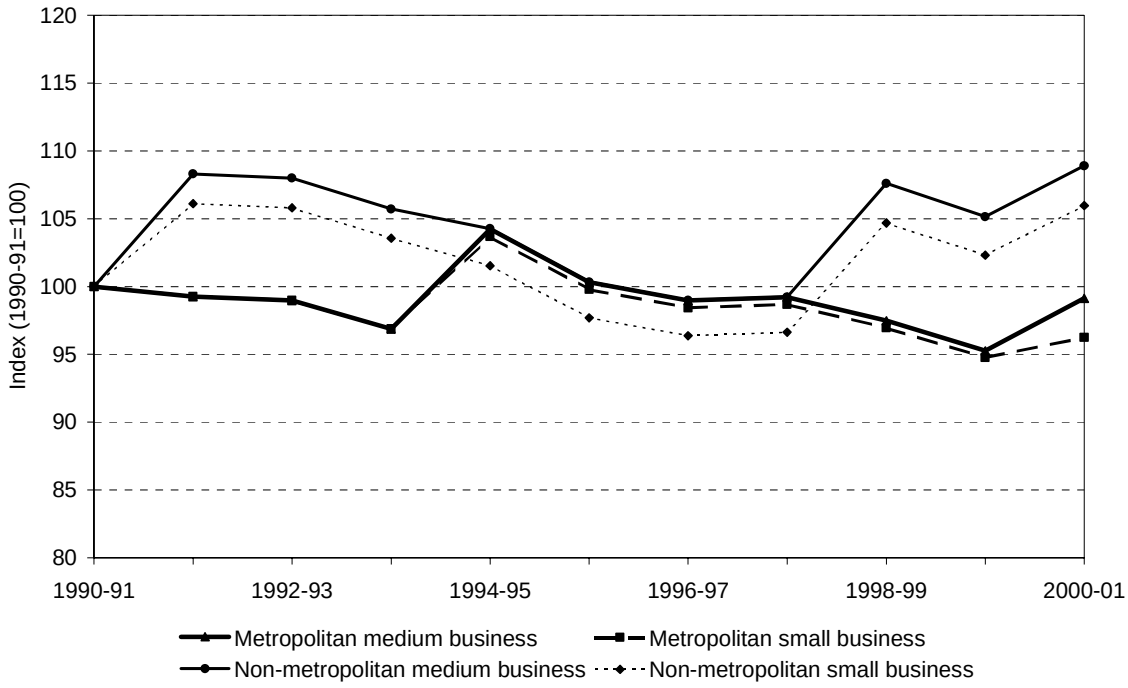
Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); Victoria Government Gazette (1997 and previous issues); Victoria Government Gazette (1998).

Victorian business prices did not vary between metropolitan and non-metropolitan areas because uniform business tariffs apply across all of TXU Retail's service area. The decline in prices since 1997-98 was mainly due to lower gas usage charges under the Victorian Gas Industry Tariff Order from January 1999.

In WA, real prices for metropolitan small and medium sized businesses fell by 4 per cent and 10 per cent respectively over the study period (see figure 3.6). In contrast, real prices for non-metropolitan small and medium sized business in Albany increased 6 per cent and 9 per cent respectively.[22]

22 Non-metropolitan prices apply to customers in Albany and Kalgoorlie-Boulder. Customers in other non-metropolitan areas such as Geraldton and Bunbury, are charged the same rates as customers in Perth.

Figure 3.6 **Real gas price trends — business, AlintaGas (WA)**
1990-91 to 2000-01



Note Price indexes were calculated using an annual consumption level of 500 GJ for a small business and 10 000 GJ for a medium sized business. The pattern of consumption is assumed to be uniform throughout the year. Prices were deflated by the CPI (All groups) for Perth. The nominal price series for 2000-01 exclude the Goods and Services Tax. Prior to 1996-97, prices were based on State Energy Commission of Western Australia tariffs. Non-metropolitan prices apply to customers in Albany. Customers in other areas such as Geraldton and Bunbury are charged the same rates as customers in Perth.

Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); WA Government Gazette (2000 and previous issues); Western Power Perth, pers. comm., 7 August 2001.

For business tariff customers in Victoria, real price falls over the period since 1990-91 resulted in a decline in 2000-01 business costs of around $1000 on an annual bill of $4400 for customers consuming 500 GJ. For a business consuming 10 000 GJ, the real price reduction is equal to a reduction in business costs of around $11 000 on an annual bill of $51 000.

The reductions in costs for business tariff customers was estimated to be in the order of $51 million in 2000-01. This estimate involved multiplying the cost reduction per GJ by the quantity of gas consumed. Average levels of consumption and unit tariff schedule prices for five consumption ranges up to annual gas consumption of 10 000 GJ were used. For this calculation, the impact of price changes on consumption was ignored.

In WA, the real price changes for business tariff customers were smaller than for Victoria, and equated to a business cost saving of around $460 on an annual bill of

$7800 for a business consuming 500 GJ in 2000-01. For a business consuming 10 000 GJ, the annual real price reduction was equal to a business cost reduction of around $13 000 on an annual bill of $148 000.

Business contract customers

The prices paid by gas customers typically comprise of several components related to the activities undertaken to deliver gas to a customer's premises. These include charges for the extraction and processing of gas, transmission at high pressure from processing plants to distribution points, distribution at lower pressures to a customer's premises, and retail charges.

For household and business tariff customers, these separate components are generally combined. However, for most business contract customers they are separately identified. Transmission and distribution prices are mostly regulated and based on the supply characteristics of each business, including location and peak demand. Prices for the other components — extraction, processing and retail — are negotiated.

Information on the components and overall level of contract gas prices is commercially sensitive and was unavailable. However, it is possible to derive information on price trends to metropolitan distribution points, which includes prices for production, processing and transmission charges. Distribution and retail charges are however, excluded from these (city-gate) prices.

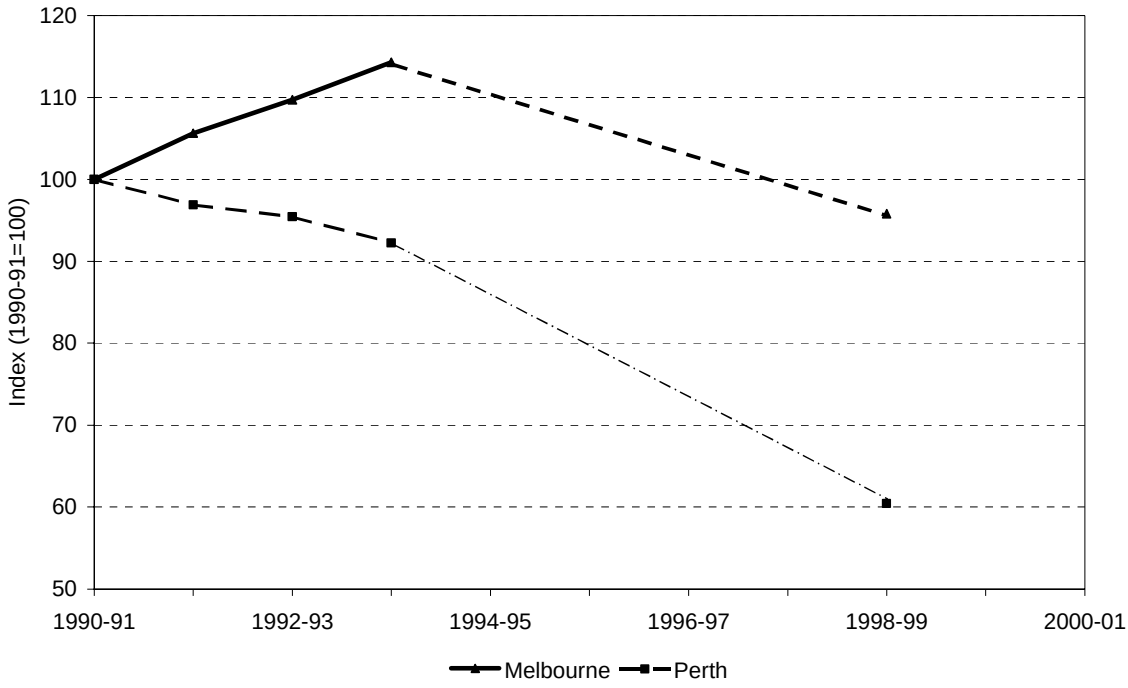
Trends in average real city-gate gas prices, suggest that on average, real prices have fallen significantly in WA since 1990-91 and declined in Victoria after 1993-94 (see figure 3.7).

In WA, where transmission charges account for around 30 per cent of the average city-gate price of gas, around 70 per cent of the reduction in average real city-gate prices between 1990-91 and 1998-99 was due to a fall in transmission charges. The remainder was due to a reduction in production and processing charges (AGA 2001 and previous issues).

In Victoria, where transmission charges account for around 15 per cent of the average city-gate price of gas, an increase in transmission charges between 1993-94 and 1998-99 was more than offset by a fall in production and processing charges since 1991-92 (AGA 2001 and previous issues).[23]

[23] Production and processing charges in Victoria for most of the study period included a component that was returned to the Government. Under the *Public Authorities Contributions Act 1966*, Gascor was required to contribute a proportion of revenue to the Victorian

Figure 3.7 **Average real city-gate gas prices — Melbourne and Perth**
1990-91 to 2000-01



Note Data for the years 1994-95 to 1997-98, 1999-2000 and 2000-01 were not published. Nominal city-gate prices were deflated by the CPI (All groups) for each capital city. Transmission prices for Perth were assumed to be constant in nominal terms over the period 1990-91 to 1993-94. **a** City-gate prices include the price of gas from producers and the transmission price for transporting gas to the capital city distribution points. The city-gate price excludes distribution and retail charges.

Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); AGA (2001 and previous issues).

The final prices paid by contract customers varies from the city-gate price, depending on the extent of distribution and retail charges. Some customers may also pay different transmission charges depending on the extent to which transmission pipelines are used to transport gas to each customer. For example, in WA, gas prices paid by mining companies surveyed in 2001 ranged between \$1.90 per GJ to \$7.00 per GJ, with an average price of \$4.05 per GJ (Clements and Qiang 2001).[24]

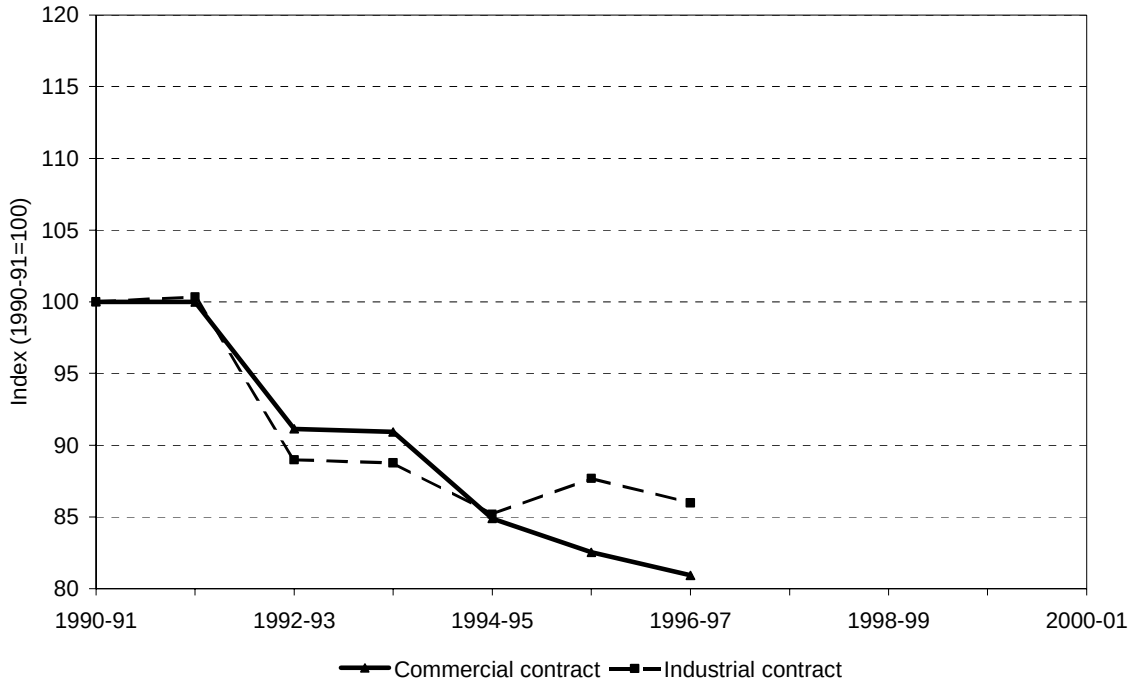
Government. This was largely due to the negotiation of low prices by the Victorian Government under long-term contracts with gas producers (ANZ McCaughan 1992). In 1990-91, the contribution rate was equal to around \$1.50 per GJ — over 60 per cent of the city-gate price. Following the renegotiation of these supply contracts and restructuring of the gas industry in Victoria, higher gas prices paid to producers resulted in the public authority contribution being discontinued.

24 Distance from processing facilities is a major determinant of transport charges for transmission and distribution. Other important factors include security of supply and a customer's demand characteristics.

Based on the trend of average city-gate prices in figure 3.7, contract customers received significant price decreases over the study period. However, where transmission and distribution and retail charges are significant, and these are not reflected in figure 3.7, it may be the case that prices have increased over the study period.

There is a further source of data that is indicative of prices paid by Victorian contract customers. This data was collected by the Steering Committee on National Performance Monitoring of Government Trading Enterprises until it was disbanded. For the period 1990-91 to 1996-97, there was a significant fall in real average prices for Victorian contract customers (see figure 3.8). Inflation accounted for most of the fall as prices remained roughly constant in nominal terms. Since 1996-97, it is unlikely that real prices for Victorian contract business customers have increased, because the gas price for contract customers was adjusted annually for movements in the CPI (VAGO 1997).

Figure 3.8 **Real gas price trends — contract customers, Victoria**
1990-91 to 2000-01



Note Data after 1996-97 are unavailable. Nominal average prices for commercial contract and industrial contract customers collected by the Steering Committee on National Performance Monitoring of Government Trading Enterprises (SCNPMGTE) were deflated by the CPI (All groups) index for Melbourne. Information provided to the SCNPMGTE did not disclose the definition of commercial or industrial customers.

Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); SCNPMGTE (1998 and previous issues).

The ABS collected real gas price trends for manufacturers around Australia for the study period. This data indicates that real prices remained stable over most of the period (see figure 3.9). There were significant price increases to several manufacturers included in the ABS survey upon the renegotiation of supply contracts in 1999-2000, when real prices increased by around 12 per cent compared to the previous year (ABS pers. comm., 9 October 2001). By 2000-01, real gas prices were 20 per cent higher than 1990-91 (ABS 2001b).

Figure 3.9 **Real gas price trends — manufacturing businesses, Australia**
1990-91 to 2000-01

Note The real gas price index for manufacturing businesses is calculated by dividing the nominal index for gas prices by the nominal index of the weighted average of all prices for materials used by manufacturing businesses. The nominal index for 2000-01 excludes the Goods and Services Tax.

Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); ABS (*Price Index of Materials Used in the Manufacturing Industry*, Cat. no. 6411.0).

The trend in natural gas prices for manufacturers is different to trends calculated for tariff customers and those presented for contract customers. The ABS uses 'judgement samples' to select respondents to the survey (ABS 1995). As a result, price trends may not be representative of all businesses. Price movements for specific manufacturing industries, different business sizes and across jurisdictions were unavailable.

The value of changes to real prices for business tariff customers is difficult to determine because the price paid by customers varies depending on location and, for the largest industrial customers, consumption characteristics.

Electricity generation customers

In WA, gas accounts for around 50 per cent of fuel used in electricity generation. This represented over 40 per cent of gas sold for domestic consumption in WA in 1999-2000 (see figure 3.4) (Office of Energy 2001). In Victoria, gas is less significant as a fuel for electricity generation, accounting for 2 per cent of fuel used in electricity generation, and equal to around 15 per cent of State gas production in 1999-2000 (AGA 2001).

Price trends for natural gas used in electricity generation may affect the price of electricity. Information on these price trends was not available. The long-term nature of gas supply contracts for electricity generators (and also other large contract customers), means that price trends faced by individual customers may be different to the trend in average city-gate prices discussed previously and which other contract customers appear to have experienced over the study period.

Factors affecting price trends

Price trends may not solely reflect performance within gas utilities. There are factors outside the control of utilities affecting prices. These include production and processing charges from gas producers, royalties to government on revenue earned by producers, and transmission and distribution charges where these activities are not part of a utility's operations.

In Victoria, part of the increase in real gas prices to households in the early 1990s was related to a 20 per cent increase in producer prices under a renegotiated contract with suppliers (Gas and Fuel 1993).

In WA, changes to production charges and royalties had only a small effect on prices. Production and processing charges account for around 15 per cent of the final prices charged by AlintaGas to household and business tariff customers. Royalties on gas produced comprise less than 1 per cent.

Governments have also directly intervened to influence prices charged to customers in some years over the study period. For example, real prices to household and business tariff customers in Victoria increased in the early 1990s as a result of government approved increases in nominal tariff prices. Subsequent price caps

imposed by the Victorian Government on tariff rates in January 1999 resulted in real prices to household and business tariff customers declining.

In WA, the government fixed prices for the main transmission pipeline at a declining rate following the sale of the pipeline to the private sector in 1998. Between 1998 and 2000, transmission prices to Perth declined by 20 per cent in real terms (AlintaGas 2001a), contributing to the 4 per cent real decline in household prices over this time.

3.4 Service quality

Quality of service was examined to see if price trends might be explained by changes in the quality and reliability of services. Lower prices can be achieved by lowering expenditure below that required to maintain service standards. However, lower service standards may take some time to manifest themselves.

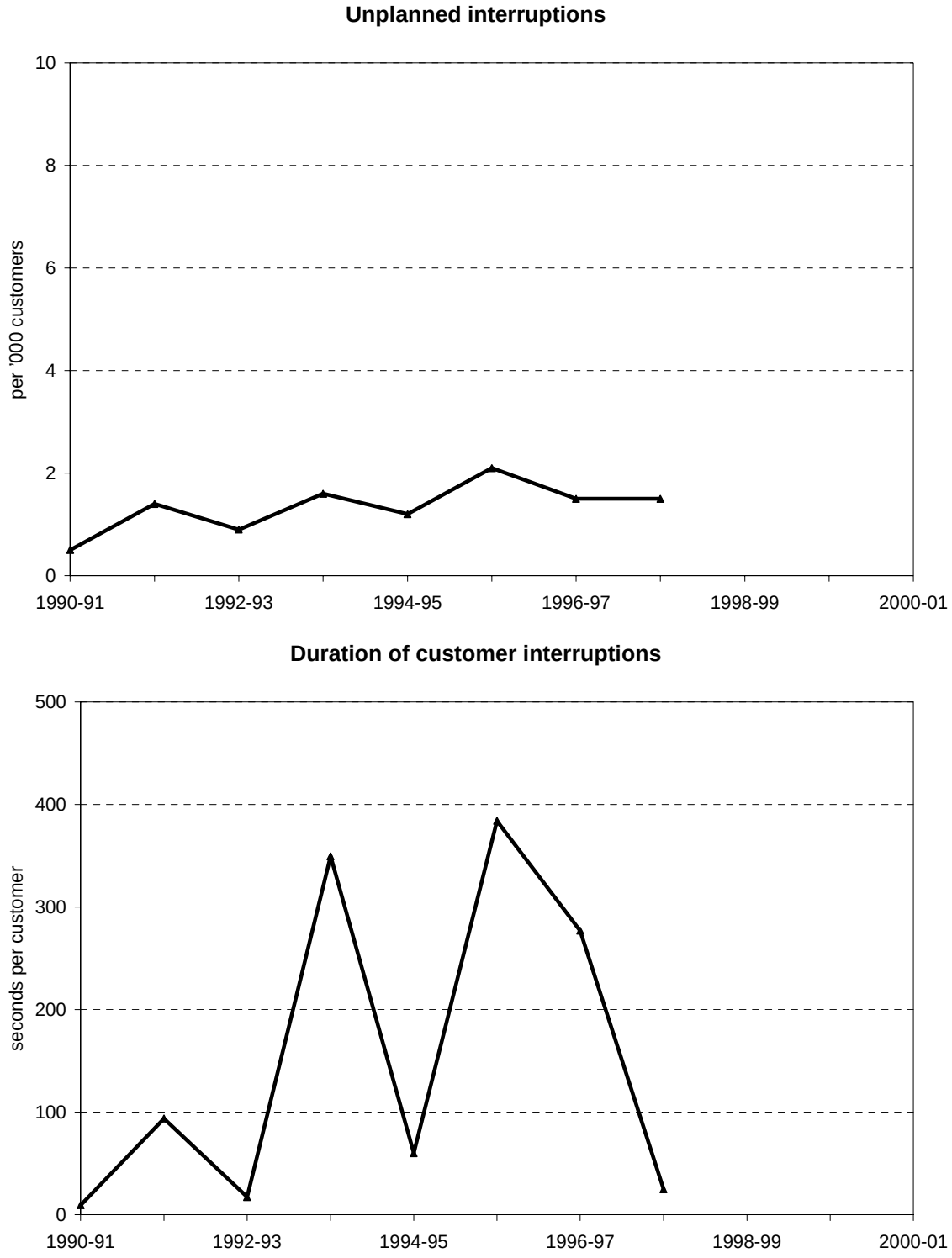
Poor quality of service may impose costs on customers as it can result in lost production, damaged equipment, unreliability of supply or inconvenience.

Reliability of service is the primary focus of quality of service monitoring — that is, the ability of a distribution network to deliver natural gas to all points of consumption. Common indicators used to measure supply reliability for customers include the average number of interruptions per customer and the average duration of interruptions per customer. These indicators relate to the average level of reliability for the network overall and may not reflect the number and duration of interruptions in particular parts of the gas distribution network.

Supply reliability for the case study utilities is expressed as unplanned interruptions per 1 000 customers and average duration of interruptions. The data indicate that supply reliability varied from year-to-year over the study period for gas utilities in Victoria and WA (see figures 3.10 and 3.11).[25] There is no clear evidence to suggest that changes in real household and business prices have been influenced by changes to quality of service.

[25] A continuous series for reliability of service for customers now served by TXU Retail in Victoria was unavailable. Since 1999, the Office of the Regulator-General has monitored the reliability of Victorian distributors using different indicators. These suggest that the reliability of supply in the TXU service territory in terms of frequency of interruptions and duration of interruptions remained stable in 1999 and 2000 (ORG 2001).

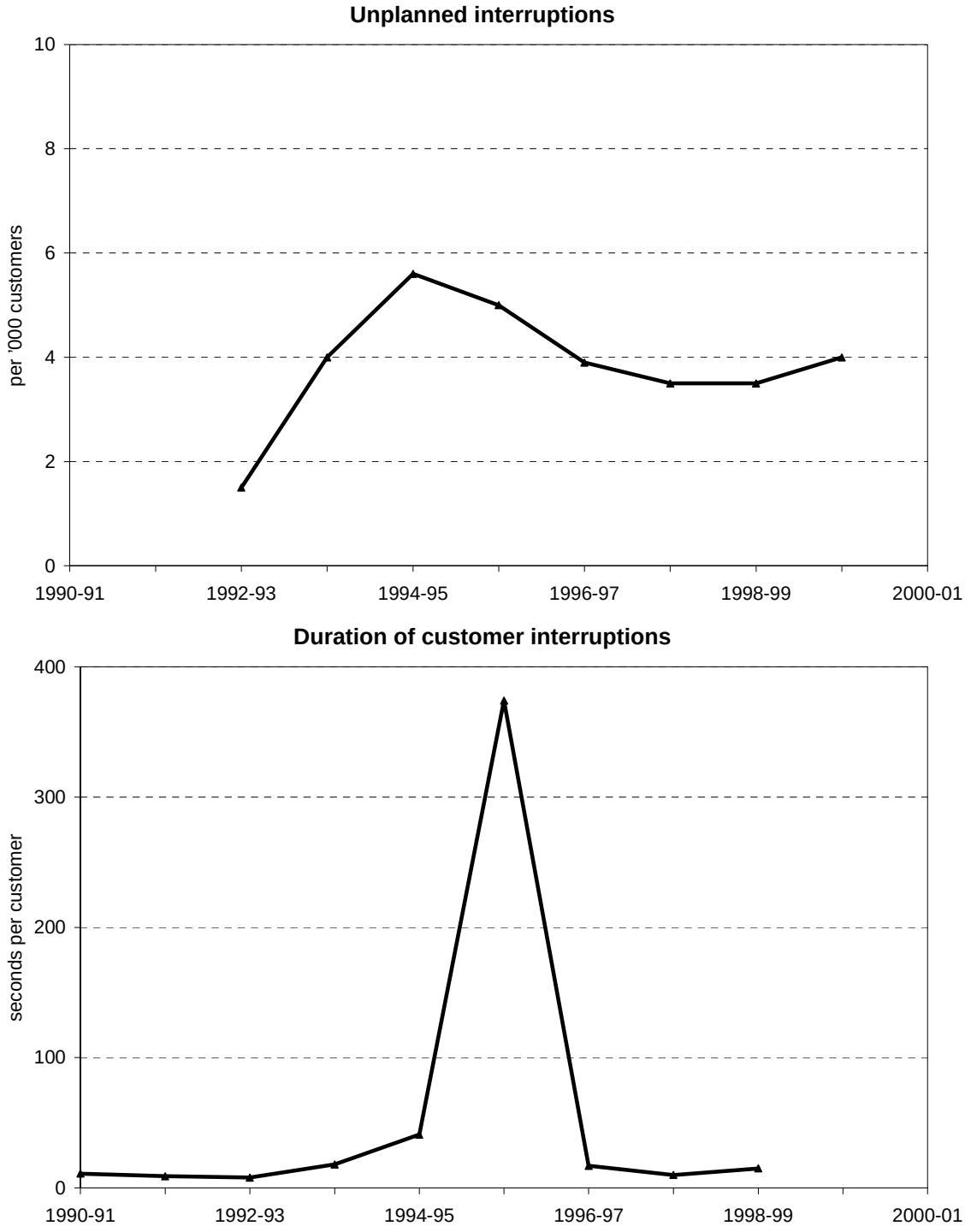
Figure 3.10 **Quality of service measures — Gascor (Victoria)**
1990-91 to 2000-01



Note Data for the years 1998-99, 1999-2000 and 2000-01 is unavailable as Gascor was separated into three separate distribution businesses. Since 1999, the Office of the Regulator-General has monitored the reliability of Victorian distributors using different indicators. These suggest that reliability of supply in the TXU service territory in terms of frequency of interruptions and duration of interruptions remained stable in 1999 and 2000.

Data sources: AGA (2001); ORG (2001); SCNPMGTE(1998 and previous issues).

Figure 3.11 **Quality of service measures — AlintaGas (WA)**
1990-91 to 2000-01



Note Average duration in 1995-96 was significantly affected by a major incident, causing water to enter the gas system. If this interruption is excluded, average duration falls to 36 seconds. Data prior to 1995-96 relate to the gas operations of the State Energy Commission of Western Australia, assumed by AlintaGas in January 1995. Data for 1990-91 and 1991-92 (for interruptions per '000 customers) was not collected by the Steering Committee on National Performance Monitoring of Government Trading Enterprises. Data for 1999-2000 (for average duration of interruptions) and 2000-01 was unavailable.

Data sources: AGA (2001); AlintaGas (2001b and previous issues); SCNPMGTE (1998 and previous issues).

There may be a lag before discernible declines in quality of service become apparent. Quality of service problems sometimes only begin to manifest themselves as assets age and poor maintenance leads to deterioration in these assets. Consequently, investments in the maintenance and upgrading of supply systems must be made to maintain, or improve upon, existing quality of service levels.

In those years where there were sharp variations in supply reliability, short-term trends may not be indicative of changes in the condition of the gas supply network. This is because interruptions can be the result of factors beyond a utility's immediate control, including third party damage to gas mains or water entering mains due to the condition of the mains. In Victoria in 2000, the Office of Gas Safety reported that of outages affecting more than five customers, 68 per cent were due to third party damage and 14 per cent were the result of water entering mains (ORG 2001).

To some extent, utilities can control the average duration of any particular interruption because it partially depends on a utility's response capability. This includes the ability to isolate sections, operate and locate valves, control pressures and the level of emergency preparedness generally (ORG 2001).

3.5 Shareholder outcomes

Each of the case study utilities — TXU Retail and AlintaGas — is now wholly-owned by the private sector.[26] As a result, the Victorian and Western Australian Governments no longer obtain the benefits of dividend payments from utilities, but are also not exposed to the financial risks involved in operating these businesses.

The financial performance of the case study utilities over the period when they were government-owned was examined to provide information on the relationship between price trends and financial outcomes, such as the return on assets. Low prices relative to costs may not achieve a satisfactory return on assets nor provide sufficient revenue to maintain and replace long-lived infrastructure assets. If services are to be maintained, the community, as owners of the utility, will have to provide financial support in the form of subsidies. Further, low prices may affect the viability of the business and possibly expose the community to financial risks.

The data used in calculating the shareholder outcomes presented in this section were generally taken from two sources:

26 TXU Retail (then Kinetik Energy) was sold to Texas Utilities of Australia Pty Ltd in January 1999. The sale of AlintaGas to the private sector was finalised in October 2000.

- Steering Committee on National Performance Monitoring of Government Trading Enterprises; and
- Productivity Commission reports on Financial Performance of Government Trading Enterprises.

There may be inconsistencies between these two data sets and the information published in the annual reports of gas utilities. These inconsistencies arise because of definitional differences.

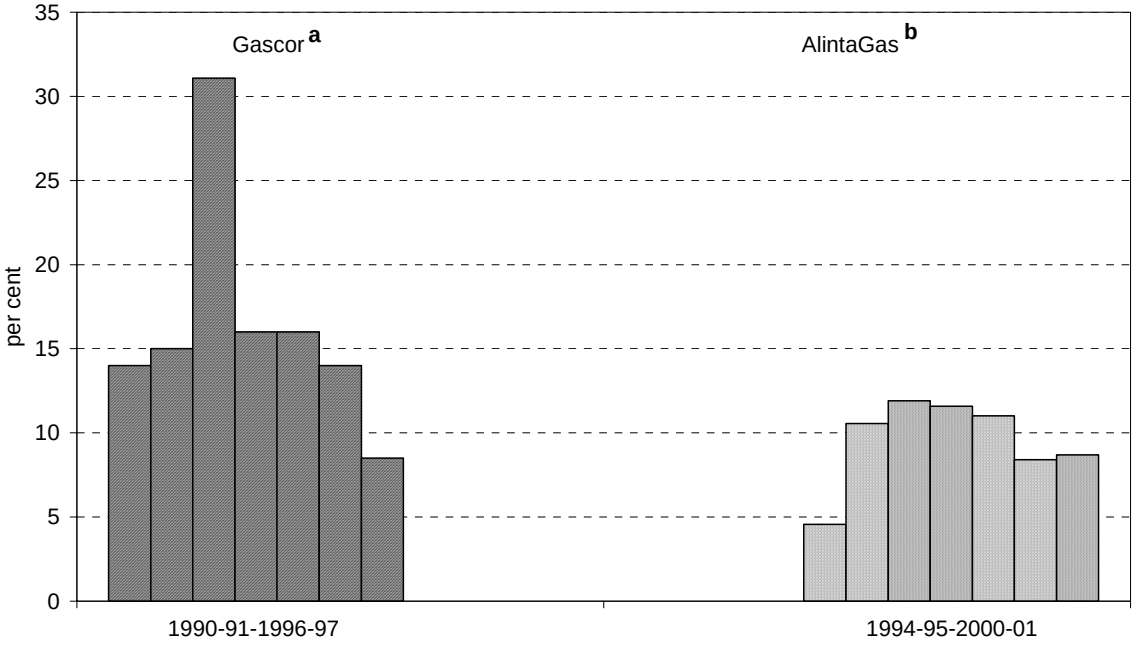
Profitability

In Western Australia, as a result of structural changes following the disaggregation of SECWA in 1995, time series data for the gas business over the whole period is unavailable. Nevertheless, trends in return on assets over part of the study period may indicate if real prices were set at a sufficient level to recover the full cost of the assets used to deliver gas to customers.

During the period of government ownership of gas assets, Gascor and AlintaGas earned a return on assets of over 10 per cent in most years (see figure 3.12). This suggests that declining real prices for business customers and household customers in WA, did not come at the expense of an inadequate return on assets.

Comparisons of performance over time based on indicators that include an estimate of asset values, have to be interpreted with care. Differences in asset valuation procedures and changes in the size of the asset base can affect the return on assets. Over the study period, there have been significant changes in the asset values of most utilities as a result of asset transfers, revaluations and changes in asset valuation methodologies.

Figure 3.12 **Return on assets — Gascor (Victoria) and AlintaGas (WA)**
1990-91 to 2000-01



Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. **a** Data prior to December 1994 include the transmission activities of the Gas and Fuel Corporation. These were transferred to the Gas Transmission Corporation. In July 1997, Gascor was disaggregated into three separate distribution businesses and three retail businesses. The last of these businesses was sold to the private sector in March 1999. **b** AlintaGas was formed in 1995 after the separation of gas and electricity businesses previously undertaken by the State Energy Commission of Western Australia (SECWA). SECWA did not publish separate financial accounts for each business. In October 2000, the sale of AlintaGas to the private sector was completed.

Data sources: AlintaGas (2001b and previous issues); SCNPMGTE (1998 and previous issues).

Payments to government

Publicly-owned gas utilities were often required to return some of their earnings to their owner-governments in the form of dividend payments. This is justified on competitive neutrality and cost recovery grounds.

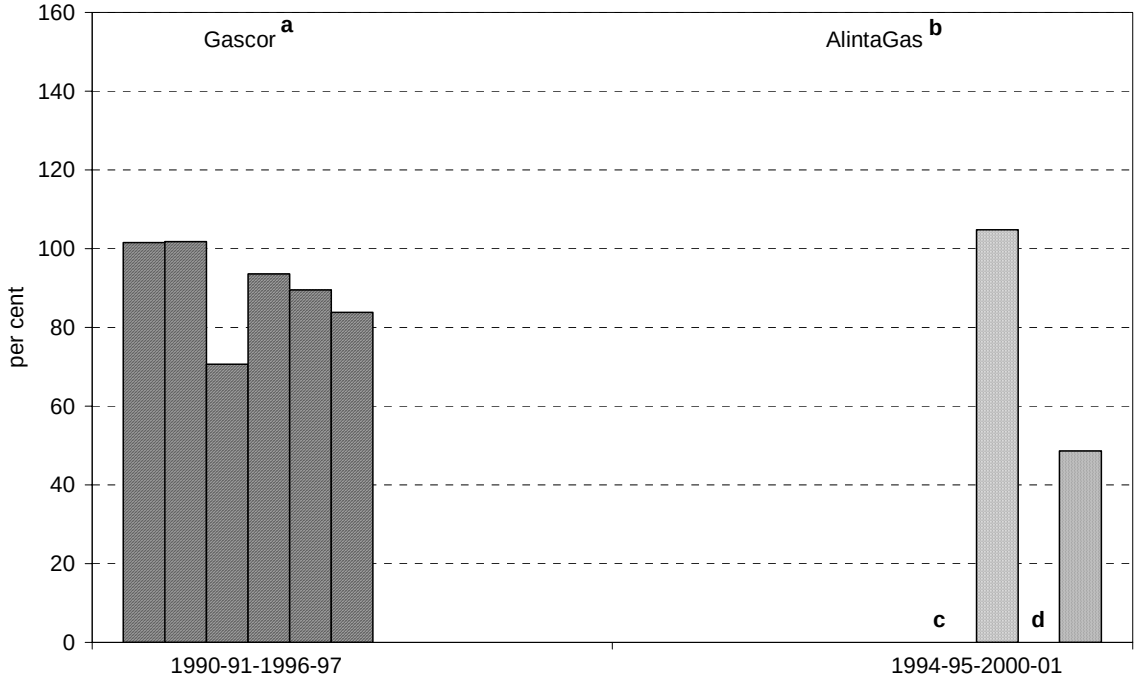
Where a utility is not required to pay dividends, it has proportionately more funds available for re-investment into its business, either for the development of new services or the improvement of existing ones. Further, a utility need not rely on debt-financing to the extent that its rivals must, and thus incurs lower overall operating costs.

Each of the case study utilities was required to pay dividends to its shareholder government. However, AlintaGas did not pay a dividend for the years 1994-95,

1995-96 and 1996-97.[27] The relative size of dividend payments is represented by the dividend payout ratio (dividends as a proportion of profit after tax) and the dividend to equity ratio (dividends as a proportion of average total equity).

The proportion of dividends paid by Gascor and AlintaGas under government ownership — generally greater than 80 per cent of profit after tax and more than 20 per cent of equity (see figures 3.13 and 3.14) — appears higher than that paid by private companies operating in the utilities sector (PC 2001a).

Figure 3.13 **Dividend payout ratio — Gascor (Victoria) and AlintaGas (WA)**
1990-91 to 2000-01



Note Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. **a** Data prior to December 1994 include the transmission activities of the Gas and Fuel Corporation. These were transferred to the Gas Transmission Corporation. In July 1997, Gascor was disaggregated into three separate distribution businesses and three retail businesses. The last of these businesses was sold to the private sector in March 1999. Gascor did not pay a dividend in 1996-97. **b** AlintaGas did not pay a dividend in 1995-96, the first full year of operation after it was separated from the State Energy Commission of Western Australia in January 1995. AlintaGas was sold to the private sector in October 2000. **c** In 1997-98, AlintaGas's dividend payout ratio was 5814 per cent. This reflects the payment of a special dividend of $1 206 million following the sale of a major gas transmission pipeline to the private sector. **d** In 1999-2000, AlintaGas's dividend payout ratio was 650 per cent.

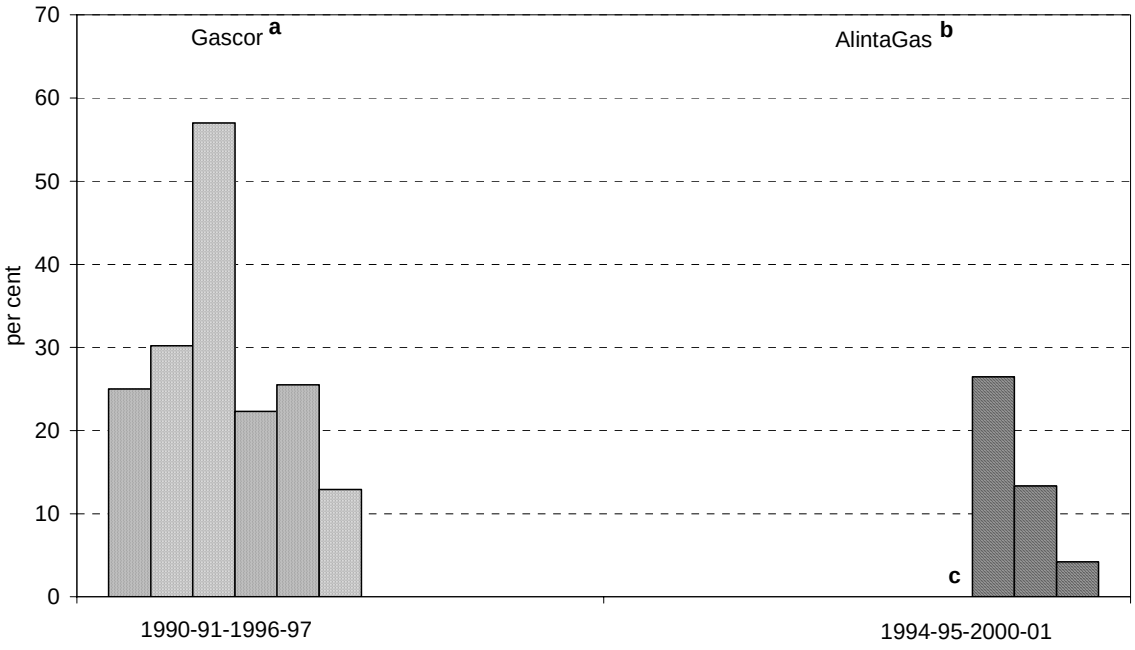
Data sources: AlintaGas (2001b and previous issues); PC (2000); SCNPMGTE (1998 and previous issues).

27 AlintaGas was formed in January 1995 following the disaggregation of SECWA.

In 1999-2000, the dividend payout ratios of private sector utilities averaged around 47 per cent, and ranged between 27 to 56 per cent. The dividend to equity ratios averaged around 5 per cent and ranged between 2 and 10 per cent.

Changes in the dividend payout ratio and dividend to equity ratios from year-to-year may reflect the profitability of a utility. However, changes may also be due to the effect of changes in asset values, liabilities and decisions to fund investment using retained earnings rather than through additional shareholder equity or borrowings.

Figure 3.14 **Dividend to equity ratio — Gascor (Victoria) and AlintaGas (WA)**
1990-91 to 2000-01



Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. **a** Data prior to December 1994 include the transmission activities of the Gas and Fuel Corporation. These were transferred to the Gas Transmission Corporation. In July 1997, Gascor was disaggregated into three separate distribution businesses and three retail businesses. The last of these businesses was sold to the private sector in March 1999. Gascor did not pay a dividend in 1996-97. **b** AlintaGas did not pay a dividend in 1995-96, the first full year of operation after it was separated from the State Energy Commission of Western Australia in January 1995. AlintaGas was sold to the private sector in October 2000. **c** In 1997-98, AlintaGas's dividend to equity ratio was 867 per cent. This reflects the payment of a special dividend of $1 206 million following the sale of a major gas transmission pipeline to the private sector.

Data sources: AlintaGas (2001b and previous issues); PC (2000); SCNPMGTE (1998 and previous issues).

Attachment A — Data tables

Table A3.1 **Real gas price trends — metropolitan households**
1990-91 to 2000-01 (index 1990-91=100)

	Sydney	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*	*Canberra*
1990-91	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991-92	100.7	103.6	98.0	101.5	101.2	99.0	100.4	97.7
1992-93	100.1	116.0	98.0	99.4	100.9	94.0	99.7	97.9
1993-94	96.2	114.0	96.1	98.9	98.8	94.6	98.4	95.9
1994-95	94.8	115.7	94.5	100.5	95.4	94.0	102.3	103.2
1995-96	96.2	111.5	91.0	98.9	91.8	97.7	100.5	103.5
1996-97	97.9	112.3	89.6	102.5	90.7	109.0	103.8	108.0
1997-98	102.6	113.9	89.1	106.3	91.0	109.7	108.3	110.5
1998-99	104.2	104.4	88.2	106.9	89.4	115.5	112.0	111.2
1999-00	99.4	98.8	86.7	108.5	87.3	139.1	117.8	108.8
2000-01	104.6	103.0	93.5	115.3	90.5	148.9	130.6	114.6

Note The real price index for each capital city was obtained by rebasing the CPI (gas) price indexes to a base year of 1990-91 and then deflating the rebased indexes by the rebased CPI (All groups) price index for each capital city. The CPI (gas) price indexes for 2000-01 include the Goods and Services and Tax. Other household fuels (such as wood and kerosene) were included in the gas CPI index with the introduction of the 14th CPI series in September 2000. As a result, prices for 2000-01 are not directly comparable with previous years.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0).

Table A3.2 **Real gas price trends — households, TXU Retail (Victoria)**
1990-91 to 2000-01 (index 1990-91=100)

	Metropolitan and non-metropolitan
1990-91	100.0
1991-92	103.5
1992-93	106.1
1993-94	114.0
1994-95	113.4
1995-96	109.9
1996-97	110.7
1997-98	111.9
1998-99	109.8
1999-00	104.6
2000-01	107.4

Note Real price indexes were calculated using the tariff applicable to average annual consumption of 57.8 GJ. Consumption during the winter months June to September was assumed to be 55 per cent of annual consumption. Tariffs were deflated by the CPI (All groups) for Melbourne. The nominal price series for 2000-01 includes the Goods and Services Tax. Prior to January 1999, prices were based on Gas and Fuel Corporation tariffs.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); Victoria Government Gazette (1997 and previous issues); Victoria Government Gazette (1998).

Table A3.3 **Real gas price trends — households, AlintaGas (WA)**

1990-91 to 2000-01 (index 1990-91=100)

	Metropolitan	*Non-metropolitan*
1990-91	100.0	100.0
1991-92	101.2	101.2
1992-93	100.9	100.9
1993-94	98.8	98.8
1994-95	95.4	95.4
1995-96	91.8	91.8
1996-97	90.9	90.6
1997-98	93.5	90.8
1998-99	91.8	98.2
1999-00	89.8	95.9
2000-01	93.1	99.4

Note Real price indexes were calculated using the tariff applicable to the customer's location and an average annual consumption of 18.4 GJ. Consumption during the months June to September was assumed to be 55 per cent of annual consumption. Prices were deflated by the CPI (All groups) for Perth. The nominal price series for 2000-01 include the Goods and Services Tax. Prior to 1996-97, prices were based on State Energy Commission of Western Australia tariffs. Separate prices apply to customers in Albany and Kalgoorlie-Boulder. Supply of natural gas to Kalgoorlie-Boulder commenced in 1997. Customers in other non-metropolitan areas such as Geraldton and Bunbury are charged the same rates as customers in Perth.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); WA Government Gazette (2000 and previous issues); Western Power Perth, pers. comm., 7 August 2001.

Table A3.4 **Natural gas consumption by sector — Victoria and WA**

1999-2000 (per cent)

Sector	*Victoria*	*WA*
	Per cent	Per cent
Residential	46.7	3.3
Commercial and industrial	47.1	54.7
Electricity Generation	6.3	42.0

a Includes household consumption.

Source: PC estimates based on Office of Energy (2001) and AGA (2001).

Table A3.5 **Real price trends — business, TXU Retail (Victoria)**

1990-91 to 2000-01 (index 1990-91=100)

	Metropolitan and non-metropolitan small business	*Metropolitan and non-metropolitan medium business*
1990-91	100.0	100.0
1991-92	104.0	102.7
1992-93	105.4	104.1
1993-94	102.9	101.5
1994-95	102.0	100.6
1995-96	98.3	97.0
1996-97	97.1	95.8
1997-98	98.2	96.9
1998-99	93.0	93.7
1999-00	83.7	87.8
2000-01	74.0	80.2

Note Price indexes were calculated using an annual consumption level of 500 GJ for a small business and 10 000 GJ for a medium sized business. The pattern of consumption is assumed to be uniform throughout the year. Prices were deflated by the CPI (All groups) for Melbourne. The nominal price series for 2000-01 exclude the Goods and Services Tax. Business prices do not vary between metropolitan and non-metropolitan areas because uniform tariffs apply throughout TXU Retail's franchise area. Prior to January 1999, prices were based on Gas and Fuel Corporation tariffs.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); Victoria Government Gazette (1997 and previous issues); Victoria Government Gazette (1998).

Table A3.6 **Real gas price trends — business, AlintaGas (WA)**

1990-91 to 2000-01 (index 1990-91=100)

	Small business		*Medium business*	
	Metropolitan	*Non-metropolitan*	*Metropolitan*	*Non-metropolitan*
1990-91	100.0	100.0	100.0	100.0
1991-92	99.3	106.1	99.2	108.3
1992-93	99.0	105.8	99.0	108.0
1993-94	96.9	103.6	96.9	105.7
1994-95	103.7	101.5	104.3	104.3
1995-96	99.8	97.7	100.3	100.3
1996-97	98.4	96.4	99.0	99.0
1997-98	98.7	96.6	99.2	99.2
1998-99	97.0	104.7	97.5	107.6
1999-00	94.7	102.3	95.3	105.1
2000-01	96.2	106.0	99.1	108.9

Note Price indexes were calculated using an annual consumption level of 500 GJ for a small business and 10 000 GJ for a medium sized business. The pattern of consumption is assumed to be uniform throughout the year. Prices were deflated by the CPI (All groups) for Perth. The nominal price series for 2000-01 exclude the Goods and Services Tax. Prior to 1996-97, prices were based on State Energy Commission of Western Australia tariffs. Non-metropolitan prices apply to customers in Albany. Customers in other areas such as Geraldton and Bunbury are charged the same rates as customers in Perth.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); WA Government Gazette (2000 and previous issues); Western Power Perth, pers. comm., 7 August 2001.

Table A3.7 **Average real city-gate gas prices — Melbourne and Perth**

1990-91 to 2000-01 (index 1990-91=100))

	Melbourne	*Perth*
1990-91	100.0	100.0
1991-92	105.6	96.9
1992-93	109.7	95.4
1993-94	114.3	92.3
1994-95	**n.a.**	**n.a.**
1995-96	**n.a.**	**n.a.**
1996-97	**n.a.**	**n.a.**
1997-98	**n.a.**	**n.a.**
1998-99	95.8	60.4
1999-00	**n.a.**	**n.a.**
2000-01	**n.a.**	**n.a.**

Note Nominal city-gate prices were deflated by the CPI (All groups) for each capital city. Transmission prices for Perth were assumed to be constant in nominal terms over the period 1990-91 to 1993-94. City-gate prices include the price of gas from producers and the transmission price for transporting gas to the capital city distribution points. The city-gate price excludes distribution and retail charges. **n.a.** Not available.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); AGA (2001 and previous issues).

Table A3.8 **Real gas price trends — contract customers, Victoria**

1990-91 to 2000-01 (index 1990-91=100)

	Commercial	*Industrial*
1990-91	100.0	100.0
1991-92	100.0	100.3
1992-93	91.1	89.0
1993-94	90.9	88.8
1994-95	84.9	85.2
1995-96	82.5	87.7
1996-97	80.9	86.0
1997-98	**n.a.**	**n.a.**
1998-99	**n.a.**	**n.a.**
1999-00	**n.a.**	**n.a.**
2000-01	**n.a.**	**n.a.**

Note Data after 1996-97 are unavailable. Nominal average prices for commercial contract and industrial contract customers collected by the Steering Committee on National Performance Monitoring of Government Trading Enterprises (SCNPMGTE) were deflated by the CPI (All groups) index for Melbourne. Information provided to the SCNPMGTE did not disclose the definition of commercial or industrial customers. **n.a.** Not available.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); SCNPMGTE (1998 and previous issues).

Table A3.9 **Real gas prices trends — manufacturing businesses, Australia**

1990-91 to 2000-01 (index 1990-91=100)

	Gas price index
1990-91	100.0
1991-92	100.3
1992-93	101.5
1993-94	99.3
1994-95	107.1
1995-96	101.1
1996-97	98.2
1997-98	101.5
1998-99	99.8
1999-00	102.3
2000-01	114.8

Note The real gas price index for manufacturing businesses is calculated by dividing the nominal index for gas prices by the nominal index of the weighted average of all prices for materials used by manufacturing businesses. The nominal price index for 2000-01 excludes the Goods and Services Tax.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); ABS (*Price Index of Materials Used in the Manufacturing Industry*, Cat. no. 6411.0).

Table A3.10 **Quality of service measures — Gascor (Victoria)**

1990-91 to 2000-01

	Average frequency of interruption	*Average duration of interruption*
	No. of interruptions per 1 000 customers	Seconds per customer
1990-91	0.5	9
1991-92	1.4	94
1992-93	0.9	17
1993-94	1.6	350
1994-95	1.2	60
1995-96	2.1	384
1996-97	1.5	277
1997-98	1.5	25
1998-99	**n.a.**	**n.a.**
1999-00	**n.a.**	**n.a.**
2000-01	**n.a.**	**n.a.**

Note Data for the years 1998-99, 1999-2000 and 2000-01 is unavailable as Gascor was separated into three separate distribution businesses. Since 1999, the Office of the Regulator-General has monitored the reliability of Victorian distributors using different indicators. These suggest that reliability of supply in the TXU service territory in terms of frequency of interruptions and duration of interruptions remained stable in 1999 and 2000. **n.a.** Not available.

Sources: AGA (2001); ORG (2001); SCNPMGTE(1998 and previous issues).

Table A3.11 **Quality of service measures — AlintaGas (WA)**

1990-91 to 2000-01

	Average frequency of interruption	*Average duration of interruption*
	No. of interruptions per 1 000 customers	Seconds per customer
1990-91	**n.a.**	11
1991-92	**n.a.**	9
1992-93	1.5	8
1993-94	4.0	18
1994-95	5.6	41
1995-96	5.0	374
1996-97	3.9	17
1997-98	3.5	10
1998-99	3.5	15
1999-00	4.0	**n.a.**
2000-01	**n.a.**	**n.a.**

Note Average duration in 1995-96 was significantly affected by a major incident, causing water to enter the gas system. If this interruption is excluded, average duration falls to 36 seconds. Data prior to 1995-96 relate to the gas operations of the State Energy Commission of Western Australia, assumed by AlintaGas in January 1995. Data for 1990-91 and 1991-92 (for interruptions per '000 customers) was not collected by the Steering Committee on National Performance Monitoring of Government Trading Enterprises. **n.a.** Not available.

Sources: AGA (2001); AlintaGas (2001b and previous issues); SCNPMGTE (1998 and previous issues).

Table A3.12 **Return on assets — Gascor (Victoria) and AlintaGas (WA)**

1990-91 to 2000-01 (per cent)

	GasCor[a]	*AlintaGas*[b]
1990-91	14.0	**n.a.**
1991-92	15.0	**n.a.**
1992-93	31.1	**n.a.**
1993-94	16.0	**n.a.**
1994-95	16.0	4.58
1995-96	14.0	10.56
1996-97	8.5	11.90
1997-98	**n.a.**	11.58
1998-99	**n.a.**	11.01
1999-00	**n.a.**	8.41
2000-01	**n.a.**	8.70

Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. **a** Data prior to December 1994 include the transmission activities of the Gas and Fuel Corporation. These were transferred to the Gas Transmission Corporation. In July 1997, Gascor was disaggregated into three separate distribution businesses and three retail businesses. The last of these businesses was sold to the private sector in March 1999. **b** AlintaGas was formed in 1995 after the separation of gas and electricity businesses previously undertaken by the State Energy Commission of Western Australia (SECWA). SECWA did not publish separate financial accounts for each business. In October 2000, the sale of AlintaGas to the private sector was completed. **n.a.** Not available.

Sources: AlintaGas (2001b and previous issues); SCNPMGTE (1998 and previous issues).

Table A3.13 **Dividend payout ratio — Gascor (Victoria) and AlintaGas (WA)**
1990-91 to 2000-01 (per cent)

	GasCor[a]	*AlintaGas*[b]
1990-91	101.5	**n.a.**
1991-92	101.8	**n.a.**
1992-93	70.7	**n.a.**
1993-94	93.6	**n.a.**
1994-95	89.5	**n.a.**
1995-96	83.8	0.0
1996-97	0.0	0.0
1997-98	**n.a.**	5813.9[c]
1998-99	**n.a.**	104.8
1999-00	**n.a.**	650.2
2000-01	**n.a.**	48.6

Note Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. **a** Data prior to December 1994 include the transmission activities of the Gas and Fuel Corporation. These were transferred to the Gas Transmission Corporation. In July 1997, Gascor was disaggregated into three separate distribution businesses and three retail businesses. The last of these businesses was sold to the private sector in March 1999. **b** AlintaGas did not pay a dividend in 1995-96, the first full year of operation after it was separated from the State Energy Commission of Western Australia in January 1995. AlintaGas was sold to the private sector in October 2000. **c** The high payout ratio reflects the payment of a special dividend of $1 206 million following the sale of a major gas transmission pipeline to the private sector. **n.a.** Not available.

Sources: AlintaGas (2001); AlintaGas (2000); PC (2000); SCNPMGTE (1998 and previous issues).

Table A3.14 **Dividend to equity ratio — Gascor (Victoria) and AlintaGas (WA)**
1990-91 to 2000-01 (per cent)

	GasCor[a]	*AlintaGas*[b]
1990-91	25.0	**n.a.**
1991-92	30.2	**n.a.**
1992-93	57.0	**n.a.**
1993-94	22.3	**n.a.**
1994-95	25.5	**n.a.**
1995-96	12.9	0.0
1996-97	**n.a.**	0.0
1997-98	**n.a.**	867.0[c]
1998-99	**n.a.**	26.5
1999-00	**n.a.**	13.3
2000-01	**n.a.**	4.2

Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. **a** Data prior to December 1994 include the transmission activities of the Gas and Fuel Corporation. These were transferred to the Gas Transmission Corporation. In July 1997, Gascor was disaggregated into three separate distribution businesses and three retail businesses. The last of these businesses was sold to the private sector in March 1999. Gascor did not pay a dividend in 1996-97. **b** AlintaGas did not pay a dividend in 1995-96, the first full year of operation after it was separated from the State Energy Commission of Western Australia in January 1995. AlintaGas was sold to the private sector in October 2000. **c** The high ratio reflects the payment of a special dividend of $1 206 million following the sale of a major gas transmission pipeline to the private sector. **n.a.** Not available.

Sources: AlintaGas (2001b and previous issues); PC (2000); SCNPMGTE (1998 and previous issues).

4 Water and sewerage

Key outcomes

- In most capital cities, real average metropolitan household water and sewerage prices were higher in 2000-01 than they were in 1990-91. The exceptions to this were Melbourne and Hobart.
- Overall, there was a net decline in direct household expenditure of $48 million in 2000-01 for Australian capital cities.
- In NSW and SA (examined as case studies), real household prices increased by 7 per cent in Sydney, decreased by 19 per cent in the Hunter region, and increased by 16 per cent in Adelaide and the non-metropolitan areas of SA.
- In Sydney, the relative price trend for concession holders varied according to consumption level. In the Hunter region, prices to concession holders decreased relative to non-concession holders. In SA, the real price increase was higher for concession holders than for non-concession holders.
- Low and medium water use business customers in Sydney have benefited from real price reductions of 75 per cent and 65 per cent respectively. Similarly, low, medium, medium to high, and high use business customers in the Hunter region have benefited from real price reductions ranging from 3 per cent to 66 per cent. Real business prices have declined for commercial and industrial customers in Adelaide. In non-metropolitan areas of SA, real prices for commercial customers have increased significantly and remained relatively unchanged for industrial customers.
- There was no evidence to suggest that service delivery and reliability of supply (as indicators of quality) have deteriorated in NSW and SA.
- Notwithstanding mixed price trends and rebalancing between customer classes, real revenues have fallen in NSW for both case study utilities (largely due to reduced consumption) and the returns on assets are below the risk free rate. Despite real revenue increases in SA, the return on assets is lower than the risk free rate.
- The continuing introduction of consumption-based pricing has contributed to a 17 per cent reduction in per capita consumption for a selection of major Australian water utilities over the study period.

Since 1990-91, Australian governments have continued to reform water utilities to achieve efficient and sustainable water use. There has been significant progress in implementing consumption-based pricing, reducing cross-subsidies, and in recognising community service obligations (CSOs).

Reforms were specifically aimed at making prices more reflective of the costs of supplying water and sewerage services. Specifically, there was a change from property-based to consumption-based prices and a rebalancing of tariffs between household and business customers.

In this chapter, trends in real prices paid by household customers for water and sewerage services are presented for the period 1990-91 to 2000-01. The impact of these real price trends on household expenditure for a range of income groups is also reported.

Using a case study approach, differences in price trends between metropolitan and non-metropolitan customers, between household and different-sized business customers, and between concession and non-concession customers are presented.

Quality of service measures were examined to determine whether any declines in real prices over the period have been associated with lower service quality. Finally, the financial performance of the case study utilities was examined to see if price declines have been associated with falling rates of return.

4.1 Industry reforms

The development of a national approach to water policy over the last decade has had a significant impact on water industry reform in Australia.

In 1994, the Council of Australian Governments (CoAG) endorsed a national water reform framework to cover both surface and groundwater, as well as the rural, urban and bulk water sectors of the industry. The reforms of particular interest for this study are:

- *Institutional reform* — adoption of an integrated catchment management approach, separating the roles of water resource management, standard setting and regulatory enforcement (so that a water utility does not set its own prices or environmental standards), and further development of inter-agency performance comparisons; and
- *Pricing reform* — including consumption-based pricing, full cost recovery and the elimination or reduction of cross-subsidies.

In April 1995, it was decided that the water reform framework would be implemented under the umbrella of National Competition Policy (NCP) and linked to NCP payments. States and Territories are required to achieve satisfactory progress against their NCP reform commitments — of which water reform is a significant component — to receive a per capita share of around $6 billion in transfers from the Commonwealth over the period 1997-98 to 2005-06 (National Competition Council, Melbourne, pers. comm., 12 February 2002).

In addition to the water specific reforms endorsed by CoAG, there are a set of agreed principles which also apply to the water sector under the NCP. These principles include:

- pricing oversight of water businesses;
- the introduction of competitive neutrality measures such as tax-equivalent regimes and removal of anti-competitive practices as defined in the *Trade Practices Act 1974*;
- structural reform of public monopolies to conform with Corporations Law;
- review of legislation to identify anti-competitive elements; and
- access to services requiring nationally significant infrastructure, as provided for under Part IIIA of the *Trade Practices Act 1974*.

Institutional reforms

Over the study period, institutional reform has been aimed at improving the efficiency of service delivery by making water utilities more commercially focused and accountable for financial and operational performance.

Most metropolitan water utilities have been corporatised. In NSW, the government changed the status of some utilities to regain control over an essential service.[1]

Some state governments have contracted out input services — for example, in 1996, the South Australian Government contracted out the management and operation of Adelaide's water supply and wastewater treatment to United Water.

In Victoria, a different approach was adopted — in January 1995, the Melbourne Water Corporation was disaggregated into three water retail businesses (City West Water, Yarra Valley Water and South East Water) and a wholesale water and sewerage business.

1 For example, in 1999, the status of Sydney Water Corporation was changed from a company to a statutory state-owned corporation in order to give the responsible Minister greater power to access information.

In most jurisdictions, one or more of the standard setting, resource management and pricing functions have been separated out from service provision. Examples include:

- In NSW, regulatory functions, including prices oversight, are performed by the Independent Pricing and Regulatory Tribunal (IPART). The Independent Competition and Regulatory Commission in the ACT provides similar functions to those of IPART.
- Resource management functions were transferred from the Sydney Water Corporation to the newly created Sydney Catchment Authority (SCA) in July 1999. The SCA is required to manage and protect catchment areas, water storage dams and major water pipelines, and to supply bulk water to Sydney Water, other water supply authorities and direct customers.
- In Victoria, the Office of the Regulator-General (ORG) has legislated regulatory responsibilities for the three metropolitan retail utilities. However, these utilities were not subject to independent prices oversight over the study period.[2] Price control remained the responsibility of the Victorian Government.[3]
- In WA, the Water Authority of Western Australia became the Water Corporation in 1996. The Water and Rivers Commission was established at this time to manage and protect Western Australia's water resources. The Office of Water Regulation was also established to administer a licensing scheme that set standards of service for the Water Corporation and other water service providers.
- In Tasmania, the Minister for Local Government sets prices for bulk water after considering recommendations from the Government Prices Oversight Commission. The Commission was established in 1995 and may make recommendations on the basis of maximum revenues, maximum prices and or pricing principles for bulk water suppliers. In the Northern Territory, independent regulatory advice, including price regulation, has been provided by the Utilities Commission since March 2000.

2 Similarly, metropolitan water utilities in SA and WA were not subject to independent prices oversight over the study period.

3 It has subsequently been proposed that from 1 January 2003, the Essential Services Commission (the successor to the ORG) will become the independent economic regulator for Victoria's water and sewerage utilities.

Pricing reforms

Water is a scarce resource in Australia, with the minority of its limited resources devoted to urban water and sewerage services.[4] A growing demand for water, and the need to allocate it more efficiently has led to a restructuring of water tariffs over the study period.

The extent to which pricing reforms have been implemented varies between and within jurisdictions. NSW in particular, has been at the forefront. Consumption-based pricing was first introduced by the Hunter Water Corporation in 1982. Since then, consumption-based pricing for major urban water utilities has been introduced in all jurisdictions except Tasmania.[5]

For the non-major urban water utilities (NMUs), owned and operated by local government, pricing reform has been slower to occur. NMUs are smaller in size and their organisational structure and demographic characteristics are quite different from the major urban water utilities typically found in Australia's capital cities.

Local government plays a significant role in urban water supply in Queensland and Tasmania in particular. However, local governments are not guaranteed a share of competition payments in return for reform, with the exception of Queensland (NCC 1998).

Consumption-based pricing

Historically, water and sewerage charges were based on property values, accompanied by a free allowance of water which could be consumed without any charge. This free water allowance offered no financial incentive to customers to conserve water.

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4 Australians use around 24 000 GL of water per year. Around 80 per cent comes from surface water and 20 per cent from groundwater. Surface water predominates in all States and Territories except WA and the Northern Territory. Some 75 per cent of water is used in irrigated agriculture, a further 20 per cent is used by the urban and industrial sectors, and the remaining 5 per cent is used for other rural uses such as stock and domestic purposes (National Land and Water Resources Audit 2001).

5 Access and volumetric charges for water services have been implemented in all capital cities in Australia with the exception of Hobart. Urban water reform in Tasmania has been delayed by a local council amalgamation program. However, the State Government has undertaken to put in place consumption-based pricing where cost effective. Property-based sewerage charges have been replaced with a cost reflective charge in most capital cities. Perth, Adelaide and Hobart have retained property-based charges for sewerage services (NCC 1999).

Property-based charging rarely reflected the actual cost of providing water and sewerage services. It also resulted in cross-subsidisation between different customer classes because property values bear little relationship to the quantity of water used.

Consumption-based charges comprise a fixed access charge for water and sewerage, plus a volumetric charge based on water use. In some capital cities, a volumetric charge for sewerage use has also been introduced.

Stepped volumetric (block) tariffs, based on amounts consumed above a threshold level, have been implemented in some jurisdictions. Under this tariff option, successive blocks of water consumption may be charged at a higher or lower unit price. For example:

- A two stepped decreasing block tariff applied to all customers, including household customers, in the Hunter region of NSW between 1992-93 and 2000-01. However, 98 per cent of household consumption is charged at the first step.
- A single, two stepped and three stepped increasing block tariff, with changing threshold levels, applied to most customers in SA at various times over the study period.

The access charge is intended to reflect the fixed costs of supplying the customer, for example the cost of maintaining the system and environmental costs.[6] The volumetric charge is intended to reflect the long-run cost to the business of supplying additional units of water.

The introduction of a volumetric charge for water was intended to encourage water conservation, thereby deferring investment in new water storages and benefiting the environment.

The Water Services Association of Australia (WSAA) suggested that the introduction of consumption-based pricing contributed to a 17 per cent reduction in per capita consumption for a selection of major Australian water utilities over the study period (WSAA 2001 and previous issues).[7]

6 The collection of water in catchments, its transportation to homes and its use and disposal to the sewerage system affects the environment, other water users and the community generally. These 'external' effects could be described as 'costs' borne by the community. If these costs are unaccounted for, water charges may be too low with consumption higher than it might otherwise be if the full cost of service provision were passed on to customers.

7 Community education programs, use of water saving devices and a general increase in environmental awareness in the community are other factors which may have contributed to the decline in water consumption over the study period.

Full cost recovery

Most urban water utilities have achieved full cost recovery over the study period (NCC 2001b).

Under the CoAG water reform framework, a set of cost recovery guidelines provide jurisdictional regulators with a framework for interpreting the requirements for full cost recovery. Regulators are required to ensure that a water utility sets prices between avoidable costs, to ensure commercial viability,[8] and stand alone costs, to avoid monopoly rents.[9]

4.2 Price outcomes for metropolitan households

In the absence of a complete Australian Bureau of Statistics (ABS) consumer price index (CPI) series for water and sewerage,[10] the Productivity Commission constructed a household real price index for each Australian capital city for the period 1990-91 to 2000-01.

Most of the indexes were constructed by deriving a consumption basket for water and sewerage. The value of the basket was calculated using published tariff schedule information.[11] Different levels of consumption were assumed in each capital city (see attachment A).

Unlike the other industry household price trends reported in this study, the Goods and Services Tax (GST) introduced in July 2000 was not included in the nominal price index series for 2000-01 because household water and sewerage customers are exempt from this tax. However, GST is included in the CPI (All groups) index used to deflate nominal prices to real prices.

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8 The CoAG 1997 pricing principles state that to be viable, a water business should recover at least the operations, maintenance and administrative costs, externalities (that is, natural resource management costs attributable and incurred by a water business), taxes or tax-equivalents (not including income tax), the interest cost on debt, dividends (if any) and make provision for future asset refurbishment or replacement using an annuity approach.

9 To avoid monopoly rents, the CoAG 1997 pricing principles state that a water business should not recover more than operations, maintenance and administrative costs, externalities, taxes or tax-equivalents, and the provision for the cost of asset consumption and cost of capital, the latter using a weighted average cost of capital.

10 The ABS real price index series for water and sewerage was first published in 1998 and does not cover the entire study period.

11 The resulting value takes account of any changes in tariff structure during the study period.

In most capital cities, there is only one supplier of water and sewerage services to households. Where there was more than one supplier, only one was chosen. For example, in Hobart up to eight councils are responsible for the delivery of these services. Hobart City Council was chosen as it is the largest supplier.

Since 1995, three water utilities provide water and sewerage services to household customers in Melbourne. The tariff schedules for each of these utilities are similar, and City West Water was chosen as the representative utility for Melbourne households.

In most capital cities, average real metropolitan household water and sewerage prices were higher in 2000-01 then they were in 1990-91 (see figure 4.1). Real prices increased by 34 per cent in Darwin, 22 per cent in Brisbane, 16 per cent in Adelaide, 12 per cent in Canberra, 10 per cent in Perth and 7 per cent in Sydney. In contrast, real prices fell by 34 per cent in Hobart and 21 per cent in Melbourne.

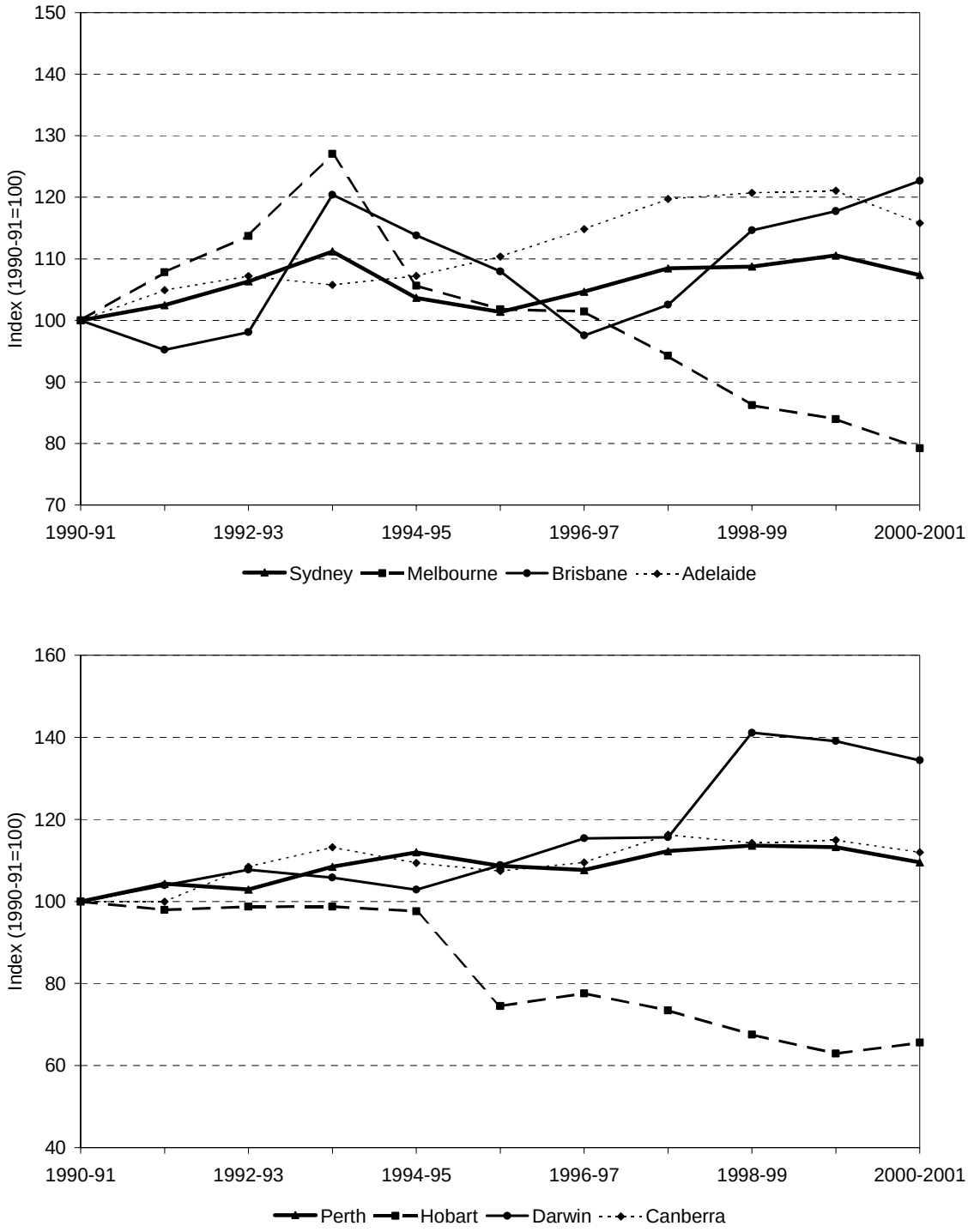
The sharp rise in water and sewerage prices in Darwin in 1998-99 was largely a result of the introduction of a fixed charge for water services, consistent with the CoAG framework.[12] The impact of this change, combined with an increase in the volumetric charge for water use, resulted in a 26 per cent increase in real prices.

In contrast, real household prices in Melbourne fell by 48 per cent between 1993-94 and 2000-01. This reflected a policy to freeze tariff rates for water and sewerage between January 1995 and June 2001, combined with the announcement of a package of water reforms in October 1997. These water reforms comprised a price and debt restructuring package, that resulted in an 18 per cent nominal reduction in water and sewerage bills for around 85 per cent of households in Melbourne in 1998.

[12] This fixed charge is based on a daily rate and linked to the customer's meter size. It is intended to reflect the customer's impact on infrastructure costs.

Figure 4.1 **Real water and sewerage price trends — metropolitan households**

1990-91 to 2000-01



Note For details on the construction of the household real price indexes refer to attachment A.

Data source: Table B4.1.

Implications for household expenditure

Water and sewerage prices have a direct effect on household expenditure. They also have an indirect effect when changes in water and sewerage prices paid by businesses are passed on to customers in the form of higher or lower prices for final products and services. These indirect effects will be examined in a forthcoming Productivity Commission research study.

The direct impact of changes in the price of water and sewerage over the decade on real household expenditure in 2000-01 was estimated for each household income quintile. This was done by multiplying the actual household expenditure on water and sewerage in 2000-01, by the difference between the movement in its price over the ten years to 2000-01 and the movement in the CPI (All groups) over the same ten year period.

In 2000-01, total expenditure by capital city households on water and sewerage was around $1.7 billion.[13]

The impact of price changes on the level of consumption and changes to the basis for charging were ignored. In the case of the latter, the change from property-based to consumption-based charges may have significant implications. For example, it was assumed that the change in unit price was uniform across all income quintiles. However, the change from property-based charges is likely to have resulted in unit price changes that differ across and within income quintiles.[14] Consequently, the average changes reported in tables 4.1 to 4.3, should be regarded as indicative only.

While changes in the basis for charging complicate calculations of a consistent price series, water and sewerage price changes overall appear to have increased faster than the CPI (All groups) in all capital cities, except Melbourne and Hobart. Further, subject to the qualification in the preceding paragraph, the expenditure changes in 2000-01, arising from price changes over the previous decade and measured in dollars per household, appear to have been largest for households in the highest income quintile (see table 4.1). However, when measured as a percentage of household expenditure per year, the changes appear to be more significant for households in the lowest income quintile (see table 4.2).

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13 Actual household expenditure in 2000-01 was derived by taking the proportion of total household expenditure that was spent on water and sewerage in the 1998-99 Household Expenditure Survey (ABS 2000a). The expenditure weight from the survey was then multiplied by total household expenditure in 1998-99 and inflated to 2000-01 prices using the CPI (All groups) deflator, to obtain an estimate of actual household expenditure on water and sewerage in 2000-01.

14 For example, households on the same income level, but with different property values, would have experienced different changes in their bills.

Table 4.1 **Real changes to household water and sewerage expenditure arising from price changes over the previous decade, by income quintile**

$ per capital city household, 2000-01

Income quintile	*Sydney*	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*[a]	*Canberra*[b]
Lowest 20%	16.03	-64.74	40.48	31.43	16.26	-91.20	34.43	20.17
Second	17.85	-98.23	40.38	39.96	21.24	-91.50	40.83	30.51
Third	21.16	-104.92	47.23	61.48	26.61	-175.64	55.77	40.25
Fourth	26.95	-119.36	61.83	64.78	31.35	-162.40	84.37	44.12
Highest 20%	32.43	-147.79	79.15	97.52	40.39	-162.11	148.82	58.18
All households	24.09	-111.03	53.37	56.25	27.20	-131.51	91.34	45.12

Note A negative sign means that households incurred a real decrease in water and sewerage expenditure because real prices declined over the period. [a] The expenditure changes for households in the lowest three income quintiles, should be interpreted with care as the underlying data is associated with relatively high standard errors. [b] The expenditure change for households in the lowest income quintile should be interpreted with care as the underlying data is associated with a relatively high standard error.

Source: PC estimates based on ABS (*Household Expenditure Survey Australia 1998-99*, Cat. no. 6535.0).

Table 4.2 **Real changes to household water and sewerage expenditure arising from price changes over the previous decade, as a proportion of total expenditure**

Per cent per capital city households, 2000-01

Income quintile	*Sydney*	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*[a]	*Canberra*[b]
Lowest 20%	0.08	-0.31	0.23	0.19	0.08	-0.49	0.13	0.13
Second	0.06	-0.36	0.15	0.17	0.08	-0.35	0.15	0.11
Third	0.06	-0.28	0.13	0.18	0.07	-0.52	0.15	0.10
Fourth	0.05	-0.24	0.13	0.14	0.07	-0.35	0.17	0.09
Highest 20%	0.05	-0.22	0.12	0.15	0.06	-0.24	0.21	0.08
All households	0.05	-0.26	0.14	0.16	0.07	-0.36	0.18	0.09

Note A negative sign means that households incurred a real decrease in water and sewerage expenditure because real prices declined over the period. [a] The expenditure changes for households in the lowest three income quintiles, should be interpreted with care as the underlying data is associated with relatively high standard errors. [b] The expenditure change for households in the lowest income quintile should be interpreted with care as the underlying data is associated with a relatively high standard error.

Source: PC estimates based on ABS (*Household Expenditure Survey Australia 1998-99*, Cat. no. 6535.0).

As previously indicated, the changes in table 4.1 are average expenditure changes for capital city households in each household income quintile. Subject to that qualification, the aggregate change in real household water and sewerage expenditure for all capitals appears to be a decrease of about $48 million in 2000-01 (see table 4.3). The largest decrease in total expenditure for capital city households was in Melbourne (about $148 million per year), and the largest increase was in Sydney (about $36 million per year).

Table 4.3 **Total change to household water and sewerage expenditure arising from price changes over the previous decade**

Capital city households, 2000-01

	Households[a]	*Change per household*	*Total change*
	No.	$	$
Sydney	1 507 189	24.09	36 315 398
Melbourne	1 330 406	-111.03	-147 709 011
Brisbane	549 387	53.37	29 322 493
Adelaide	436 065	56.25	24 530 319
Perth	456 010	27.20	12 403 803
Hobart	89 751	-131.51	-11 803 188
Darwin	38 530	91.34	3 519 404
Canberra	125 561	45.12	5 665 176
Total	**4 532 900**		**-47 755 605**

Note A negative sign means that households incurred a real decrease in water and sewerage expenditure because real prices declined over the period. [a] Household numbers in each capital city were calculated by multiplying the proportion of households in each capital city as reported in (ABS 1996) by the total number of capital city households reported in (ABS 2000a).

Sources: ABS (*The Australian Consumer Price Index-Concepts, Sources and Methods*, Cat. no. 6461.0); ABS (*Household Expenditure Survey Australia 1998-99*, Cat. no. 6535.0).

4.3 Price variations

Selected utilities in NSW and SA were used as case studies to examine whether prices varied according to customer location and eligibility for concessions. Trends in business prices were also examined. The utilities examined were Sydney Water Corporation and Hunter Water Corporation in NSW, and SA Water in SA.

In NSW, the Sydney Water Corporation delivers water to an estimated 1.6 million properties within Sydney, the Blue Mountains and the Illawarra. It also provides sewerage services to an estimated 1.5 million properties. In 2000-01, around $1.2 billion in revenue was generated from use and service charges (SWC 2001a).

In 2000-01, the Hunter Water Corporation provided water and sewerage services to around 200 000 properties in the five local government areas in the lower Hunter region — Newcastle, Lake Macquarie, Maitland, Cessnock and Port Stephens.

Of the 200 000 properties, there are around 185 000 household properties, 8300 business properties and 5900 other properties. Household customers accounted for $82.2 million (72 per cent) of total revenue, business customers $22.8 million (20 per cent), and other customers accounted for $8.5 million (around 7 per cent) in 2000-01 (HWC 2001).

SA Water delivers water to about one million people in metropolitan Adelaide and about 416 000 people in non-metropolitan areas. It also provides sewerage services to around one million people in metropolitan Adelaide and around 142 000 people in non-metropolitan areas. SA Water generated $460 million in revenue from rates and charges in 2000-01 (SA Water 2001).

The different environments in which the case study utilities operate mean that price trends over the period are not directly comparable. There are cost factors that affect price trends that, in some circumstances, are unique to each water utility (see box 4.1).

Box 4.1 **Cost factors affecting price trends**

Like gas and electricity supply, the low density of some urban and non-urban development has led to high costs of water transport infrastructure. This can limit reductions in prices relative to water utilities with higher development densities.

Over the study period, health and environmental standards for drinking water and effluent discharge have become increasingly stringent. The cost of compliance can vary between utilities depending on whether additional treatment processes are required.

The quality of source water can also have significant implications for the cost of meeting drinking water standards. SA relies on the River Murray to supply 40 per cent of its urban water. This can increase to 90 per cent during extreme drought conditions (SA Water 2001). The declining condition of this water supply has a significant impact on the cost of providing high quality drinking water to urban customers.

Government policies can also impact on water utility costs. For example, following the Sydney water incident in 1998, the NSW Government imposed more stringent monitoring and reporting requirements on the Sydney Water Corporation. Although there were increased costs associated with these requirements, SWC (1999) indicated that these costs were not reflected in the real price trends, but were offset by forecast efficiency gains.

Each utility may be at a different stage in its asset life cycle. Compared with older systems, recently constructed distribution systems require less expenditure on asset maintenance and replacement.

Location

Real household price indexes for Sydney and the Hunter region of NSW and Adelaide and non-metropolitan areas of SA were constructed using a representative consumption bundle for each utility (see attachment A). For example, the price index for Sydney was constructed using average annual household consumption of

240 kl whereas an average annual household consumption level of 210 kl was used for the Hunter region. The consumption bundles chosen for the NSW case studies were based on information published by IPART and following consultation with the respective water utilities (IPART 2000b and 2000c).

In SA, the price indexes for Adelaide and the non-metropolitan areas were based on average annual household consumption of 250 kl. This figure was chosen in consultation with SA Water.

NSW case studies

In Sydney (examined as a metropolitan NSW case study), real household prices increased by 7 per cent over the study period (see figure 4.2).[15] This increase reflects the implementation of new pricing arrangements, combined with a rebalancing of tariff rates between household and business customers.[16]

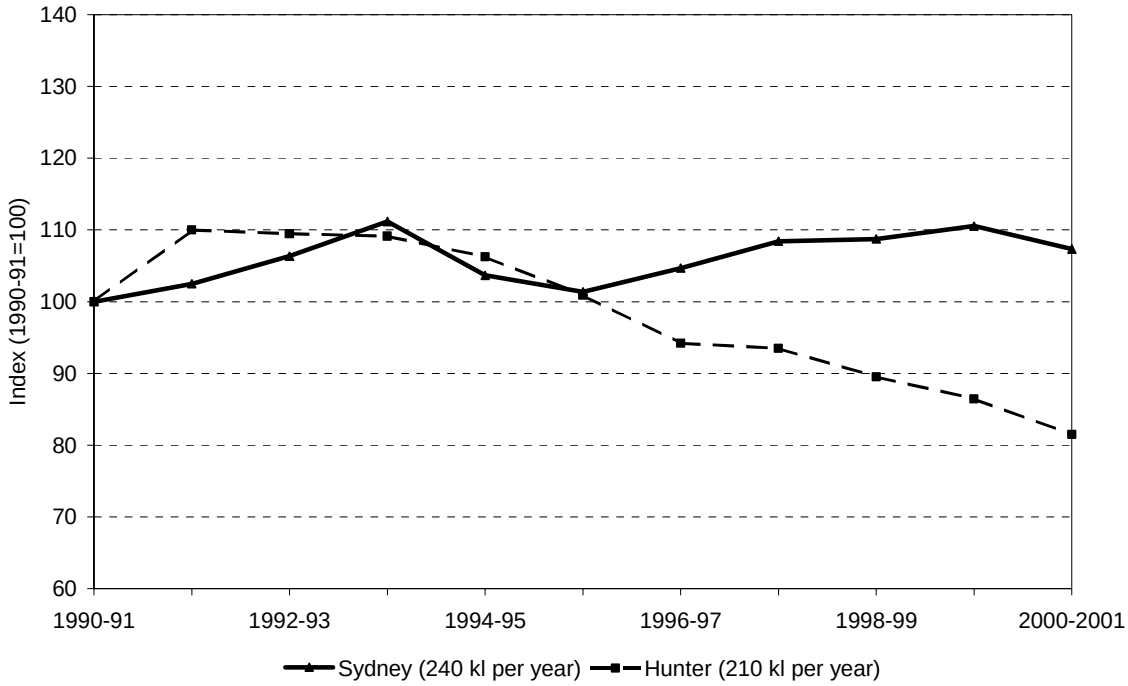
Between 1990-91 and 1994-95, property-based charges for water and sewerage applied to household customers in Sydney who had a land value greater than $33 000. However, these charges were excluded in the calculation of the real price index because less than 50 per cent of household customers paid property-based charges during this period (Sydney Water Corporation, pers. comm., 7 March 2002). If property-based charges for water and sewerage had been included in the calculation, the real price change for Sydney households would have been less than the 7 per cent increase referred to above.

In the Hunter region, real household prices decreased by 19 per cent over the study period (see figure 4.2).

15 This price trend is the same as that reported for Sydney in figure 4.1.

16 Since 1993-94, there has been much greater reliance on charges that reflect actual water use and much less reliance on property-based charges.

Figure 4.2 **Real water and sewerage price trends — households, Sydney Water Corporation and Hunter Water Corporation (NSW)**
1990-91 to 2000-01



Note For details on the construction of the household real price indexes refer to attachment A.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); HWC (2001 and previous issues); SWC (2001a and previous issues).

South Australian case studies

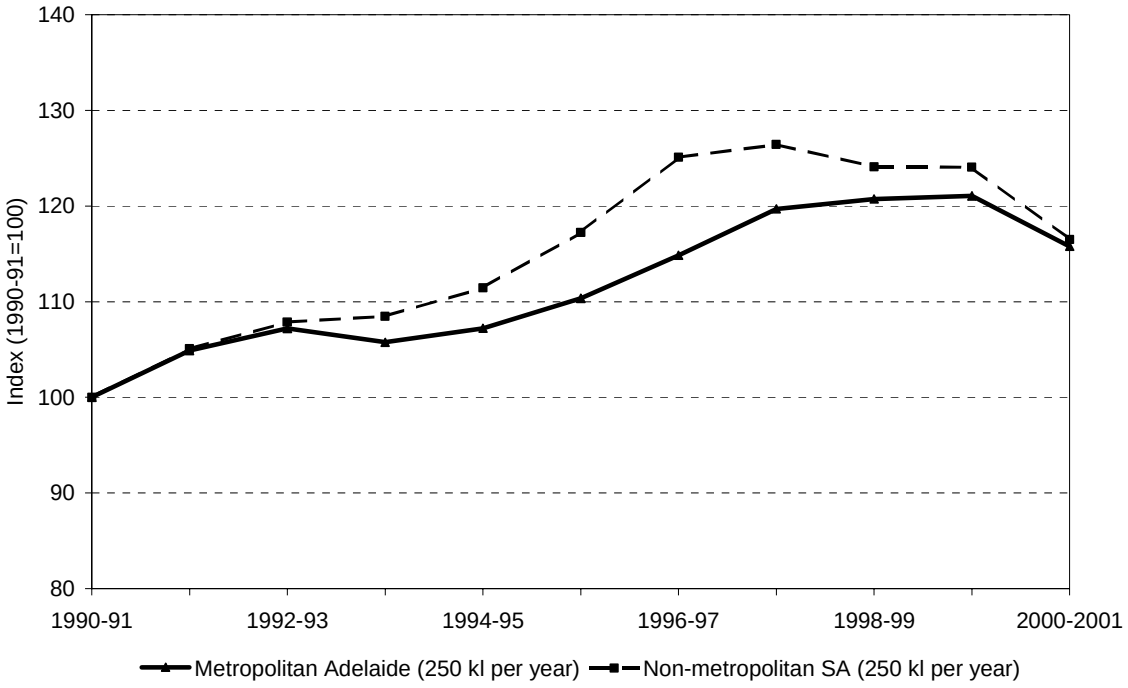
In SA, the price of household water services comprises a fixed charge and a water use charge. Until 1994-95, it also included a component of free water. The price of sewerage services over the study period was based on the capital value of a customer's property set by the Valuer-General on 1 July each year.

In both the metropolitan and non-metropolitan areas, the combined water and sewerage real prices for household customers increased by around 16 per cent over the study period (see figure 4.3).[17]

The primary drivers of this increase were price restructuring associated with the removal of the free water allowance in 1995-96 and a one-off sewerage charge adjustment in 1994-95.[18]

[17] The price trend for metropolitan Adelaide is the same as that reported in figure 4.1.

Figure 4.3 **Real water and sewerage price trends — households, SA Water (SA)**
1990-91 to 2000-01



Note For details on the construction of the household real price indexes refer to attachment A.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); SA Water, Adelaide, pers. comm., 10 October 2001.

In some years real price movements were different in non-metropolitan areas than in metropolitan areas. These differences were influenced by relative movements in metropolitan and non-metropolitan property values affecting the sewerage component.

The tariff rate applied to the capital value of property for non-metropolitan household customers for sewerage services is 26 per cent above the metropolitan rate. This rate differential is designed to take some account of the generally lower capital value of properties outside the metropolitan areas.

Apart from this rate differential, and some other minor exceptions, the SA Water Corporation adopts a policy of State-wide tariffs for both water and sewerage services. On average, however, the combination of sewerage rates and property

[18] Sewerage charges were increased by around 10 per cent in 1994-95 (around 7 per cent after allowing for inflation) in response to a finding by the South Australian Commission of Audit that the total revenue from water and sewerage services in metropolitan and non-metropolitan areas was low relative to other States (The Commission 1994).

values means that non-metropolitan customers pay less than metropolitan customers and SA Water makes a less than commercial rate of return in the non-metropolitan areas. The South Australian Government reimburses SA Water for this less-than-commercial return under a CSO contract.

Concessions

Sydney Water, Hunter Water and SA Water all provide tariff concessions to eligible customers. Generally, the revenue foregone from the provision of these concessions is reimbursed by the respective State governments through a CSO contract. In NSW, CSO payments were made over the entire study period.

SA Water provides pensioner concessions on behalf of the Department of Human Services. Revenue shortfalls are reimbursed by the Department but are not identified as a CSO in SA Water's financial statements. In 1996-97, a payment was made for the first time to SA Water for the administration of the pensioner concession scheme and was reported as a CSO.

NSW concessions

Sydney Water Corporation provides NSW Government-funded rebates to assist pensioners and low-income customers such as people on the Age, Disability Support and Service pensions. The program also covers certain allowances for Newstart and special benefit recipients (SWC 2001b).

Rebates apply to houses and home units (strata or company title) which are owned and occupied by an eligible customer. For jointly owned and occupied property, a proportion of these rebates may be granted to an eligible customer. Eligible customers who are occupants of a retirement village on a long-term lease arrangement may also be entitled to a rebate.

In Sydney, concession holder rebates date back to the 1970s. The original concept was to provide concession holders with a 50 per cent rebate off their 'water rates' — that is the fixed component of their water, sewerage and drainage bill. At the time pensioner rebates were introduced, the majority of customers did not pay a volumetric charge for water use (due to the way pricing arrangements were structured).

In the early 1990s, significant reforms to Sydney Water's pricing arrangements commenced. These reforms progressively increased the emphasis on water use charges as a component of total water, sewerage and drainage bills.

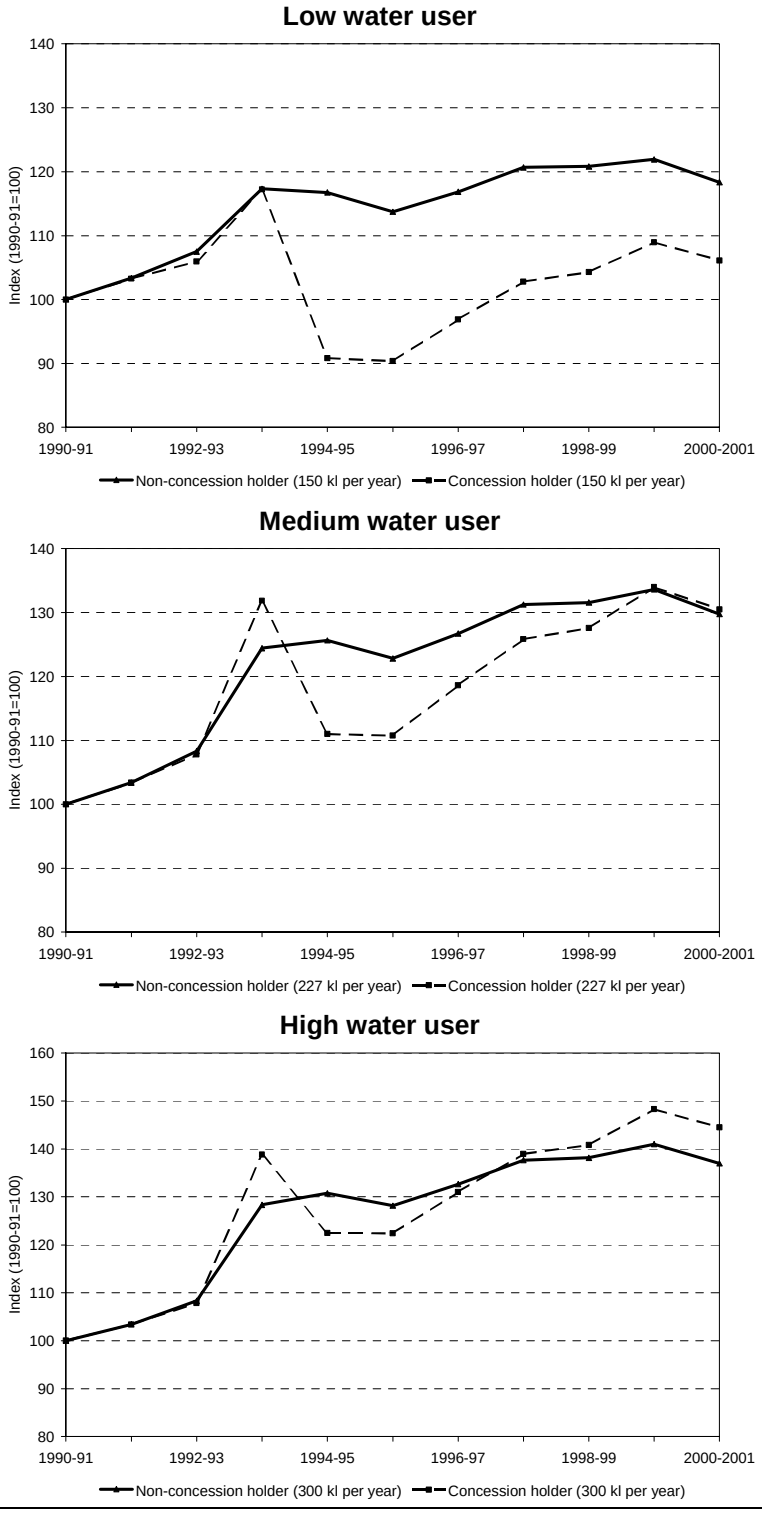
An unintended consequence of the reform was that without compensatory action, there would have been a shift in the relativity of charges between concession holders and non-concession holders. It was decided that concession holders should be subject to the same financial incentive to conserve water as non-concession holders. Therefore, rebates were not extended to use charges, but fixed charge rebates were adjusted to ensure concession holders were not adversely affected relative to non-concession holders.

Real price indexes for low, medium and high use concession holders in Sydney were constructed to examine the effect of these various changes for concession and non-concession holders. This revealed that:

- For low water users (150 kl per year), the real price index has not increased as much as that for a non-concession holder — that is, 6 per cent for a concession holder and 18 per cent for a non-concession holder (see figure 4.4). Trends in the real price index show that the concession holder bill has fallen over the period from 47 per cent of the non-concession bill, to 42 per cent of the non-concession bill.
- For medium water users (227 kl per year), the rate of increase has been approximately the same as non-concession holders, at around 30 per cent (see figure 4.4). Over the study period, concession holders paid around 49 per cent of the non-concession bill.
- For high water users (300 kl per year), concession holders have faced slightly larger real increases than non-concession holders — a 44 per cent increase and a 37 per cent increase respectively (see figure 4.4). The concession holder bill has risen from 51 per cent to 54 per cent of the non-concession bill over the study period.

In Sydney, 66 per cent of concession holders consume less than 250 kl per year (Sydney Water Corporation, pers. comm., 23 November 2001). Accordingly, it would seem that the majority of concession holders have not been disadvantaged relative to non-concession holders.

Figure 4.4 **Real water and sewerage price trends — non-concession and concession holders, Sydney Water Corporation (NSW)**
1990-91 to 2000-01



Note For details on the construction of the concession holder real price indexes refer to attachment A.

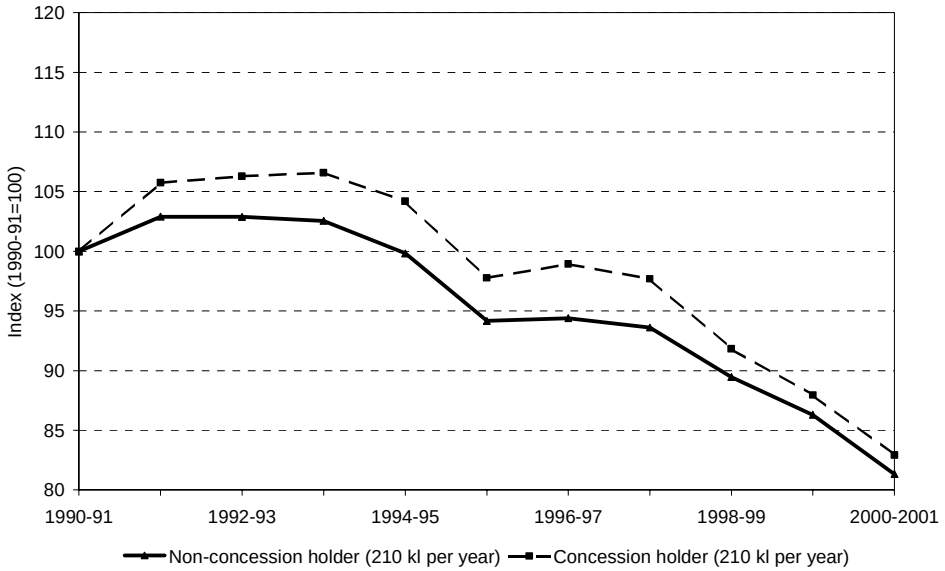
Data source: Table B4.4.

The trends, arising from the way concession holder rebates have been restructured over the last decade, broadly maintain relativity between concession and non-concession customers. They are also consistent with the water conservation and demand management initiatives embodied in Sydney Water Corporation's pricing reforms generally.[19]

In the Hunter region, pensioners who own and occupy their properties are entitled to a rebate equal to half of the fixed and use charges for water and sewerage, up to a maximum of $175 per year. The level of the rebate has remained unchanged since 1988.

For average use concession holders in the Hunter region (210 kl per year), real prices for water and sewerage decreased by 17 per cent compared with a real price decrease of 19 per cent for non-concession households (see figure 4.5). Over the study period the concession holder bill was around 62 per cent of the non-concession bill.

Figure 4.5 **Real water and sewerage price trends — non-concession and concession holders, Hunter Water Corporation (NSW)**
1990-91 to 2000-01



Note For details on the construction of the concession holder real price indexes refer to attachment A.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Hunter Water Corporation, pers. comm., 26 September 2001; HWC (2001 and previous issues).

19 The Sydney Water Corporation is required by its 2000 Operating Licence to meet certain water conservation targets and demand management strategies. In particular, it must take action to reduce the quantity of water it draws from all sources on a per capita basis by at least 35 per cent by 2010-11 from the 1990-91 baseline. In 2000-01, Sydney Water had reduced per capita water use by 16 per cent (SWC 2001c).

South Australian concessions

SA Water offers concessions on water and sewerage rates to eligible pensioners as part of the State Pensioner Concession Scheme. To receive a concession, a pensioner must own or part-own the property in which they live and be responsible for paying the rates and land tax on the property.

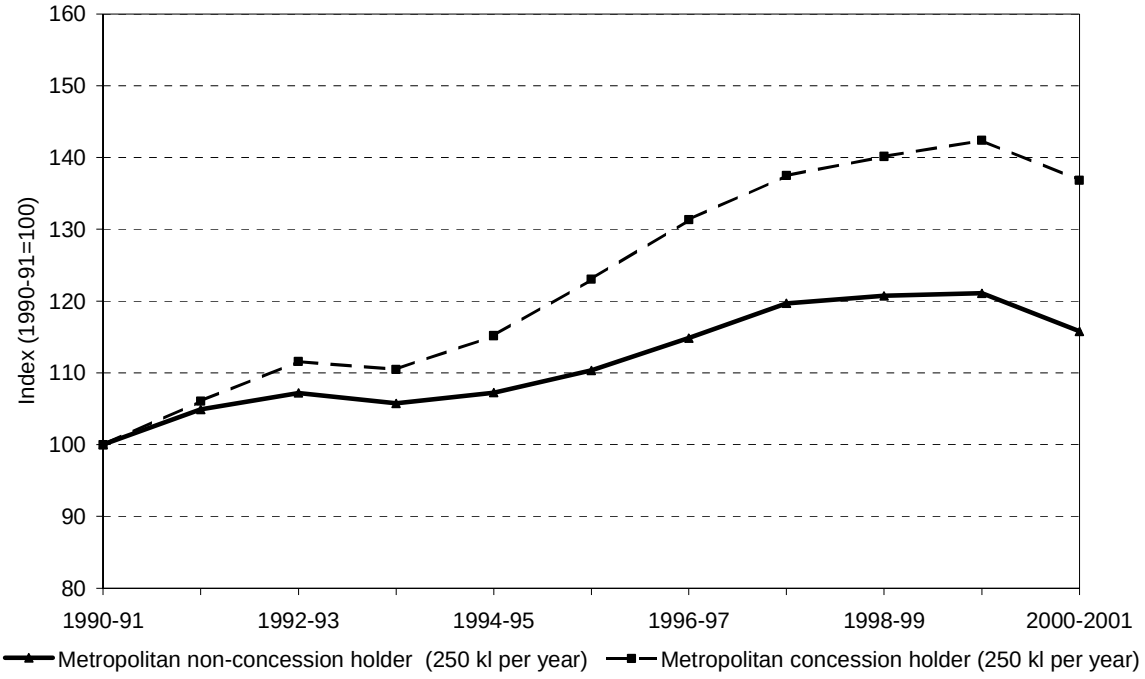
In 2000-01 concession holders were eligible for a rebate of 60 per cent, up to a maximum of $90 a year for water, and $95 a year for sewerage. The rebates have varied in dollar terms from time-to-time, but the real value of the rebate has declined over the study period.

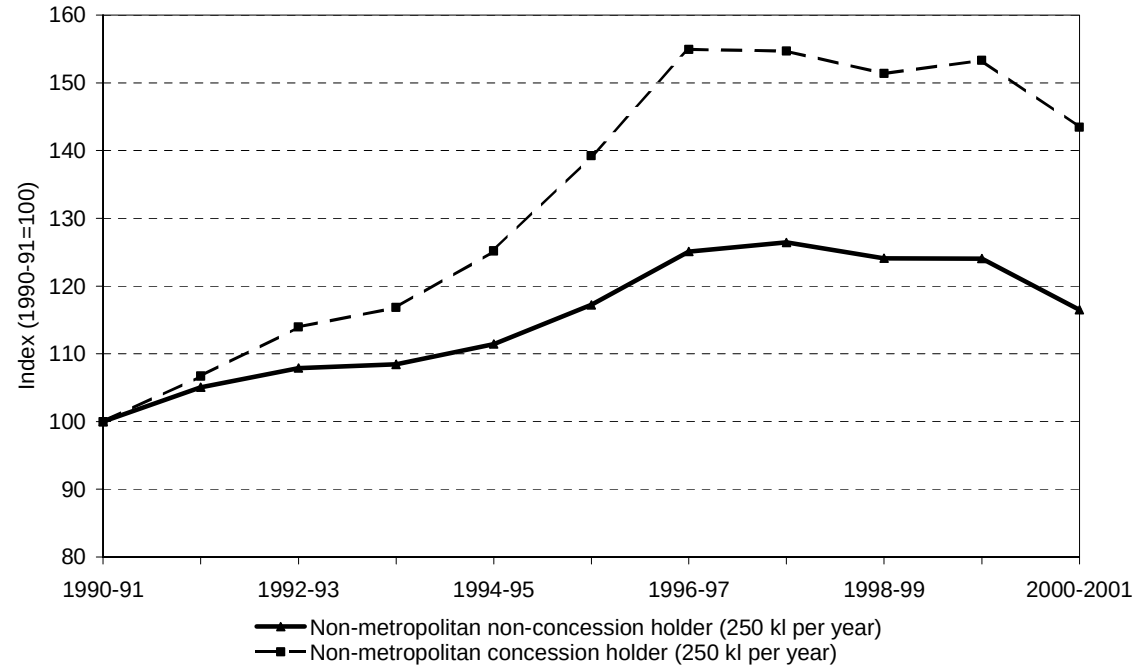
For concession holders in metropolitan Adelaide, the declining real value of the rebates has meant that real prices for water and sewerage increased by 37 per cent, compared with a 16 per cent real increase for non-concession customers (see figure 4.6). The average metropolitan concession holder bill has gradually increased from 58 to 69 per cent of the total non-concession bill.

In non-metropolitan areas, concession holders have faced slightly higher real price increases for water and sewerage services than concession holders in metropolitan Adelaide. For concession holders the real price increased by 43 per cent (see figure 4.6). In a similar fashion to their city counterparts, the concession holder bill as a proportion of the non-concession holder bill has gradually increased from 53 to 65 per cent.

The increase for non-metropolitan concession holders (43 per cent compared with 37 per cent for metropolitan concession holders), does not imply that non-metropolitan concession customers pay higher charges. On the contrary, the higher percentage increase occurred because charges for the average non-metropolitan concession holder were lower at the outset, reflecting lower property values.

Figure 4.6 **Real water and sewerage price trends — non-concession and concession holders, SA Water (SA)**
1990-91 to 2000-01





Note For details on the construction of the concession holder real price indexes refer to attachment A.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); SA Water, Adelaide, pers. comm., 10 October 2001.

Business prices

The construction of a real price index for business customers is more difficult than that for household customers because of the greater variation in consumption levels, and different pricing formulae within and between jurisdictions. The indexes are extremely sensitive to changes in underlying assumptions concerning sewerage discharge factors,[20] the size of meter connections[21] and property values.

The GST introduced in July 2000 was not included in the nominal price index series for 2000-01 because business water and sewerage customers are exempt from this tax. However, GST is included in the CPI (All groups) index used to deflate nominal prices to real prices.

NSW business prices

For the NSW case studies, different business consumption levels were chosen. The assumptions were based on information published by IPART and advice from the respective water utilities (see attachment A).

In 2000-01, there were around 112 000 business customers (metered and unmetered) serviced by Sydney Water, representing 7 per cent of all customers. Metered customers accounted for 30 per cent of total water consumption (Independent Pricing and Regulatory Tribunal, Sydney, pers. comm., 12 March 2002).

Over the study period, the real prices paid in Sydney by low water use businesses (100 kl per year)[22] and medium water use businesses (1700 kl per year) fell by 75 per cent and 65 per cent respectively (see figure 4.7).

These customers benefited from significant reductions in property-based charges[23] and a rebalancing of tariffs to eliminate cross-subsidies from businesses to

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20 A discharge factor is the assessed percentage of water purchased that is discharged into the sewer.

21 For example, in the Hunter region the meter connection can range from 20 mm to 500 mm. A different charge applies to each meter size.

22 Almost 50 per cent of Sydney Water's business customers (around 17 000) use less than 250 kl of water per year (IPART 2000b).

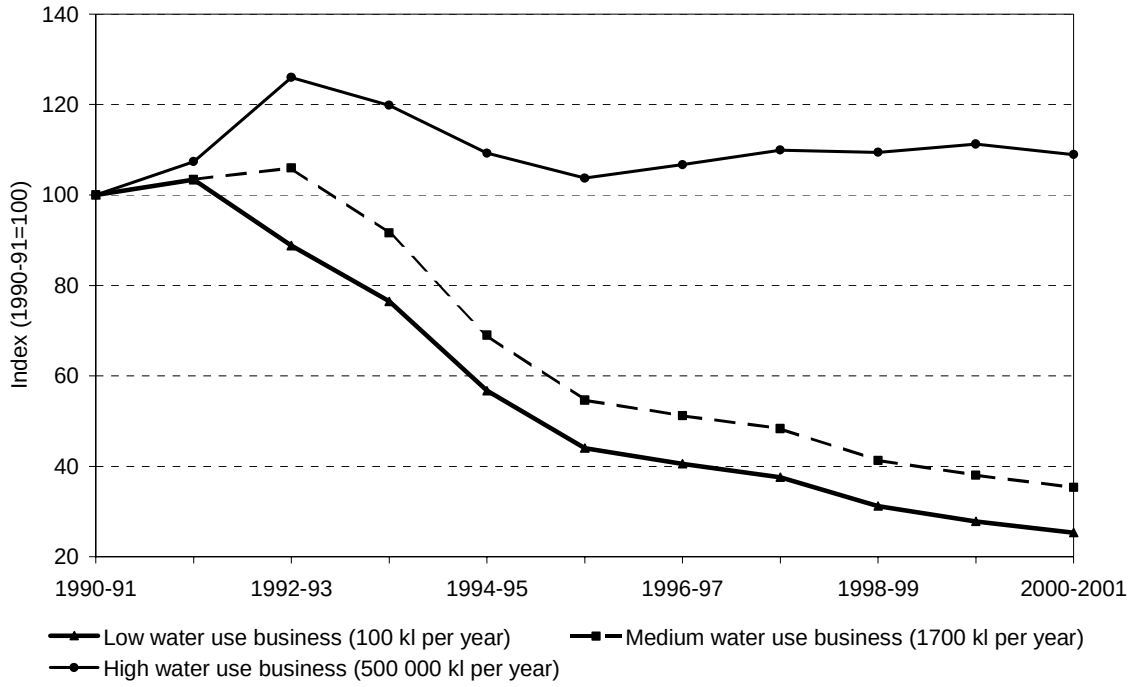
23 Between 1992-93 and 1995-96, property-based charges for business customers in Sydney were reduced by $217 million. This reduction was achieved by reducing both capital and operating costs. IPART was assured that reductions in capital spending reflected efficiency gains and not a downgrading of Sydney Water's commitment to existing standards (IPART 1995). In 1996-97, property-based charges for water were abolished and gradually reduced for sewerage and stormwater over the study period. Between 1996-97 and 1999-2000 property-based charges

household customers. For example, small to medium businesses in particular, which tended to have high rental values and low water use, subsidised those who lived on the urban fringes where servicing costs were higher (SWC 1995).

In contrast, real water and sewerage prices have increased by around 9 per cent for high water use business customers (500 000 kl per year) (see figure 4.7).

In 1992-93, Sydney Water introduced a fixed charge for water and sewerage based on the size of the water meter connected to the property. As a result, real prices increased for medium and high water use business customers in that year.

Figure 4.7 **Real water and sewerage price trends — business, Sydney Water Corporation (NSW)**
1990-91 to 2000-01



Note For details on the construction of the business real price indexes refer to attachment A. For business customers it was assumed that a low water use customer (100 kl per year) had a 20 mm connection and an assessed annual value (AAV) of $10 000, a medium water use customer (1700 kl per year) had a 40 mm connection and an AAV of $50 000, and a high water use customer (500 000 kl per year) had a 300 mm connection and an AAV of $1 000 000. All business customers were assumed to have an 80 per cent discharge factor.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); IPART (2000b).

were reduced by a further $80 million. However, in 1999 there were still around 26 500 business customers that paid property-based charges of varying degrees (SWC 1999).

In the Hunter region, there are 8300 business customers, of which 36 consume more than 50 000 kl per year (IPART 2000c). These 36 customers accounted for 20 per cent of total water consumption in 2000-01 (Hunter Water Corporation, pers. comm., 19 March 2002).

In the Hunter region, real prices for low, medium, medium to high and high water use business customers fell over the study period. In 1994-95 property-based charges for water and sewerage services were removed. Real prices were relatively unchanged between 1995-96 and 2000-01.

A declining two stepped volumetric tariff for water use applied to business customers serviced by the Hunter Water Corporation over the study period. Business customers who consumed more than 1000 kl of water per year paid less per unit of water consumed.

According to Hunter Water, the two stepped declining volumetric tariff is designed to reflect economies of scale that exist in the provision of water to large and very large customers. The lower use charge in excess of 1000 kl is intended to reflect economies in billing and servicing, and the fact that business customers are not the main source of peak demand and associated costs, such as additional pumping.

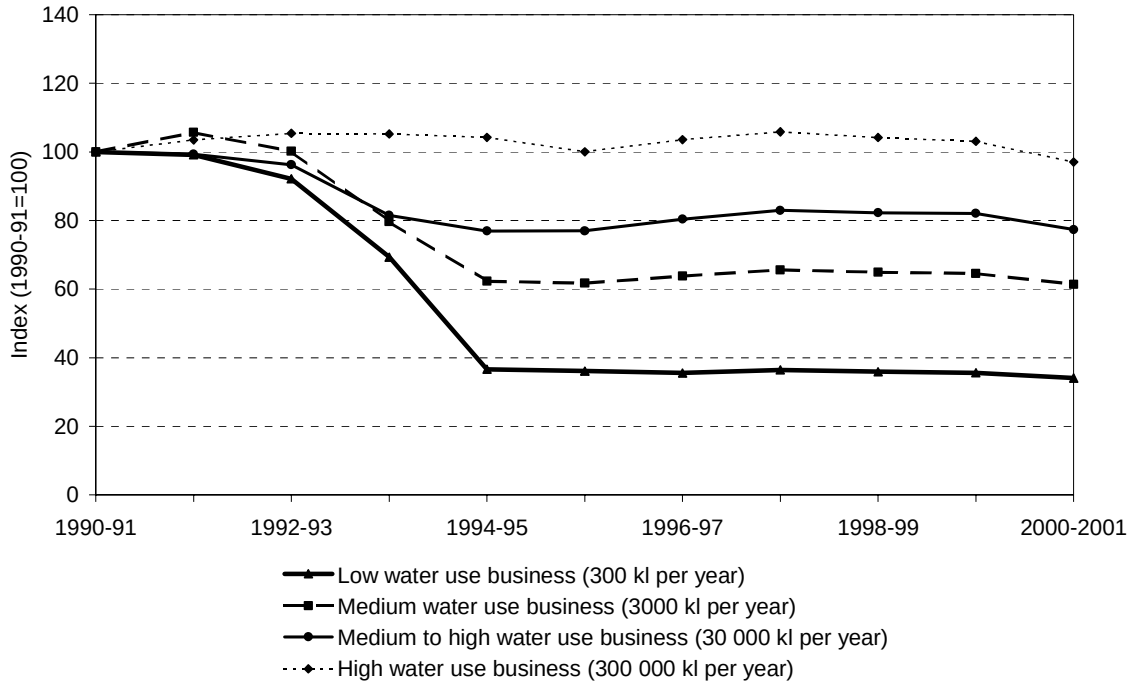
Low water use business customers (300 kl per year) have experienced the most significant reductions — with real prices falling by 66 per cent over the study period (see figure 4.8).

Real prices for medium water use business customers (3000 kl per year) and medium to high water use business customers (30 000 kl per year) fell by 39 and 23 per cent respectively (see figure 4.8).

For a high water use business customer (300 000 kl per year), real prices remained relatively constant for most of the study period but fell by 3 per cent in 2000-01 (see figure 4.8).[24]

[24] The real price index for high water use business customers does not include sewerage charges. As advised by Hunter Water, these customers tend to operate their own discharge systems and are subject to trade waste charges and inspection fees. These charges and fees were not included in the calculation of the real price index.

Figure 4.8 **Real water and sewerage price trends — business, Hunter Water Corporation (NSW)**
1990-91 to 2000-01



Note For details on the construction of the business real price indexes refer to attachment A. For business customers it was assumed that a low water use customer (300 kl per year) had a 20 mm connection and a property value of $9000, a medium water use customer (3000 kl per year) had a 40 mm connection and a property value of $25 000, a medium to high water use customer (30 000 kl per year) had a 40 mm connection and a property value of $100 000, and a high water use customer (300 000 kl per year) had a 300 mm connection and a property value of $200 000. All business customers were assumed to have an 80 per cent discharge factor with the exception of high water use customers. Few high use customers are connected to sewerage services and therefore sewerage charges were not included for this group.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Hunter Water Corporation, pers. comm., 27 March and 4 April 2002; IPART (2000c).

South Australian business prices

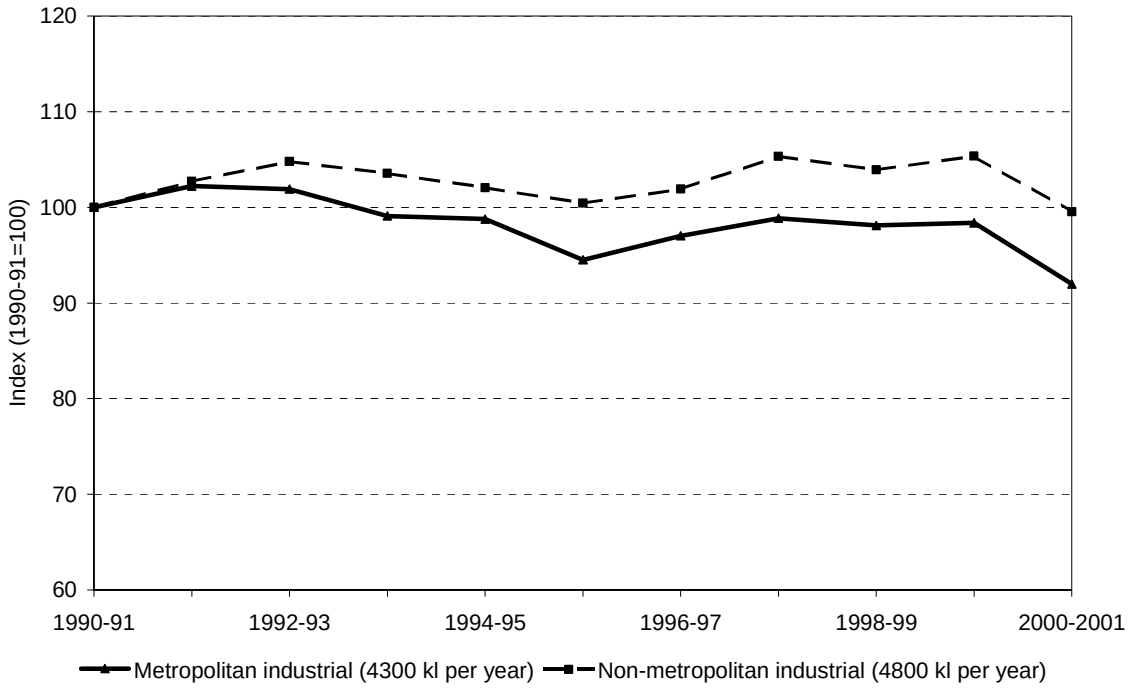
In SA, there are two classes of business customers — commercial and industrial. Commercial businesses include shops, retailers and professional services. Industrial businesses include mining, quarrying, medical and health services, hotels, motels and recreational facilities. It was not possible to disaggregate each customer class into low, medium, medium to high, and high water users because of the complexities associated with the use of property-based charges.

Real price indexes for commercial and industrial customers were constructed based on average water consumption over the period and an annual average property value for each class of customer (see attachment A).

Uniform industrial business tariffs apply to water services in metropolitan and non-metropolitan areas. However, the sewerage tariff is higher in non-metropolitan areas to take account of the generally lower property values.

Real prices for average industrial customers located in metropolitan Adelaide fell by 8 per cent over the study period. The real price index for the average non-metropolitan industrial customer was at the same level in 2000-01 as it was in 1990-91 (see figure 4.9). Until 1994-95, water charges were based on property values and attracted a free water allowance. From 1995-96, charges on industrial customers comprised a fixed water charge and a water use charge.

Figure 4.9 **Real water and sewerage price trends — industrial business, SA Water (SA)**
1990-91 to 2000-01



Note For details on the construction of the business real price indexes refer to attachment A. For industrial business customers it was assumed that average water consumption was 4300 kl per year in metropolitan Adelaide and 4800 kl per year in non-metropolitan areas of SA over the study period.

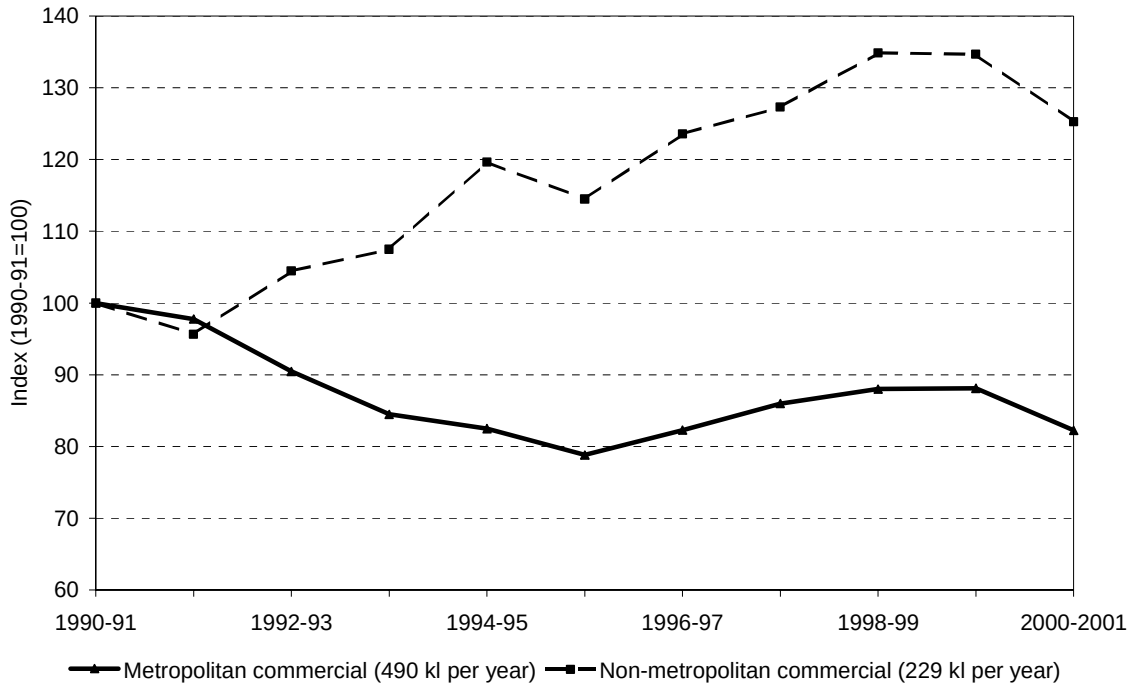
Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); SA Water, Adelaide, pers. comm., 10 October 2001.

Uniform commercial business tariffs apply to water services in metropolitan and non-metropolitan areas. However, the sewerage tariff is higher in non-metropolitan areas to take account of the generally lower property values.

Unlike industrial customers, commercial customers continue to pay a water charge based on property values. In addition, commercial customers are entitled to a quantity of water free of charge, which is linked to the fixed charge. Any water consumed over and above the free allowance is charged for at the water use rate.[25]

Real prices for commercial customers located in metropolitan Adelaide fell by 18 per cent, while in non-metropolitan areas real prices increased by around 25 per cent over the study period (see figure 4.10). This disparity in real price trends between metropolitan and non-metropolitan commercial customers reflects different movements in average property values.

Figure 4.10 **Real water and sewerage price trends — commercial business, SA Water (SA)**
1990-91 to 2000-01



Note For details on the construction of the business real price indexes refer to attachment A. For commercial business customers it was assumed that average water consumption was 490 kl per year in metropolitan Adelaide and 229 kl per year in non-metropolitan areas of SA over the study period.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); SA Water, Adelaide, pers. comm., 10 October 2001.

25 In 2001, the South Australian Government amended the *Waterworks Act 1932* to phase out the provision of free water over a five year period effective from 2002-03 on a revenue neutral basis (SA Water, Adelaide, pers. comm., 11 March 2002).

During the property boom of the 1980s, the average capital value of metropolitan commercial properties increased. However, they declined significantly from 1990 — largely driven by a fall in property values in Adelaide's central business district. In contrast, property values in the non-metropolitan areas did not experience a similar boom prior to the study period and have, on average, been increasing in value in real terms over the study period.

4.4 Service quality

Quality of service was examined to see if price trends might be explained by changes in the quality and reliability of services. Lower prices can be achieved by lowering expenditure below that required to maintain service standards. However, lower service standards may take some time to manifest themselves.

Water utilities are required to meet a range of service quality measures relating to compliance with health and environmental standards and service delivery.[26] Although compliance with drinking water quality standards is an important aspect of quality of service, the primary focus of this section is service delivery and reliability of supply — that is, the ability of the distribution network to deliver water and sewerage services to customers.

Reliability is measured by the frequency of interruptions and the time taken to restore supply. Frequency of interruptions is measured by the number of water main breaks and sewer main chokes per 100 km. These indicators were chosen because they were consistently published over the study period. Other indicators, such as interruption frequency per property and average duration of interruptions, were not available in a continuous series.

The frequency of interruptions can be influenced by a number of factors including:

- ageing infrastructure, which can increase the risk of interruptions to supply if assets are not maintained or upgraded; and
- climatic variability, over which a water utility has no control — dry weather encourages tree root intrusion into sewers and causes sewer blockages, and burst water mains are largely due to substantial ground movement in dry conditions.

In NSW, the frequency of interruptions in Sydney and the Hunter region has varied from year-to-year over the study period (see figure 4.11). In the Hunter region, climatic variability had a significant impact on the frequency of interruptions. In

[26] These and other standards of service may be set out in operating licences and customer service charters.

particular, a higher level of sewer main chokes was experienced between 1990-91 and 1994-95 as a result of the adverse effects of the 1989 earthquake.[27]

Since 1994-95, the number of sewer main chokes per 100 km in the Hunter region has fallen by 39 per cent. In contrast, the number of sewer main chokes per 100 km in Sydney has continued to increase despite a significant injection of funds to maintain and upgrade the system.[28]

Tariff rebalancing in Sydney and the Hunter region over the study period has meant real price increases for some customers and real price declines for others. However, there is no evidence to suggest that service delivery and reliability (as the indicators of quality) have been compromised where price declines have occurred.

In SA, the data on frequency of interruption indicators for water main breaks and sewer main chokes relate to metropolitan Adelaide.

Over the study period, the frequency of interruptions has remained relatively constant, with less year-to-year variation than observed for the NSW case studies (see figure 4.12).[29]

Although some customer classes in SA have benefited from real price reductions for water and sewerage services, it would appear that these reductions have not been achieved at the expense of service quality as measured by reliability.

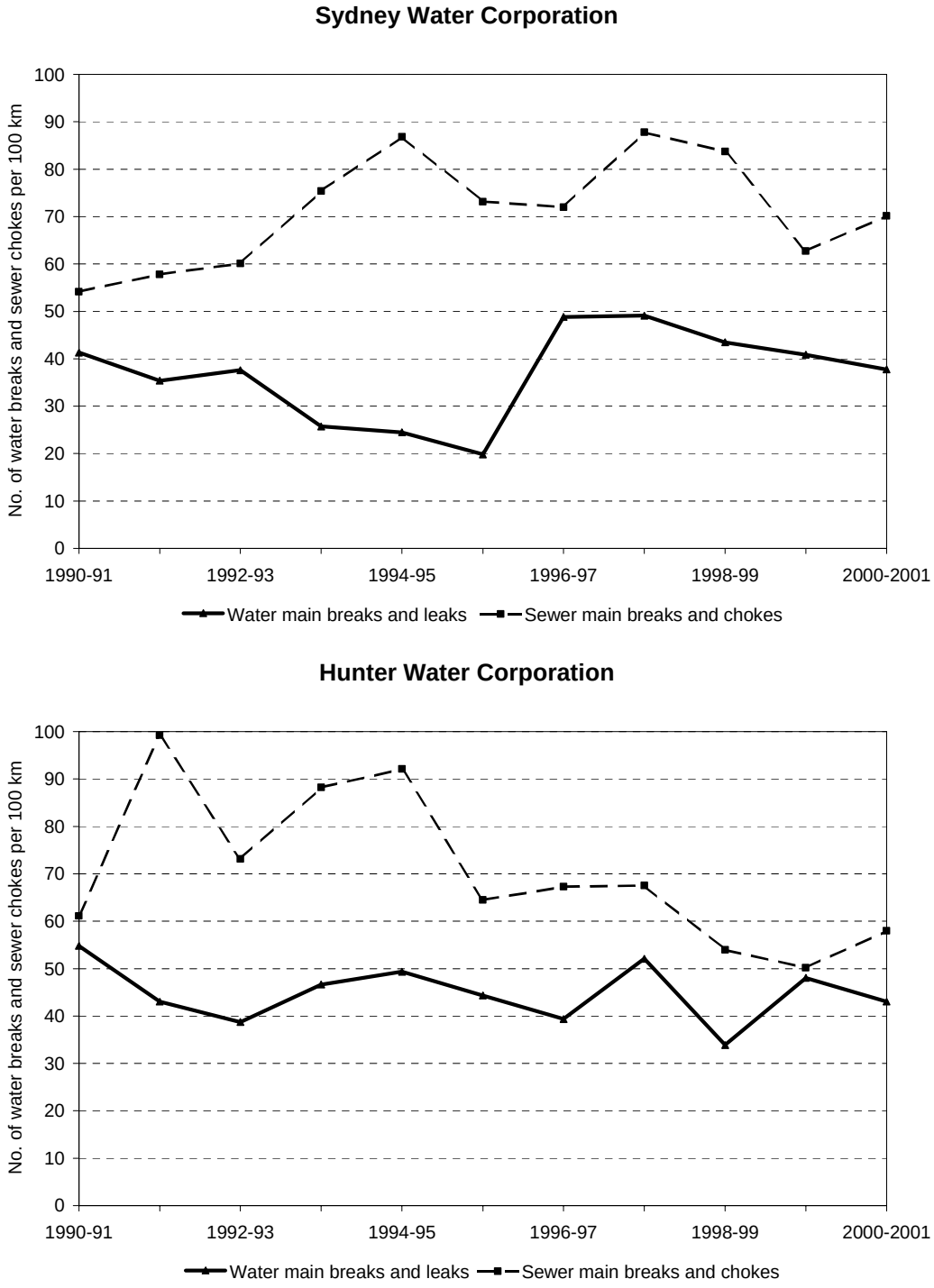
[27] It is believed that although the earthquake did not result in significant structural problems to the sewerage system, it created joint movement and minor cracking of sewer pipes which greatly increased the potential for tree root intrusion (HWC 1995).

[28] In 1997, the Sydney Water Corporation published *WaterPlan 21*, which made a commitment to reduce wet weather sewerage overflows at a cost of $1.6 billion over 20 years. In the first five years, $112 million was allocated to repair cracks and leaks in the sewerage system.

[29] Significant movement and corrosion problems caused by Adelaide's unique soil conditions are the principal reasons for burst water mains in the metropolitan area. The incidence of sewer chokes increases during dry weather (SA Water 2001).

Figure 4.11 **Quality of service measures — Sydney Water Corporation and Hunter Water Corporation (NSW)**

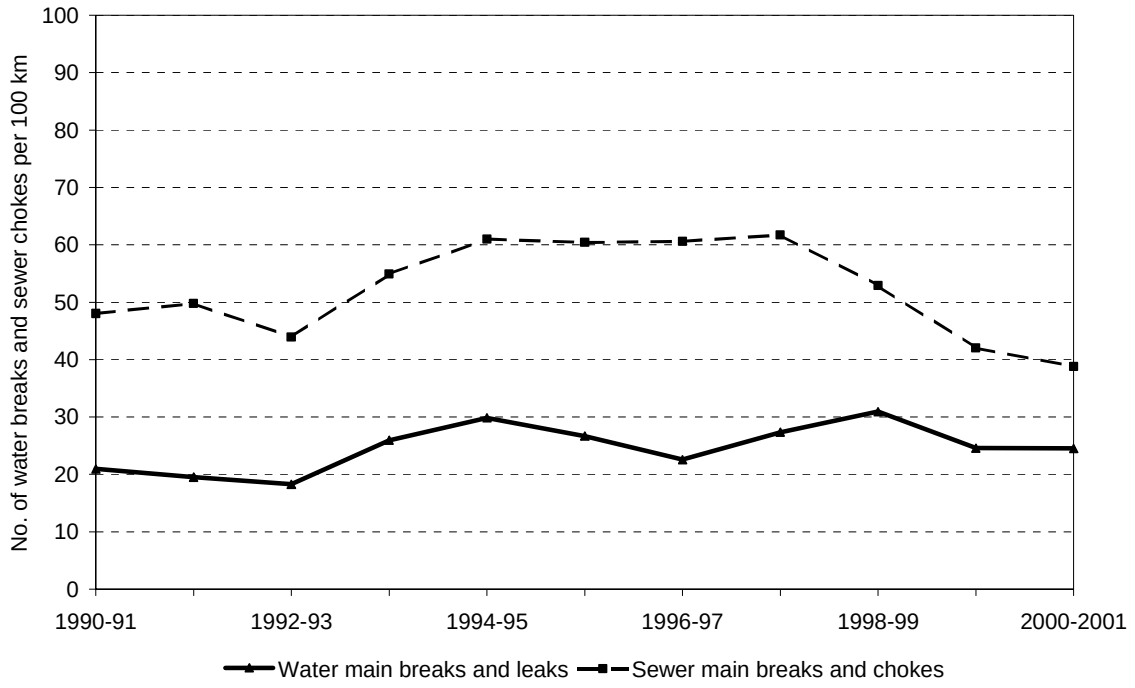
1990-91 to 2000-01



Note Main breaks include bursts and leaks. Leaks include faults that can be fixed without shutting down the main. Chokes are confirmed partial or total blockages occasioning an interruption to service, excluding any blockages that occur upstream of the service connections.

Data source: WSAA (2001 and previous issues).

Figure 4.12 **Quality of service measures — SA Water (SA)**
1990-91 to 2000-01



Note Main breaks include bursts and leaks. Leaks include main faults that can be fixed without shutting down the main. Chokes are confirmed partial or total blockages occasioning an interruption to service, excluding any blockages that occur upstream of the service connections.

Data source: WSAA (2001 and previous issues).

4.5 Shareholder outcomes

The financial performance of the case study utilities was examined to provide information on the relationship between price trends and financial outcomes, such as the return on assets.

Low prices relative to costs may not achieve a satisfactory return on assets, nor provide sufficient revenue to maintain and replace long-lived infrastructure assets. If services are to be maintained, the community as owners of the utility will have to provide financial support in the form of subsidies. Further, low prices may affect the viability of the business and possibly expose the community to financial risks.

The data used in calculating the shareholder outcomes presented in this section were generally taken from two sources:

- Steering Committee on National Performance Monitoring of Government Trading Enterprises; and

- Productivity Commission reports on Financial Performance of Government Trading Enterprises.

There may be inconsistencies between these two data sets and the information published in the annual reports of water utilities. These inconsistencies arise because of definitional differences.

In addition, there have been changes in accounting policies over the study period. In particular, there were changes in how contributed assets were recognised in financial statements.

Profitability

Sydney Water, Hunter Water and SA Water earned a positive rate of return on assets over the study period. However, their rate of return was less than 5 per cent (see figure 4.13), and always below the risk free rate (as approximated by the 10 year bond rate).[30]

In earning rates of return below the risk free rate, water utilities are in effect receiving an implicit subsidy. Their ability to pay dividends to government will be reduced and they may not be making a sufficient return to fund necessary capital spending and asset replacement in the longer term.

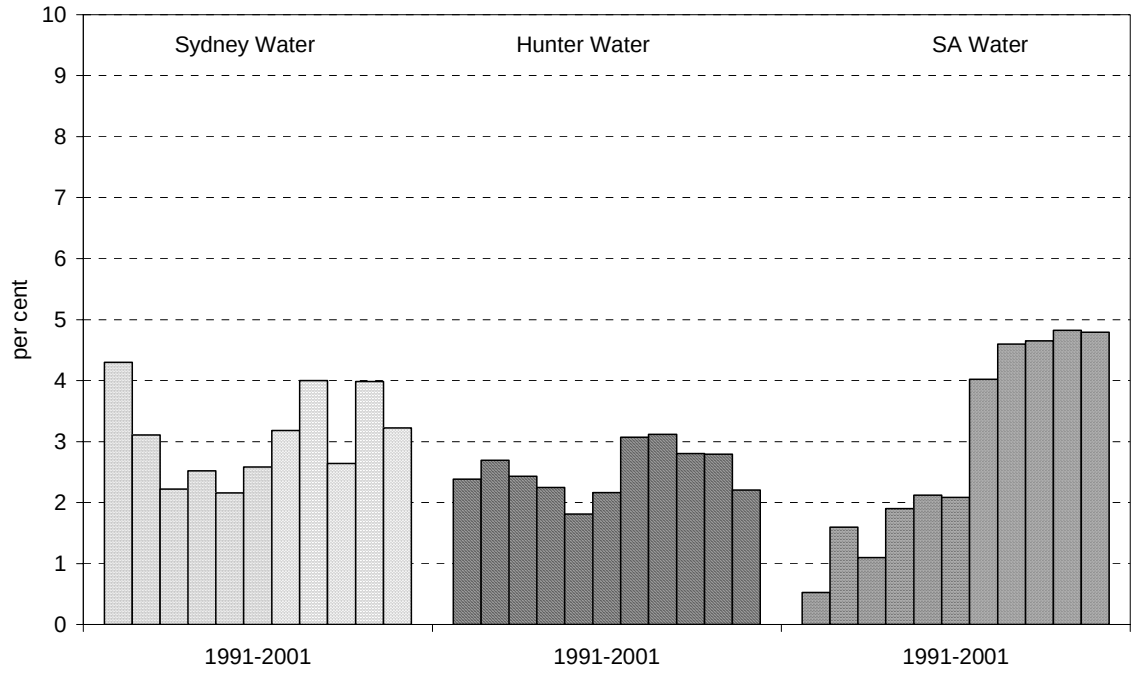
In SA, there was a significant increase in the return earned by SA Water between 1995-96 and 1996-97 (see figure 4.13). This reflects the implementation of a new CSO policy by the South Australian Government. Under this policy, SA Water received payments to offset revenue losses associated with the provision of water services in non-metropolitan areas. Since 1996-97, these payments contributed to increased profit and an improvement in the rate of return on assets.[31]

Comparisons of performance over time, using indicators that include an estimate of asset values, have to be interpreted with care. Differences in asset valuation procedures and changes in the size of the asset base can affect the return on assets. Over the study period, there have been significant changes in the asset values as a result of asset transfers, revaluations and changes in asset valuation methodologies.

30 The rate of return on long-term bonds at June 2001 was 6 per cent — its lowest level over the study period.

31 Prior to 1996-97, the costs were met internally by cross-subsidisation from other activities.

Figure 4.13 **Return on assets — Sydney Water Corporation and Hunter Water Corporation (NSW) and SA Water (SA)**
1990-91 to 2000-01



Note Return on assets is the ratio of earnings before interest and tax (EBIT), to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year.

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Payments to government

Most publicly-owned water utilities are required to return some of their earnings to their owner-governments in the form of dividend payments. This is justified on competitive neutrality and cost recovery grounds.

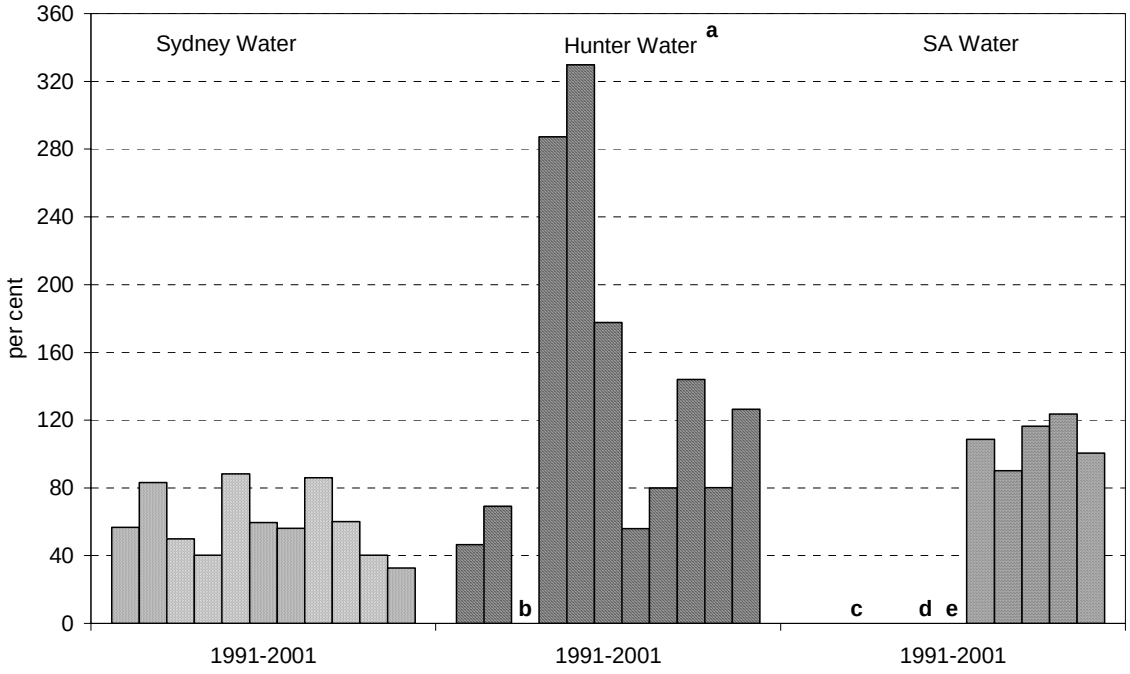
Where a utility is not required to pay dividends, it has proportionately more funds available for re-investment into its business, either for the development of new services or the improvement of existing ones. Further, a utility need not rely on debt-financing to the extent that its rivals must, and thus incurs lower overall operating costs.

Each of the case study utilities was required to pay dividends to its shareholder government. SA Water did not pay a dividend for the years 1990-91 to 1993-94 because it was not generating sufficient profits (SA Water, Adelaide, pers. comm.,

11 March 2002). The relative size of dividend payments is represented by the dividend payout ratio (dividends as a proportion of profit after tax) and the dividend to equity ratio (dividends as a proportion of average total equity).

In most years, the dividend payout ratios of the three utilities examined have been higher than the payout rates of private sector utilities (see figure 4.14). In 1999-2000, the dividend payout ratios of private sector utilities averaged around 47 per cent and ranged between 27 and 56 per cent (PC 2001a). By comparison, the dividend payout ratios of the three case study utilities averaged 92 per cent over the study period, ranging between 40 per cent for Sydney Water and 124 per cent for Hunter Water in 1999-2000.

Figure 4.14 **Dividend payout ratio — Sydney Water Corporation and Hunter Water Corporation (NSW) and SA Water (SA)**
1990-91 to 2000-01



Note Dividend payout ratio is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. **a** The dividend payout ratios for 1993-94 and 1996-97 have been revised from those published in previous Steering Committee Reports. **b** In 1992-93, Hunter Water had a dividend payout ratio of 1053 per cent, implying the payment of dividends from sources other than current year profits. **c** SA Water did not pay a dividend for the years 1990-91 to 1993-94. **d** In 1994-95, SA Water had a dividend payout ratio of 1682 per cent, implying the payment of dividends from sources other than current year profits. **e** In 1995-96, SA Water incurred an operating loss after tax. The dividend payout ratio for that year was –437 per cent, implying the payment of dividends from sources other than current year profits.

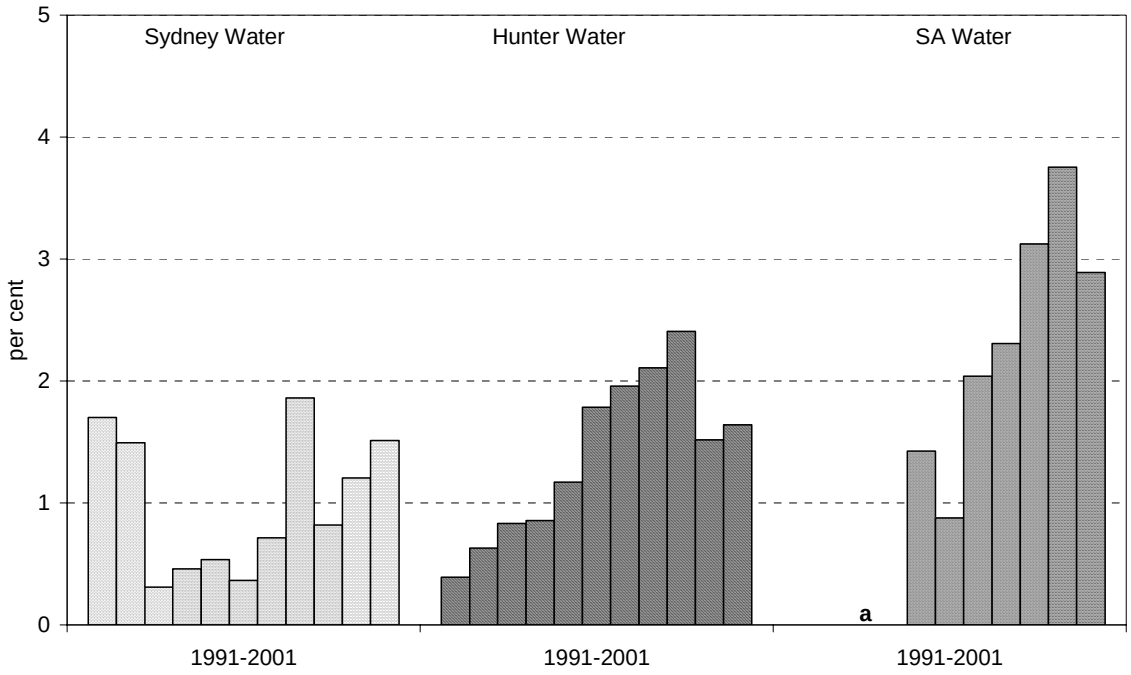
Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

When dividend payout ratios are greater than 100 per cent it indicates that the water utility is paying the dividend from sources other than current year profits. This was the case for Hunter Water and SA Water in some years. A negative dividend payout ratio for SA Water in 1995-96 implies that the utility incurred an operating loss after tax in that year but was still required to pay a dividend from sources other than current year profits.

The dividend to equity ratios — broadly in the 1 to 3 per cent range (see figure 4.15) — appear to be below that of private companies operating in the utilities market. In 1999-2000, for example, the dividend to equity ratio of private sector utilities averaged around 5 per cent, but ranged between 2 and 10 per cent (PC 2001a).

Changes in the dividend payout ratio and dividend to equity ratios from year-to-year may reflect the profitability of a utility. However, they may also be due to the effect of liabilities, changes in asset values and decisions to fund investment using retained earnings.

Figure 4.15 **Dividend to equity ratio — Sydney Water Corporation and Hunter Water Corporation (NSW) and SA Water (SA)**
1990-91 to 2000-01



Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. **a** SA Water did not pay a dividend for the years 1990-91 to 1993-94.

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Attachment A – Assumptions and data sources underlying construction of real price indexes

Capital city household real price indexes

The first step in constructing a household real price index for most of the Australian capital cities was to derive a consumption basket for water and sewerage. The value of the basket was calculated using the tariff rates applicable for the period 1990-91 to 2000-01.

The resulting nominal price index was then deflated by the CPI (All groups) price index for each capital city to convert it to a real price index.

The nominal price index excludes the GST that was introduced in 2000-01 because household water and sewerage customers are exempt from this tax. However, GST is included in the CPI (All groups) index used to deflate nominal prices to real prices.

Sydney

The real price index for Sydney households was based on a water use charge and a fixed charge for water and sewerage services over the study period. The environmental levy was included,[32] property-based charges were excluded (see section 4.3 for details),[33] and stormwater charges were excluded.

The following assumptions were used in constructing the index:

- average water consumption of 240 kl per year; and
- all properties had a 20 mm connection.

Melbourne

The real price index for Melbourne households was based on property-based charges (1990-91 to 1996-97), a water use charge (1990-91 to 2000-01), a sewerage use charge (1994-95 to 2000-01) and a fixed charge for water and sewerage (1997-98 to 2000-01). The drainage charge was excluded.

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32 The levy applied between 1990-91 and 1993-94.

33 Property-based charges were in place from 1990-91 to 1994-95 and were completely abolished for household customers in 1995 (SWC 1995).

Data provided by WSAA was used to calculate the value of the consumption basket for the period 1990-91 to 1993-94 (Water Services Association of Australia, Melbourne, pers. comm., 6 December 2001). For 1994-95, it was assumed that the value of the consumption basket was similar to that for 1995-96.

Data published in WSAA*facts* for City West Water (the representative water utility for Melbourne households), was used to calculate the value of the consumption basket for the period 1995-96 to 2000-01 (WSAA 2001 and previous issues).

The following assumptions were used in constructing the index:

- average water consumption of 270 kl per year; and
- a 60 per cent discharge factor applied to the sewerage use charge (1994-95 to 2000-01).

Brisbane

The real price index for Brisbane households was based on property-based charges for water and sewerage (1990-91 to 1995-96), a water use charge and a fixed charge for water and sewerage (1996-97 to 2000-01). Calculations were based on average water consumption of 255 kl per year.

Adelaide

The real price index for Adelaide households was based on a water use charge, an annual fixed water supply charge and a sewerage charge based on the capital value of the property, set by the Valuer-General on 1 July each year (1990-91 to 2000-01).

Average annual household property values were provided by SA Water and used to calculate the value of the sewerage component of the consumption basket (SA Water, Adelaide, pers. comm., 10 October 2001).

The following assumptions were used in constructing the index:

- average water consumption of 250 kl per year; and
- free water allowance of 136 kl per year (1991-92 to 1994-95).

Perth

The household real price index data published in the report titled '*Steering Committee on National Performance Monitoring of Government Trading*

Enterprises' was used to construct the water and sewerage real price index series for the period 1990-91 to 1996-97 (SCNPMGTE 1998 and previous issues).

For the years 1997-98, 1999-2000 and 2000-01, published price increases in the Water Corporation's annual reports were used to extend the earlier real price index series (WCWA 2000 and previous issues).

For 1998-99, the approved general price increase was provided by the Water Corporation (Water Corporation, Perth, pers. comm., 24 April 2002).

Hobart

The real price index for Hobart households was based on property-based charges for water and sewerage (1990-91 to 2000-01). Calculations for the value of the consumption basket were based on an average property value, that is, an assessed annual value (AAV) of $7020 which was provided by Hobart City Council (Hobart City Council, pers. comm., 27 November 2001).

Darwin

The real price index for Darwin households was based on a water use charge (1990-91 to 2000-01), a daily fixed access charge for water (1998-99 to 2000-01) and a fixed annual sewerage charge (1990-91 to 2000-01). An average water consumption of 650 kl per year was assumed.

Canberra

The real price index for Canberra households was based on a water use charge and a fixed charge for water and sewerage over the study period. The environmental levy which applied between 1992-93 and 1998-99 was included.

The following assumptions were used in constructing the index:

- average water consumption of 280 kl per year;
- free water allowance of 455 kl per year (1990-91);
- free water allowance of 350 kl per year (1991-92 to 1993-94); and
- free water allowance of 1 kl per year (1994-95 to 2000-01).

Non-metropolitan household real price indexes

Hunter region

A similar approach to that used to construct the capital city household real price indexes was used to construct a real price index for the Hunter region.

The real price index was based on a water and sewerage use charge, a fixed charge for water and sewerage services, and an environmental improvement charge over the study period. The drainage service charge was excluded.

The following assumptions were used in constructing the index:

- average water consumption of 210 kl per year;
- all properties had a 20 mm connection;
- a 100 per cent discharge factor applied to the sewerage use charge in 1990-91; and
- a 50 per cent discharge factor applied to the fixed sewerage and use charge from 1991-92 to 2000-01.

South Australia

A similar approach to that used to construct the capital city household real price indexes was used to construct the household real price index for non-metropolitan areas of SA.

The real price index was based on a water use charge, an annual fixed water supply charge and a sewerage charge based on the capital value of the property, set by the Valuer-General on 1 July each year (1990-91 to 2000-01).

Average annual household property values were provided by SA Water and used to calculate the value of the sewerage component of the consumption basket (SA Water, Adelaide, pers. comm., 10 October 2001).

The following assumptions were used in constructing the index:

- average water consumption of 250 kl per year; and
- free water allowance of 136 kl per year (1991-92 to 1994-95).

Concession holder real price indexes

Sydney NSW

The real price index for Sydney concession holders involved deriving three consumption baskets based on low water use (150 kl per year), medium water use (227 kl per year) and high water use (300 kl per year) for non-concession holders over the period 1990-91 to 2000-01. Property-based charges were excluded (see section 4.3 for details),[34] the environmental levy was excluded because concession holders did not pay this levy,[35] and stormwater charges were excluded.

The rebate entitlement for concession holders was deducted from the values for the three non-concession holder baskets, and then expressed as a nominal price index. The three nominal price indexes were then deflated by the CPI (All groups) for Sydney.

It was assumed that all properties had a 20 mm connection.

Hunter region NSW

The real price index for Hunter concession holders involved deriving a consumption basket based on average water use of 210 kl per year for non-concession holders over the period 1990-91 to 2000-01.

The rebate entitlement for concession holders was deducted from the value for the non-concession holder basket and then expressed as a nominal price index. The nominal price index was then deflated by the CPI (All groups) for Sydney.

The environmental improvement charge was excluded in the calculation of the value of the consumption basket because concession holders did not pay this levy.

Metropolitan and non-metropolitan South Australia

The real price index for metropolitan Adelaide and non-metropolitan concession holders was derived using a consumption basket based on average water use of 250 kl per year for non-concession holders over the period 1990-91 to 2000-01.

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34 Property-based charges were in place from 1990-91 to 1994-95 and were completely abolished for household customers in 1995 (SWC 1995).

35 The levy applied between 1990-91 and 1993-94.

The rebate entitlement for concession holders was deducted from the value for the non-concession holder basket and then expressed as a nominal price index. The nominal price indexes for metropolitan and non-metropolitan concession holders were then deflated by the CPI (All groups) for Adelaide.

Business real price indexes

The nominal business price index excludes the GST that was introduced in 2000-01 because business water and sewerage customers are exempt from this tax. However, GST is included in the CPI (All groups) index used to deflate nominal prices to real prices.

Sydney NSW

Three real price indexes for low, medium and high water use business customers in Sydney were constructed. They were based on a water use charge, a sewerage use charge (for discharges greater than 500 kl per year), a fixed charge for water, sewerage and stormwater, and property-based charges for water, sewerage and stormwater (for AAV greater than $2500).[36]

The following assumptions were used in constructing the indexes:

For low water use business customers:

- average water consumption of 100 kl per year;
- all properties had a 20 mm connection;
- an AAV of $10 000 was used to calculate the value of the property-based component of the consumption basket;
- the sewerage use charge did not apply (because water consumption was below 500 kl per year); and
- an 80 per cent discharge factor applied to the fixed sewerage charge.

For medium water use business customers:

- average water consumption of 1700 kl per year;
- all properties had a 40 mm connection;

[36] From 1992-93 to 2000-01, the fixed charge for water and sewerage was based on the size of the meter connected to the property. Prior to this a fixed charge applied to water and sewerage services which was not based on the size of the customers meter. In 1996-97, property-based charges for water were abolished. However, property-based charges for sewerage and stormwater applied to all business customers over the study period.

- an AAV of $50 000 was used to calculate the value of the property-based component of the consumption basket; and
- an 80 per cent discharge factor applied to the fixed sewerage and use charge.

For high water use business customers:

- average water consumption of 500 000 kl per year;
- all properties had a 300 mm connection;
- an AAV of $1 000 000 was used to calculate the value of the property-based component of the consumption basket; and
- an 80 per cent discharge factor applied to the fixed sewerage and use charge.

Hunter region NSW

Four real price indexes for low, medium, medium to high and high water use business customers in the Hunter region were constructed. They were based on a water and sewerage use charge, a fixed charge for water and sewerage, the environmental improvement charge, and property-based charges for water and sewerage for the period 1990-91 to 1993-94.[37] Drainage charges were excluded.

Sewerage charges, trade waste charges and inspection fees were not included in the calculation of the real price index for high water use business customers.

The following assumptions were used in constructing the indexes:

For low water use business customers:

- average water consumption of 300 kl per year;
- all properties had a 20 mm connection;
- a property value of $9000 was used to calculate the value of the property-based component of the consumption basket; and
- an 80 per cent discharge factor applied to the fixed sewerage and use charge.

For medium water use business customers:

- average water consumption of 3000 kl per year;
- all properties had a 40 mm connection;

[37] Over the study period, the fixed charge for water was based on the size of the meter connected to the property. From 1991-92 to 2000-01, the fixed sewerage and use charge was based on the size of the meter connected to the property and a discharge factor.

- a property value of $25 000 was used to calculate the value of the property-based component of the consumption basket; and
- an 80 per cent discharge factor applied to the fixed sewerage and use charge.

For medium to high water use business customers:

- average water consumption of 30 000 kl per year;
- all properties had a 40 mm connection;
- a property value of $100 000 was used to calculate the value of the property-based component of the consumption basket; and
- an 80 per cent discharge factor applied to the fixed sewerage and use charge.

For high water use business customers:

- average water consumption of 300 000 kl per year;
- all properties had a 300 mm connection; and
- a property value of $200 000 was used to calculate the value of the property-based component of the consumption basket.

Metropolitan Adelaide

The real price indexes for industrial and commercial business customers in metropolitan Adelaide were based on a water use charge, an annual fixed water supply charge and a sewerage charge based on the capital value of the property, set by the Valuer-General on 1 July each year (1990-91 to 2000-01).

Average annual industrial and commercial property values were provided by SA Water (SA Water, Adelaide, pers. comm., 10 October 2001).

The following assumptions were used in constructing the indexes:

- average water consumption of 4300 kl per year for industrial customers;
- average water consumption of 490 kl per year for commercial customers;
- a free water allowance applied to commercial customers. This was calculated by dividing the water supply charge for the average customer by the water use charge;
- for industrial businesses, the calculation of the fixed water supply charge was based on the average annual property value for the period 1990-91 and 1994-95; and

- for commercial businesses, the calculation of the fixed water supply charge was based on the average annual property value for the period 1990-91 to 2000-01.

Non-metropolitan South Australia

The real price indexes for industrial and commercial business customers in non-metropolitan areas of SA were based on a water use charge, an annual fixed water supply charge and a sewerage charge based on the capital value of the property, set by the Valuer-General on 1 July each year (1990-91 to 2000-01).

Average annual industrial and commercial property values were provided by SA Water (SA Water, Adelaide, pers. comm., 10 October 2001).

The following assumptions were used in constructing the indexes:

- average water consumption of 4800 kl per year for industrial customers;
- average water consumption of 229 kl per year for commercial customers;
- a free water allowance applied to commercial customers. This was calculated by dividing the water supply charge for the average customer by the water use charge;
- for industrial businesses, the calculation of the fixed water supply charge was based on the average annual property value for the period 1990-91 and 1994-95; and
- for commercial businesses, the calculation of the fixed water supply charge was based on the average annual property value for the period 1990-91 to 2000-01.

Attachment B – Data tables

Table B4.1 Real water and sewerage price trends — metropolitan households

1990-91 to 2000-01 (index 1990-91=100)

	Sydney	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*	*Canberra*
1990-91	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991-92	102.5	107.8	95.2	104.9	104.3	97.9	103.9	99.9
1992-93	106.4	113.7	98.1	107.2	102.9	98.7	107.7	108.5
1993-94	111.2	127.1	120.4	105.7	108.5	98.8	105.8	113.2
1994-95	103.7	105.6	113.8	107.2	112.0	97.6	102.9	109.4
1995-96	101.4	101.8	108.0	110.4	108.7	74.5	108.8	107.4
1996-97	104.7	101.4	97.6	114.8	107.7	77.6	115.4	109.5
1997-98	108.4	94.2	102.5	119.7	112.3	73.5	115.7	116.2
1998-99	108.7	86.2	114.6	120.7	113.6	67.5	141.1	114.2
1999-00	110.5	84.0	117.7	121.1	113.2	62.9	139.0	114.9
2000-01	107.4	79.2	122.7	115.8	109.5	65.6	134.4	112.0

Note For details on the construction of the household real price indexes refer to attachment A.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); ACT Electricity and Water Corporation, Canberra, pers. comm., 29 April 2002; Brisbane Water, pers. comm., 7 November 2001; Hobart City Council, pers. comm., 27 November 2001; IPART (1995, 1998, 2000b); PAWA (2000 and previous issues); Power and Water Authority, Darwin, pers. comm., 16 October 2001; SA Water, Adelaide, pers. comm., 10 October 2001; SCNPMGTE (1998 and previous issues); SWC (2001a and previous issues); WCWA (2000 and previous issues); WSAA (2001 and previous issues); Water Services Association of Australia, Melbourne, pers. comm., 6 December 2001.

Table B4.2 Real water and sewerage price trends — households, Sydney Water Corporation and Hunter Water Corporation (NSW)

1990-91 to 2000-01 (index 1990-91=100)

	Sydney Water Corporation	*Hunter Water Corporation*
1990-91	100.0	100.0
1991-92	102.5	110.0
1992-93	106.4	109.5
1993-94	111.2	109.1
1994-95	103.7	106.2
1995-96	101.4	100.9
1996-97	104.7	94.2
1997-98	108.4	93.5
1998-99	108.7	89.5
1999-00	110.5	86.5
2000-01	107.4	81.5

Note For details on the construction of the household real price indexes refer to attachment A.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); HWC (2001 and previous issues); SWC (2001a and previous issues).

Table B4.3 **Real water and sewerage price trends — households, SA Water (SA)**

1990-91 to 2000-01 (index 1990-91=100)

	Metropolitan (Adelaide)	*Non-metropolitan SA*
1990-91	100.0	100.0
1991-92	104.9	105.1
1992-93	107.2	107.9
1993-94	105.7	108.5
1994-95	107.2	111.4
1995-96	110.4	117.2
1996-97	114.8	125.1
1997-98	119.7	126.4
1998-99	120.7	124.1
1999-00	121.1	124.1
2000-01	115.8	116.5

Note For details on the construction of the household real price indexes refer to attachment A.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); SA Water, Adelaide, pers. comm., 10 October 2001.

Table B4.4 **Real water and sewerage price trends — non-concession and concession holders, Sydney Water Corporation (NSW)**

1990-91 to 2000-01 (index 1990-91=100)

	Low water user		*Medium water user*		*High water user*	
	Non-concession holder	Concession holder	Non-concession holder	Concession holder	Non-concession holder	Concession holder
1990-91	100.0	100.0	100.0	100.0	100.0	100.0
1991-92	103.3	103.3	103.4	103.4	103.4	103.4
1992-93	107.5	105.9	108.3	107.8	108.3	107.8
1993-94	117.3	117.2	124.4	131.9	128.4	138.8
1994-95	116.7	90.8	125.6	111.0	130.7	122.4
1995-96	113.7	90.4	122.8	110.7	128.2	122.4
1996-97	116.8	96.9	126.7	118.6	132.7	131.0
1997-98	120.7	102.8	131.2	125.8	137.7	138.9
1998-99	120.8	104.3	131.6	127.6	138.1	140.8
1999-00	121.9	108.9	133.6	134.0	141.0	148.3
2000-01	118.3	106.1	129.8	130.5	137.0	144.5

Note For details on the construction of the concession holder real price indexes refer to attachment A. It was assumed that a low water user consumed 150 kl per year, a medium water user consumed 227 kl per year and a high water user consumed 300 kl per year.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Sydney Water Corporation, pers. comm., 20 December 2001; SWC (2001a and previous issues).

Table B4.5 Real water and sewerage price trends — non-concession and concession holders, Hunter Water Corporation (NSW) and SA Water (SA)

1990-91 to 2000-01 (index 1990-91=100)

	Hunter Water		*Metropolitan Adelaide*		*Non-metropolitan SA*	
	Non-concession holder	Concession holder	Non-concession holder	Concession holder	Non-concession holder	Concession holder
1990-91	100.0	100.0	100.0	100.0	100.0	100.0
1991-92	102.9	105.8	104.9	106.1	105.1	106.7
1992-93	102.9	106.3	107.2	111.6	107.9	114.0
1993-94	102.6	106.6	105.7	110.5	108.5	116.8
1994-95	99.8	104.2	107.2	115.2	111.4	125.2
1995-96	94.2	97.8	110.4	123.0	117.2	139.2
1996-97	94.4	98.9	114.8	131.3	125.1	154.9
1997-98	93.6	97.7	119.7	137.5	126.4	154.7
1998-99	89.5	91.8	120.7	140.1	124.1	151.3
1999-00	86.3	88.0	121.1	142.4	124.1	153.3
2000-01	81.3	82.9	115.8	136.9	116.5	143.4

Note For details on the construction of the concession holder real price indexes refer to attachment A.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Hunter Water Corporation, pers. comm., 26 September 2001; HWC (2001 and previous issues); SA Water, Adelaide, pers. comm., 10 October 2001.

Table B4.6 Real water and sewerage price trends — business, Sydney Water Corporation (NSW)

1990-91 to 2000-01 (index 1990-91=100)

	Low water user	*Medium water user*	*High water user*
1990-91	100.0	100.0	100.0
1991-92	103.4	103.4	107.4
1992-93	88.8	106.0	126.0
1993-94	76.5	91.6	119.8
1994-95	56.7	69.0	109.3
1995-96	44.0	54.6	103.7
1996-97	40.5	51.2	106.7
1997-98	37.6	48.3	109.9
1998-99	31.2	41.3	109.4
1999-00	27.8	38.1	111.2
2000-01	25.3	35.3	108.9

Note For details on the construction of the business real price indexes refer to attachment A. For business customers it was assumed that a low water use customer (100 kl per year) had a 20 mm connection and an assessed annual value (AAV) of $10 000, a medium water use customer (1700 kl per year) had a 40 mm connection and an AAV of $50 000, and a high water use customer (500 000 kl per year) had a 300 mm connection and an AAV of $1 000 000. All business customers were assumed to have an 80 per cent discharge factor.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); IPART (2000b).

Table B4.7 **Real water and sewerage price trends — business, Hunter Water Corporation (NSW)**

1990-91 to 2000-01 (index 1990-91=100)

	Low water user	*Medium water user*	*Medium to high water user*	*High water user*
1990-91	100.0	100.0	100.0	100.0
1991-92	99.2	105.7	99.3	103.5
1992-93	92.1	100.2	96.3	105.4
1993-94	69.4	79.7	81.5	105.3
1994-95	36.7	62.3	76.9	104.2
1995-96	36.1	61.7	77.0	100.1
1996-97	35.5	63.8	80.4	103.5
1997-98	36.4	65.7	83.0	105.8
1998-99	35.9	64.9	82.3	104.2
1999-00	35.6	64.6	82.1	103.1
2000-01	34.1	61.4	77.4	97.1

Note For details on the construction of the business real price indexes refer to attachment A. For business customers it was assumed that a low water use customer (300 kl per year) had a 20 mm connection and a property value of $9000, a medium water use customer (3000 kl per year) had a 40 mm connection and a property value of $25 000, a medium to high water use customer (30 000 kl per year) had a 40 mm connection and a property value of $100 000, and a high water use customer (300 000 kl per year) had a 300 mm connection and a property value of $200 000. All business customers were assumed to have an 80 per cent discharge factor with the exception of high water use customers. Few high use customers are connected to sewerage services and therefore sewerage charges were not included for this group.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Hunter Water Corporation, pers. comm., 27 March and 4 April 2002; IPART (2000c).

Table B4.8 **Real water and sewerage price trends — industrial and commercial businesses, SA Water (SA)**

1990-91 to 2000-01 (index 1990-91=100)

	Metropolitan industrial	*Non-metropolitan industrial*	*Metropolitan commercial*	*Non-metropolitan commercial*
1990-91	100.0	100.0	100.0	100.0
1991-92	102.2	102.7	97.7	95.6
1992-93	101.9	104.8	90.4	104.5
1993-94	99.1	103.6	84.5	107.5
1994-95	98.8	102.1	82.5	119.6
1995-96	94.5	100.4	78.8	114.5
1996-97	97.0	101.9	82.3	123.6
1997-98	98.9	105.3	86.0	127.3
1998-99	98.1	103.9	88.0	134.9
1999-00	98.4	105.4	88.1	134.7
2000-01	92.0	99.5	82.2	125.3

Note For details on the construction of the business real price indexes refer to attachment A. For industrial business customers it was assumed that average water consumption was 4300 kl per year in metropolitan Adelaide and 4800 kl per year in non-metropolitan areas of SA over the study period. For commercial business customers it was assumed that average water consumption was 490 kl per year in metropolitan Adelaide and 229 kl per year in non-metropolitan areas of SA over the study period.

Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); SA Water, Adelaide, pers. comm., 10 October 2001.

Table B4.9 **Quality of service measures — Sydney Water Corporation (NSW)**

1990-91 to 2000-01

	Water main breaks per 100 km	*Sewer main chokes per 100 km*
1990-91	41	54
1991-92	35	58
1992-93	38	60
1993-94	26	75
1994-95	24	87
1995-96	20	73
1996-97	49	72
1997-98	49	88
1998-99	43	84
1999-00	41	63
2000-01	38	70

Note Main breaks include bursts and leaks. Leaks include faults that can be fixed without shutting down the main. Chokes are confirmed partial or total blockages occasioning an interruption to service, excluding any blockages that occur upstream of the service connections.

Source: WSAA (2001 and previous issues).

Table B4.10 **Quality of service measures — Hunter Water Corporation (NSW)**

1990-91 to 2000-01

	Water main breaks per 100 km	*Sewer main chokes per 100 km*
1990-91	55	61
1991-92	43	99
1992-93	39	73
1993-94	47	88
1994-95	49	92
1995-96	44	64
1996-97	39	67
1997-98	52	68
1998-99	34	54
1999-00	48	50
2000-01	43	58

Note Main breaks include bursts and leaks. Leaks include faults that can be fixed without shutting down the main. Chokes are confirmed partial or total blockages occasioning an interruption to service, excluding any blockages that occur upstream of the service connections.

Source: WSAA (2001 and previous issues).

Table B4.11 **Quality of service measures — SA Water (SA)**

1990-91 to 2000-01

	Water main breaks per 100 km	*Sewer main chokes per 100 km*
1990-91	21	48
1991-92	20	50
1992-93	18	44
1993-94	26	55
1994-95	30	61
1995-96	27	60
1996-97	23	61
1997-98	27	62
1998-99	31	53
1999-00	25	42
2000-01	25	39

Note Main breaks include bursts and leaks. Leaks include faults that can be fixed without shutting down the main. Chokes are confirmed partial or total blockages occasioning an interruption to service, excluding any blockages that occur upstream of the service connections.

Source: WSAA (2001 and previous issues).

Table B4.12 **Return on assets — Sydney Water Corporation and Hunter Water Corporation (NSW) and SA Water (SA)**

1990-91 to 2000-01 (per cent)

	Sydney Water	*Hunter Water*	*SA Water*
1990-91	4.3	2.4	0.5
1991-92	3.1	2.7	1.6
1992-93	2.2	2.4	1.1
1993-94	2.5	2.2	1.9
1994-95	2.2	1.8	2.1
1995-96	2.6	2.2	2.1
1996-97	3.2	3.1	4.0
1997-98	4.0	3.1	4.6
1998-99	2.6	2.8	4.7
1999-00	4.0	2.8	4.8
2000-01	3.2	2.2	4.8

Note Return on assets is the ratio of earnings before interest and tax (EBIT), to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year.

Sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Table B4.13 **Dividend payout ratio — Sydney Water Corporation and Hunter Water Corporation (NSW) and SA Water (SA)**

1990-91 to 2000-01 (per cent)

	Sydney Water	*Hunter Water*	*SA Water*[a]
1990-91	56.6	46.5	0.0
1991-92	83.3	69.3	0.0
1992-93	50.0	1052.6	0.0
1993-94	40.3	287.2	0.0
1994-95	88.2	329.7	1681.5
1995-96	59.5	177.6	-437.4
1996-97	56.2	56.0	108.7
1997-98	86.0	80.0	90.1
1998-99	60.1	144.0	116.4
1999-00	40.3	80.1	123.6
2000-01	32.7	126.4	100.6

Note Dividend payout ratio is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. **a** SA Water did not pay a dividend for the years 1990-91 to 1993-94.

Sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Table B4.14 **Dividend to equity ratio — Sydney Water Corporation and Hunter Water Corporation (NSW) and SA Water (SA)**

1990-91 to 2000-01 (per cent)

	Sydney Water	*Hunter Water*	*SA Water*[a]
1990-91	1.7	0.4	0.0
1991-92	1.5	0.6	0.0
1992-93	0.3	0.8	0.0
1993-94	0.5	0.9	0.0
1994-95	0.5	1.2	1.4
1995-96	0.4	1.8	0.9
1996-97	0.7	2.0	2.0
1997-98	1.9	2.1	2.3
1998-99	0.8	2.4	3.1
1999-00	1.2	1.5	3.8
2000-01	1.5	1.6	2.9

Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. [a] SA Water did not pay a dividend for the years 1990-91 to 1993-94.

Sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

5 Urban Transport

Key outcomes

- In all capital cities real urban transport prices were higher in 2000-01 than they were in 1990-91.
- Increases in real urban transport prices added to overall household expenditure. The real increase in household expenditure across all capital cities in 2000-01 compared to 1990-91 was about $326 million per year.
- In all capital cities, real metropolitan taxi prices were higher in 2000-01 than they were in 1990-91. Increases in taxi fares over the study period have generally been lower than the increases in the remaining urban transport fares. The exception is Melbourne.
- In NSW and Queensland (examined as case studies), real household prices for urban transport were also higher in metropolitan and non-metropolitan areas in 2000-01 compared with 1990-91.
- In both states, the real price change for concession customers was the same as non-concession customers.
- There is some evidence of enhancement of service — such as the introduction of new rolling stock, air-conditioned buses and wheelchair accessible buses. However quality of service — as measured by punctuality and reliability — remained generally unchanged.
- Real price increases in NSW and Queensland do not appear to have been sufficient to allow 'commercial' financial targets to be met.
- In the case of the State Transit Authority, it appears that real government contributions (defined as explicit payments and implicit subsidies) have declined.

The Australian urban transport industry has undergone extensive reform since 1990-91.[1] These reforms have influenced the prices paid for urban transport services. Further, as fares were re-structured to be more reflective of cost, price trends varied between households situated in metropolitan and non-metropolitan areas.

[1] For the purposes of this study, urban transport is defined as bus, tram, train, ferry and taxi services. The definition does not include hire cars, horse drawn vehicles or motorcycles.

In this chapter, trends in real prices paid by household customers for urban transport services are presented for the period 1990-91 to 2000-01. Using a case study approach, differences in price trends between metropolitan and non-metropolitan customers, and between concession and non-concession customers are also presented.

Quality of service measures were examined to determine whether any declines in real prices over the period have been associated with lower service quality. Finally, the financial performance of the case study utilities was examined to see if price declines have been associated with falling rates of return.

Urban transport service providers generally require budgetary funding to make good their operating deficits. Consequently, trends in the level of government subsidies and funding of urban transport was also examined.

5.1 Industry reforms

Many governments are extensively involved in the provision of urban transport services — through ownership, funding support and the regulation of fares and quality of service. The reasons they cite for this include service coordination, system-wide ticketing and recognition of natural monopoly characteristics and positive externalities. Some States have addressed these issues through public-private partnerships and privatisation.

Urban transport is not subject to a specific agreement under the National Competition Policy (NCP) package of reforms. However, some aspects of the NCP agreements have had a noticeable impact on administrative and operational arrangements. These include, the application of competitive neutrality principles, prices oversight of public monopolies and the contracting out of service provision.

A general aim of microeconomic reform has been to increase the commercial focus of publicly-owned service providers and reduce their reliance on government funding support. In urban transport, the principal reforms have been:

- *governance* – the commercialisation, corporatisation or privatisation of government-owned service providers;
- *market* – the introduction of competitive tendering of some urban transport services; and
- *tariff* – the introduction of policies that increase prices to be more reflective of costs and policies such as integrated ticketing — aimed at increasing convenience to customers.

Governance reforms

Governance reform in the period 1990 to 2001 was achieved by commercialisation, corporatisation and in some cases privatisation. The rate at which these changes were implemented varied across jurisdictions. These reforms were typical of those described in chapter 1.

The Victorian public transport sector provides an example of the restructuring process accompanying the reform of governance arrangements. The Public Transport Corporation's suburban passenger services, MetTrains and MetTram, were restructured into four corporations under *the Rail Corporations (Amendment) Act 1997*. MetTrains was divided into two State business corporations — Hillside Trains and Bayside Trains.[2] MetTram was also restructured into two State business corporations — Yarra Trams and Swanson Trams. The four businesses were incorporated in 1998.

Privatisation of Melbourne train and tram services occurred in August 1999, when they were purchased by three companies — Metrolink Pty Ltd, Connex Melbourne and National Express (Australia).

Privatisation of bus services in Melbourne was achieved in 1998 when the services provided by MetBus were transferred to two private sector companies. As at October 2001, there were 41 private sector bus operators providing Melbourne metropolitan bus services.

Other jurisdictions have commercialised or corporatised their government-owned urban transport service providers. In 1995-96, the Metropolitan Transport Trust (Tasmania) became a government business enterprise (GBE) subject to the *Government Business Enterprise Act 1995*. Prices oversight was provided for under the *Government Prices Oversight Act 1995*. In February 1998, the Metropolitan Transport Trust was made a government-owned company — Metro Tasmania Pty Ltd — subject to corporations law.

Accompanying the process of structural reform has been a movement towards making taxpayer funding more transparent and improving accountability through the implementation of community service obligation (CSO) agreements, supported by explicit government funding arrangements.

ACTION (ACT) entered into an agreement in 1996-97 to provide CSO services. ACTION receives reimbursement for offering fares below a commercial level,

2 Hillside Trains became Connex on 23 July 2000.

providing general route off-peak services, concession travel for students, and the provision of school services and special needs transport.[3]

Market reforms

Urban transport has been exposed to competition through competitive tendering for designated bus and ferry services. GTEs have been required to compete with private sector providers for the right to operate certain urban passenger services. For example, in 1995, the Passenger Transport Board (SA) developed an area-based competitive tendering program for the provision of urban transport services within the Adelaide metropolitan region. The government-owned utility — TransAdelaide — was required to compete with the private sector on the basis of a set of costing rules aimed at ensuring competitive neutrality *vis a vis* private sector competitors.

In 1999-2000, TransAdelaide was unsuccessful in tendering for the provision of urban bus services in Adelaide. As a result, TransAdelaide no longer provides bus services in its own right.[4] In 2001, urban transport contractors included Australian Transit Enterprises Pty Ltd, Serco Australia Pty Ltd, Torrens Transit Pty Ltd, SouthLink and TransitPlus.

In 1993-94, competitive tendering of service contracts was introduced in WA. Transperth — the metropolitan urban transport system — is comprised of businesses that provide bus, train, ferry and information services. Private companies and government organisations compete to operate these services, and the successful tenderers are known as Transperth operators.[5]

Competition has also been introduced through tendering franchise agreements. In Melbourne, such agreements exist between the Victorian Government and Metrolink Pty Ltd, Connex Melbourne and National Express (Australia) to operate Hillside Trains, Bayside Trains, Yarra Trams and Swanson Trams as franchises.

Incentive-based payments and penalties are a feature of the Victorian franchise agreements. The Victorian government implemented an Operational Performance Regime, whereby tram and train operators may pay a penalty or receive an incentive

3 ACTION operates the special needs transport on a full cost recovery basis with the revenue for this service coming from ACT Health Community Care, the ACT Department of Education and Canberra Hospital.

4 Metropolitan bus services are provided by TransitPlus, a business formed through a relationship between TransAdelaide and Australian Transit Enterprises Pty Ltd.

5 In October 2001, bus services were provided by CGEA Perth Bus, Southern Coast Transit, Swan Transit, and Path Transit. Ferry services were provided by Perth Water Transport and train services by Westrail. Information services are operated by Serco Australia.

payment depending on their performance as measured by indicators of reliability and punctuality. Further incentives are available to operators for increasing patronage.

Tariff reforms

The fare structures for urban transport services also vary across jurisdictions (for an explanation of fare structures see box 5.1). For example, a sectional structure is employed in Hobart, while a flat fare structure is used in Adelaide. In addition, some jurisdictions use a combination of fare structures. Sydney has a sectional system overlaid with a zonal system. However, most jurisdictions tend to use a zone based system.

Box 5.1 **Fare structures — Urban transport**

- *Flat fares* are single fares which apply to all services. For example, a ticket in Adelaide allows customers to travel anywhere on the Adelaide Metro public transport system, within a two hour time period, with no constraints on intermodal transfer.
- *Zone fares* are similar to flat fares in that only one fare is payable within a specified geographically defined area of travel. However, there are generally a number of zones within a single urban transport network. Zonal systems are mostly time-based so that tickets have an expiry time. Zonal systems are more conducive to allowing transfers both within and between transport modes than other fare types.
- *Distance-based fares* are determined by the distance travelled. Distance fares are usually described with reference to artificially created section points. Such fare structures are employed by MetroTas, CityRail and for private bus operators in NSW.
- *Time-based fares* are valid for travel within a specified period regardless of the distance travelled or the number of transfers. Elements of time-based travel are evident in Melbourne fares.
- *Off-peak fares* provide reductions in flat distance-based or zone fares outside of peak periods. Off-peak fares are aimed at increasing patronage. Public transport networks are designed to handle peak period demand (usually morning and afternoon commuter traffic). Lower demand during non-peak may lead to under utilisation of infrastructure. Off-peak pricing aims to increase demand during these periods and therefore increase service revenue.
- *Mulitmodal fares* allow passengers to transfer between modes of transport. For example, from tram to train or from bus to ferry.

Source: IPART (1996a).

Off-peak fares are available in most jurisdictions, as are multimodal fares. All jurisdictions offer discounts on a periodical or volume purchase basis. Discounts based on volume purchases include *Multirider* tickets and the *Fare Saver* or *Ten Trip Saver* tickets in Brisbane. Discounts based on periodical purchases include the daily, weekly, monthly or yearly *Metcards* available in Melbourne.

Several jurisdictions have implemented integrated ticketing to address declining patronage and to increase convenience of use. Integrated ticketing ensures that one ticket system applies to all transport modes and allows passengers to transfer between modes.

Integrated ticketing affects fares as it necessitates the standardisation of full and concession fares as well as the integration of existing fare zones or sections. Fully integrated ticketing systems operate in Melbourne, Adelaide and Perth. Integrated ticketing has been partially introduced in Brisbane and Sydney.[6]

In some jurisdictions, increases in the real fare price index over the study period reflect the introduction of reforms aimed at increasing farebox cost recovery. An example is the fare increases administered by ACTION (ACT) between 1990 and 2001.[7]

The Independent Competition and Regulatory Commission (ICRC) is responsible for determining the price direction for ACTION. The ICRC has stated that improvements in revenue are required to produce more efficient bus operations and that there is further scope to raise the general level of ACTION fares as a means of contributing to an improvement in farebox cost recovery (ICRC 2001). The ICRC estimates that average real fare increases will assist in raising ACTION's farebox cost recovery from 22.7 per cent in 1998-99 to 26.6 per cent in 2000-01 (ICRC 2000).

In Victoria, as part of the public transport reform program, the State Government sought to decrease taxpayer funding by $245 million per year. A specific element of the financial strategies identified by the government for achieving the target reduction was a 10 per cent increase in transport fares in 1993 (Auditor-General of Victoria 1998).

6 In 2002 both Brisbane and Sydney were implementing smart card integrated ticketing.

7 In 1991-92 and 1992-93, fare increases were applied to most tickets. In 1995-96, the fare increase was applied to adult pre-purchased tickets. Child, student and concession fares remained unchanged, as did cash fares for all categories. In 1996-97, the fare increase was applied to most pre-purchased tickets for adults and pensioner, senior and child categories. New tickets were also introduced for students and for families and shoppers travelling at off-peak times. The 2000-01 fare increase is consistent with the final price direction set by the ICRC — the increase reflects movements in the CPI and a GST component of 8 per cent.

Farebox cost recovery can also be increased through the implementation of revenue protection measures, specifically, measures aimed at decreasing fare evasion. Such measures include the appointment of revenue protection officers. The appointment of revenue protection officers by ACTION contributed to an increase in cash fares of $350 000 in 2000 (ICRC 2001).

5.2 Price outcomes for metropolitan households

The prices reported in this section are for the urban transport component of the Australian Bureau of Statistics (ABS) consumer price index (CPI) series. Prices are presented for each capital city. In constructing this price series, the ABS covers all major modes of urban transport according to their availability in particular capital cities. The modes covered include trains, buses, trams, ferries and taxis.[8]

The Goods and Services Tax (GST), introduced in July 2000, was included in the nominal household price series for 2000-01 because households incur the full cost of this tax.

Prices are collected by the ABS for samples of a number of trips between specific origins and destinations. The prices include those applying to single, multi, periodical, peak, off-peak, non-concession or concession (including pensioner and student) tickets.

The urban transport prices reported by the ABS can be expressed in real terms. Real prices trended upwards in all capital cities between 1990-91 and 2000-01. The largest increase (43 per cent) was experienced in Perth. Increases in Brisbane, Adelaide, Darwin and Canberra ranged from 30 to 35 per cent. Sydney, Melbourne and Hobart had real increases of 22, 24 and 26 per cent respectively (see figure 5.1).

Real prices increased further in all capital cities in 2000-01, with the introduction of the GST. For example, ACTION fares in Canberra increased by 8 per cent to reflect the net impact of the GST.[9]

The rise in fares across all jurisdictions is consistent with the adoption of policies aimed at increasing farebox cost recovery. The strong growth of prices in Perth, may be attributed to a policy change first introduced in 1993.

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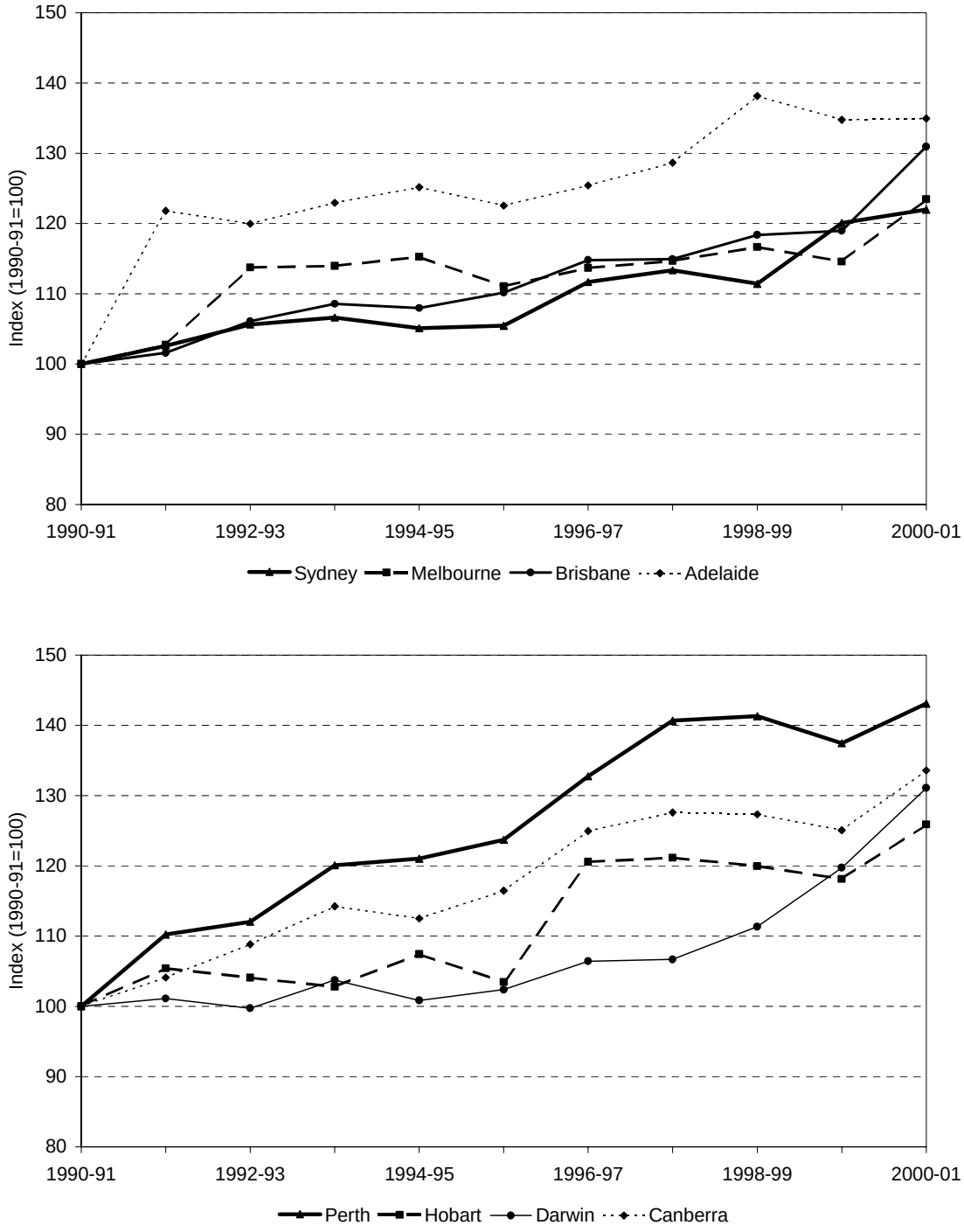
8 Price indices that rely on ABS data include a weighting for taxis that can be regarded as one mode of 'public' transport. The weighting varies by jurisdiction and taxi fares are discussed in greater detail later in the chapter.

9 The impact of the GST has not been netted out of the price indexes.

Figure 5.1 **Real urban transport price trends — metropolitan households**
1990-91 to 2000-01



Note The real price index for each capital city was obtained by rebasing the CPI (urban transport) price indexes to a base year of 1990-91 and then deflating the rebased indexes by the re-based CPI (All groups) price index for each capital city. The CPI (urban transport) price indexes for 2000-2001 include the Goods and Services Tax.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0).

In Adelaide, prices were increased significantly in July 1991 due to an across-the-board fare increase, the application of a premium to onboard (cash) tickets, and the introduction of student fares — previously students had travelled free of charge. Prices rose again in July 1998 due to an across-the-board fare increase of approximately 9 per cent resulting from a general review process (Passenger Transit Board, Adelaide, pers. comm., 25 September 2001).

Prices in Darwin were relatively stable until 1998, when bus fares were increased by 20 cents across the board (Department of Transport and Works, Darwin, pers. comm., 25 October 2001). Rising prices in 1999-2000 reflect a substantial increase in taxi hiring charges in Darwin.

Hobart urban transport prices were increased in 1996-97 in order to improve farebox cost recovery. Accompanying the across-the-board fare increase, was a decrease in the discount on pre-purchased tickets, such as ten trip tickets, from approximately 30 per cent to 20 per cent (Metro Tasmania Pty Ltd, Hobart, pers. comm., 30 September 2001).

Implications for household expenditure

Urban transport prices have a direct effect on household expenditure. The direct impact of changes in the price of urban transport over the decade on real household expenditure in 2000-01 was estimated. This was done by multiplying the actual household expenditure on urban transport in 2000-01, by the difference between the movement in its price over the ten years to 2000-01 and the movement in the CPI (All groups) over the same ten year period. For this calculation, the impact of price changes on consumption was ignored.

In 2000-01, total expenditure by capital city households on urban transport was around $1.6 billion.[10]

Urban transport price trends were such that prices increased faster than the CPI (All groups). Real increases in household expenditure, arising from price changes over the previous decade, on urban transport occurred in all jurisdictions (see tables 5.1 and 5.2). The level of increase varied between cities. Total increase in expenditure by all households across all capital cities approximated $326 million per year

[10] Actual household expenditure in 2000-01 was derived by taking the proportion of total household expenditure that was spent on urban transport by households in the 1998-99 Household Expenditure Survey (ABS 2000a). The proportion or expenditure weight was then multiplied by total household expenditure in 1998-99 and inflated to 2000-01 prices using the CPI (All groups) deflator, to obtain an estimate of actual household expenditure on urban transport in 2000-01.

(see table 5.3). The largest increases were for households in Sydney (approximately $128 million per year). The lowest increase was in Darwin at $2 million per year.

Table 5.1 **Real change to household urban transport expenditure arising from price changes over the previous decade**

$ per capital city household, 2000-01

Income quintile	*Sydney*	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*	*Canberra*
All households	84.82	64.10	87.75	49.45	59.47	37.31	49.71	86.98

Note The Commission did not calculate the real change to expenditure by income quintile because the estimates are statistically unreliable at the necessary level of disaggregation.

Source: PC estimates based on ABS (*Household Expenditure Survey Australia 1998-99,* Cat. no. 6535.0); ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0).

Table 5.2 **Real change to household urban transport expenditure arising from price changes over the previous decade, as a proportion of total expenditure**

Per cent per capital city household, 2000-01

Income quintile	*Sydney*	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*	*Canberra*
All households	0.19	0.15	0.23	0.14	0.15	0.10	0.10	0.18

Note The Commission did not calculate the real change to expenditure by income quintile because the estimates are statistically unreliable at the necessary level of disaggregation.

Source: PC estimates based on ABS (*Household Expenditure Survey Australia 1998-99,* Cat. no. 6535.0); ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0).

Table 5.3 **Total change to household urban transport expenditure arising from price changes over the previous decade**

$ per capital city household, 2000-01

	Households[a]	*Change per household*	*Total change*
	No.	$	$000s
Sydney	1,507,189	84.82	127 838 119
Melbourne	1,330,406	64.10	85 275 320
Brisbane	549,387	87.75	48 208 858
Adelaide	436,065	49.45	21 565 510
Perth	456,010	59.47	27 116 843
Hobart	89,751	37.31	3 348 783
Darwin	38,530	49.71	1 915 508
Canberra	125,561	86.98	10 921 584
Total	**4,532,899**		**326 190 525**

a Household numbers in each capital city were calculated by multiplying the proportion of households in each capital city as reported by the ABS (1996) by the total number of capital city households reported in the ABS (2000a).

Sources: ABS (*The Australian Consumer Price Index-Concepts, Sources and Methods*, Cat. no. 6461.0); ABS (*Household Expenditure Survey Australia 1998-99,* Cat. no. 6535.0).

5.3 Price trends for taxis and other forms of urban transport

In this section, the price trends for taxis and other forms of urban transport are presented separately. Trends for all forms of urban transport other than taxis, were derived by netting out taxi price trends from the ABS CPI series for urban transport as a whole, which includes taxis. Price trends for taxis were derived from fare information.

Taxis

Taxis have a number of characteristics which complicate price trend comparisons with other modes of urban transport. Taxis do not provide scheduled transport services — they are not subject to the constraint of set routes and timetables. Government involvement in the taxi market has not extended to ownership as it has in other modes of urban transport. However, governments do heavily regulate the taxi industry.

Information regarding taxi fares over the last decade across all jurisdictions is not readily available from a single source such as the ABS. Consequently, the Commission collected fare and policy documents for taxis for all capital cities for the period 1990-91 to 2000-01.

Industry reforms affecting taxi fares

Taxis are regulated in all jurisdictions of Australia. Regulatory arrangements typically encompass three key elements — market entry, quality of service and fares.

Entry regulations restrict the number of taxis, by requiring taxis to be licensed and limiting the number of licences issued. The regulation of market entry directly affects the value of taxi plates and consequently, taxi fares, such that fares are higher than they otherwise would be (IPART 1999). Taxi plate values exceed $200 000 in most Australian capital cities and the National Competition Council (NCC) has stated that they have been estimated to add around one third to the cost of a taxi fare (Deighton-Smith 2000).

On 1 January 1999, the NT government deregulated entry into the taxi sector. This involved the cancellation of pre-existing taxi licences and a lump sum compensation

of $23.7 million to plate owners.[11] By August 1999, the number of taxis operating in Darwin had grown by 22 per cent (Department of Transport and Works, Darwin, pers. comm., 24 January 2002).[12]

Quality of service is regulated through the imposition of quality controls and minimum standards. Such controls can take the form of owner accreditation, driver authorisation, vehicle standards (such as age) and roadworthiness. Customer service can also be regulated — by monitoring driver behaviour and mandating the wearing of uniforms.

The imposition of minimum standards for vehicles and operators affects taxi costs and fares. For example, in 1996, flagfall rates were increased in NSW so that taxi drivers and operators could recoup the costs incurred through the introduction of new regulatory requirements, such as installing a vehicle tracking device, security alarms device, security screen and driver uniforms (Taxi Hire Car Bureau, Sydney, pers. comm., 20 August 2001).

Fares or hiring charges are regulated through the setting of maximum and additional fares. Fares typically comprise a booking fee, flagfall rate, distance rate and a detention rate. In all jurisdictions, fares vary according to the time of day, with the exception of Victoria, where a single fare applies all day.

Taxi price trends

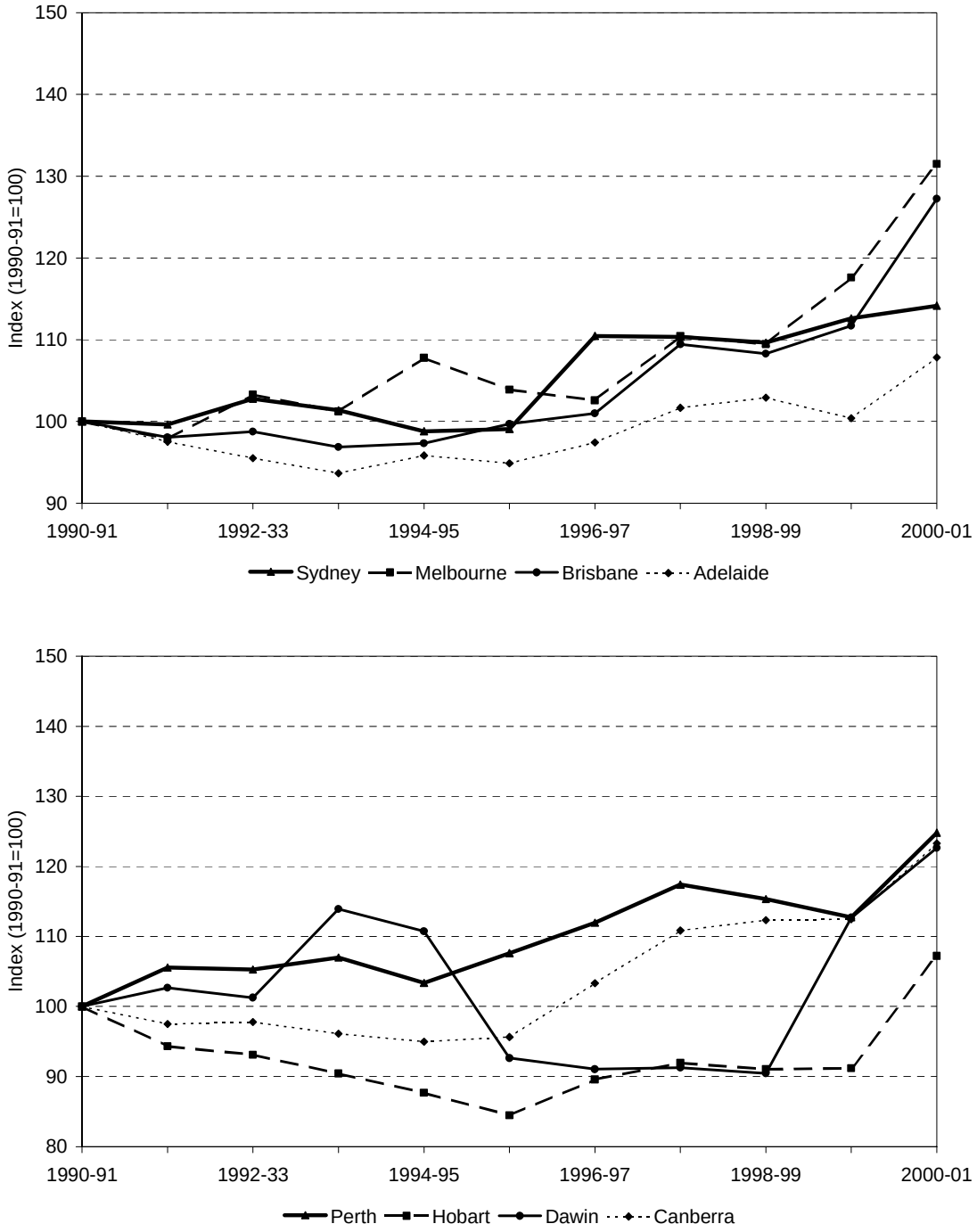
Real taxi price indexes were constructed for all capital cities based on a common reference journey. A distance of 10 kilometres, with one flagfall and 3 minutes waiting time was assumed for a reference journey. Booking fees were not included. The price indexes were calculated using the fares in each jurisdiction.

The resulting indexes reveal that fares have increased in real terms for all jurisdictions since 1990-91 (see figure 5.2). In 2000-01 fares increased in all jurisdictions due to the introduction of the GST. The increase attributable to GST in Darwin was approximately 6 per cent and 8 per cent in Perth and Melbourne (Department of Transport and Works, Darwin, pers. comm., 24 January 2002; Batchelor 2000).

[11] Prior to the reforms the valuation of taxi plates was partially determined by the fact that taxi licences were sold and not leased to operators. Under the introduced reforms taxi plates are leased for periods of up to 12 months after which they need to be renewed.

[12] This increase should be viewed in the context of substantial accompanying decreases in the number of operating private hire vehicles and mini buses.

Figure 5.2 **Real urban transport price trends — taxis**
1990-91 to 2000-01



Note Real taxi price indexes were constructed for all capital cities based on a common reference journey — distance of 10 kilometres, with one flagfall and 3 minutes waiting time. Booking fees were not included. The real price index for each capital city was obtained by rebasing taxi fares to 1990-91 and then deflating by the CPI (All groups) for each capital city. The nominal price series for 2000-01 include the Goods and Services Tax. Fare determinations for Darwin 1991 were not available, therefore the 1992 fare was extrapolated backwards based on the CPI for Darwin.

Data Source: For details on data sources refer to attachment A, table A5.2.

In 1994, price increases were implemented in Melbourne, to partially offset the cost of a taxi industry reform package (uniforms, taxi livery, driver training). A similar increase was experienced in Sydney in 1995-96, when the flagfall was increased by $1, to enable taxi operators to fund new regulatory requirements. However, this additional flagfall was removed in the subsequent year.

Taxi fares are also sensitive to movements in the price of fuel. For example, due to increases in the price of Liquid Petroleum Gas (LPG), Melbourne hiring charges (in nominal terms) increased by 3.5 per cent in December 1990, 4.6 per cent in May 2000 and 5.3 per cent in December 2000 (Victorian Taxi Directorate, Melbourne, pers. comm., 28 August 2001).

The movement evident in Darwin fares is partially the result of a change in methodology for fare determination. During 1994, the NT government moved away from automatic fare adjustments based on CPI movements towards industry initiated determinations (Department of Transport and Works, Darwin, pers. comm., 8 August 2001). Subsequently, the real value of fares has been variable (see figure 5.2). In 2001, the NT government moved away from CPI based determinations towards determinations based on a basket of inputs (such as fuel, tyres and automotive paint).

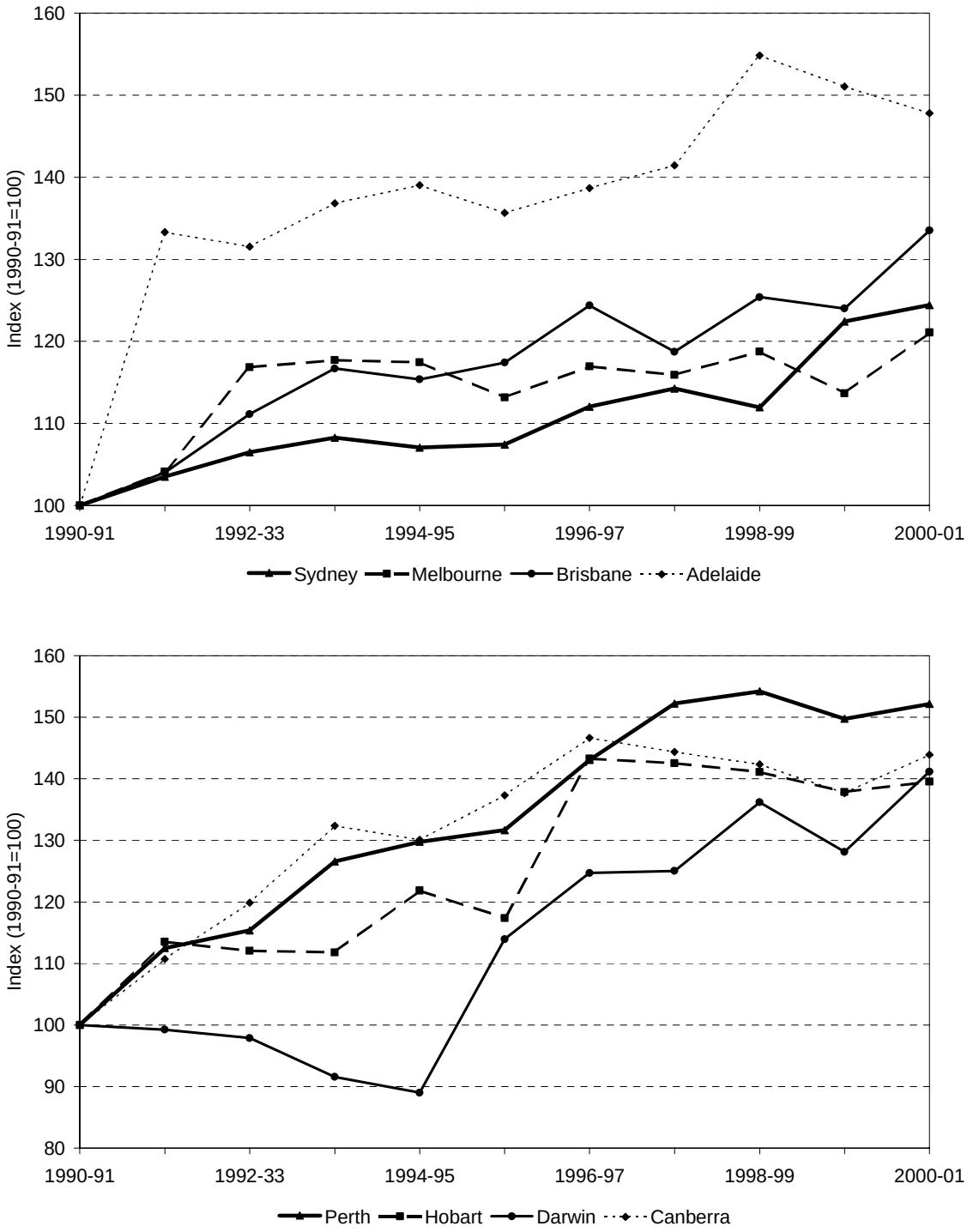
Forms of urban transport other than taxis

Household expenditure on taxi services represents a significant proportion of expenditure on urban transport as a whole. For example, in both 1988-99 and 1998-99, taxis accounted for nearly 30 per cent of expenditure on urban transport — public transport and taxis combined — for Australia as a whole (ABS 2000a).

If taxis are removed from the CPI urban transport series, then the residual price data trend should better approximate the price trends for the remaining transport providers — bus, train, tram and ferry (see figure 5.3).

When taxis are removed from the CPI prices series for urban transport as a whole, the data tends to show even greater increases in public transport fares. This is because the increase in taxi fares over the last decade has, in general, been lower than the increases in the remaining urban transport fares (see figures 5.1 and 5.3). However, towards the end of the study period, increases in taxi fares in Melbourne exceeded those for the remaining urban transport modes.

Figure 5.3 **Real urban transport price trends — excluding taxis**
1990-91 to 2000-01



Note Taxis were separated from the CPI series using weights derived from ABS HES (1998-99) expenditure on taxis as a proportion of urban transport expenditure. The exact algorithm for calculating the urban transport component of the CPI (inclusive of taxis) can not be disclosed by the ABS. Therefore, the indexes in figure 5.3 act as an approximation only.

Data Source: For details on data sources refer to attachment A, table A5.3.

5.4 Price variations

Service providers in NSW and Queensland were selected as case studies to examine whether prices have varied according to customer location (metropolitan or non-metropolitan centre) and eligibility for concessions. The NSW service providers included:

- the State Transit Authority (STA),
- CityRail (State Rail Authority) and
- Wollongong bus service providers — Dion's Bus Service, Rutty's Bus Service and John J Hill Pty Ltd.[13]

The Queensland providers included in the case studies were:

- Brisbane Transport (BT),
- Citytrain (Queensland Rail) and
- Rockhampton bus service providers — Rockhampton City Council and Capricorn Sunbus.[14]

The different environments in which these providers operate mean that prices over the period are not directly comparable between service providers. Differences in modal composition (bus, ferry and train), route densities and passenger volumes may influence the costs of provision and impact on price movements relative to those for other urban transport service providers. For example, the relative size of the area served by an urban rail system and its population density affect requirements for rolling stock and fixed rail infrastructure per passenger trip.

Price trends, however, should be reflective of the cost environment for individual utilities providing that the operational circumstances of each provider remained unchanged over the study period and that there were no significant changes in competing transport modes or operators.

Location

Real household price indexes for metropolitan and non-metropolitan areas of NSW and Queensland were constructed based on the cost of a 10 kilometre journey — or as close as possible to 10 kilometres from the city centre. An average fare is reported for each mode of transport where possible. There were a large number of

[13] In addition to bus services, CityRail provides urban passenger rail services within the Wollongong area. Fares for these services are based on the same schedule as those provided in metropolitan Sydney.

[14] STA, SRA (State Rail Authority), BT and QR (Queensland Rail) are publicly owned utilities.

ticket types available to customers. Where service providers offered more than one ticket type, the index prices were based on an average fare, in which differing ticket types were weighted according to their usage.

Intermodal ticket prices are reported separately, as bus and ferry, or bus, ferry and rail combined (see lower panel of figure 5.4).

In Sydney, STA was chosen as representative of bus services. STA services the higher density inner city areas, while privately-owned bus operators service the middle and outer suburbs. Therefore, STA is the appropriate choice for a 10 kilometre journey from the city centre. In 1998, STA carried 55 per cent of bus passengers on the average week day.

Price indexes based on a 10 kilometre journey may not be indicative of prices for trips of a shorter or longer length. For example, the average bus trip length in Sydney is 5.7 kilometres. Differences in fare types and the possible redefinition of distance bands serviced by a fare may result in differing price paths for different journey lengths. For example, a price index for STA based on a 5.7 kilometre journey may show a decline in 2000 and 2001 resulting from the redefinition of distance bands applicable to fare types.

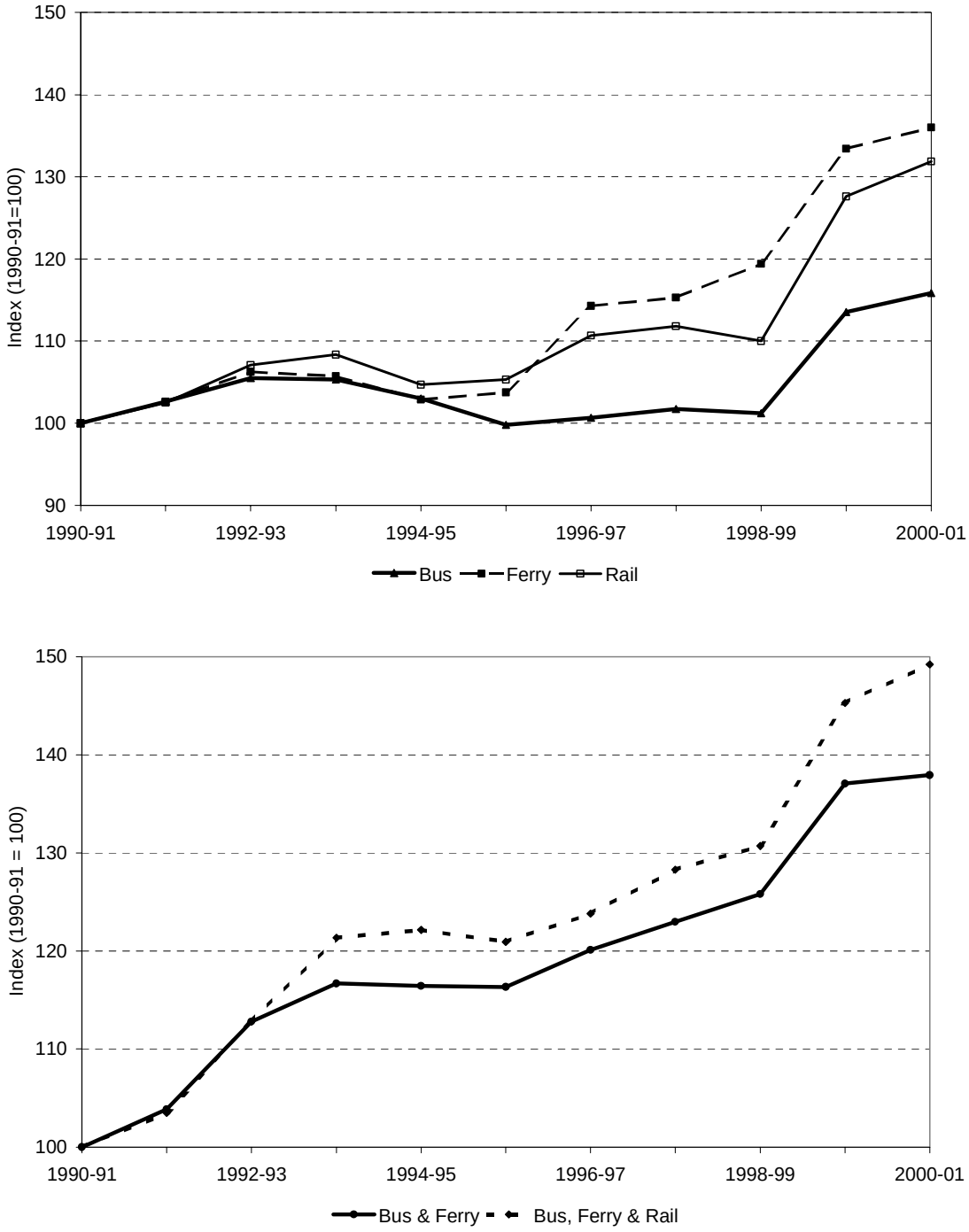
The case study trend data for STA and CityRail is not directly comparable to the ABS CPI series for Sydney urban transport (see figures 5.1 and 5.4). Unlike the case study data, the CPI series data includes the fare schedules of private bus companies, operating within the middle and outer suburban areas of Sydney.

Case study trend data shows that the increase in real prices is marginally greater in Wollongong (non-metropolitan) than it is in Sydney (metropolitan) (see figures 5.4 and 5.5).

CityRail provides urban passenger services in Wollongong and in metropolitan Sydney. The Wollongong services are provided at the same fares as those in Sydney. Consequently, rail fares presented in figure 5.4 are also applicable to Wollongong.

The net impact of the implementation of the GST on fares varies between service providers. In 2000-01, due to GST, STA bus fares (in nominal terms) increased by 7.8 per cent, STA ferries increased by 1.5 per cent, CityRail increased by 9.2 per cent (IPART 2000d), Brisbane Transport 7.5 per cent (Brisbane Transport, Brisbane, pers. comm., 19 April 2002) and Citytrain 10 per cent (Queensland Rail, Brisbane, pers. comm., 13 December 2001).

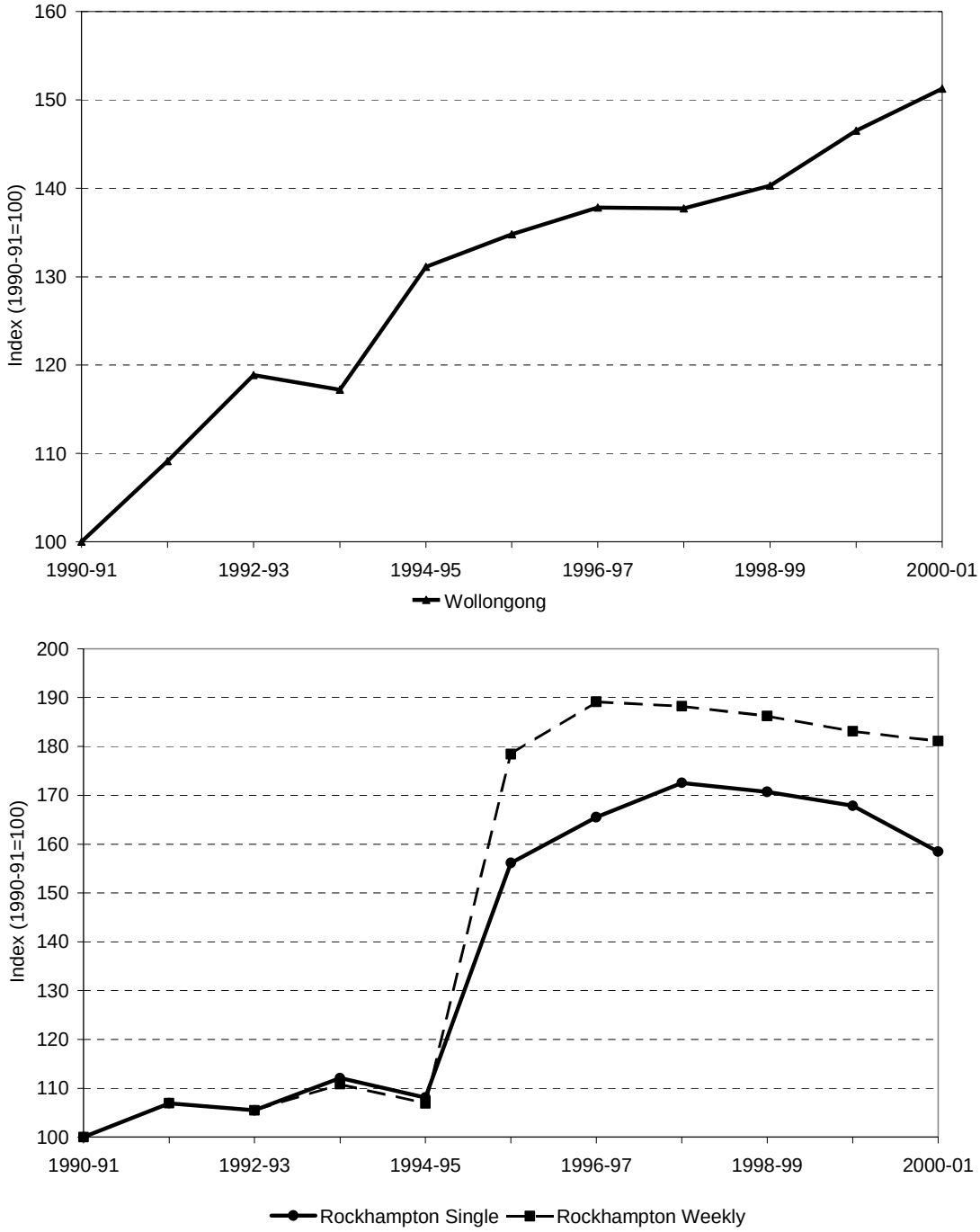
Figure 5.4 **Real urban transport price trends — Sydney (NSW)**
1990-91 to 2000-01



Note Real household price indexes for Sydney were constructed based on the cost of a 10 kilometre journey from the city centre. Where service providers offered more than one ticket type, the index prices were based on an average fare, in which differing ticket types were weighted according to their usage. The real price index was obtained by rebasing fares to 1990-91 and then deflating by the CPI (All groups) for Sydney. The nominal price series for 2000-01 include the Goods and Services Tax.

Data Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); IPART (2001 and previous determinations).

Figure 5.5 **Real urban transport price trends — non-metropolitan bus services, Wollongong (NSW) and Rockhampton (Queensland)**
1990-91 to 2000-01



Note Real household price indexes for non-metropolitan areas of NSW and Queensland were constructed based on the cost of a 10 kilometre journey from the city centre. The real price index for Wollongong and Rockhampton was obtained by rebasing fares to 1990-91 and then deflating by the CPI (All groups) for each capital city. The nominal price series for 2000-01 include the Goods and Services Tax.

Data Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Dions Bus Service, Wollongong, pers. comm., 22 October 2001; Queensland Transport, Rockhampton, pers comm., 2 November 2001; Transport NSW, Wollongong, pers. comm., 6 September 2001.

Relative to single mode fares, multimodal fares have increased at a greater rate in NSW (see figure 5.4).[15] This is consistent with a policy of reducing discounts on pre-purchased periodical and multitrip tickets.

Equity is another reason that governments have increased periodical and multitrip fares at a greater rate than singles and daily tickets. For example, IPART (1993) stated that the main customers of periodicals are commuters from higher income groups and therefore fare increases are less likely to impact adversely than on lower income groups.

The large increase evident in the price index for Rockhampton in 1995-96 (see lower panel of figure 5.5) is related to a change in service provider and the implementation of an urban transport reform package.[16] During this period the responsibility for the provision of services was transferred from the Rockhampton City Council to a private operator — SunBus.

In Wollongong prior to 1994, bus service providers had individual fare schedules. In 1994, all services were standardised on a metropolitan standard fare scale determined by the Department of Transport. The 1994 increase in fares partly reflect the need to increase the relatively low fare level in the contract with Seapost Pty Ltd prior to standardisation.

Fares for services from BT have risen over the period. There have been a number of major changes to fare policy over the study period. These include, changes to the discount rate applying to multi-trip tickets,[17] and the withdrawal of some periodical ticket types (Brisbane Transport, Queensland, pers. comm., 19 April 2002).[18]

The rise in Citytrain prices in 1993-94 (see lower panel of figure 5.6) may be attributed to the implementation of two fare increases within the same financial year. The real price increases experienced by Citytrain in the later years are partially due to fares being rounded up to the next 5 or 10 cents.

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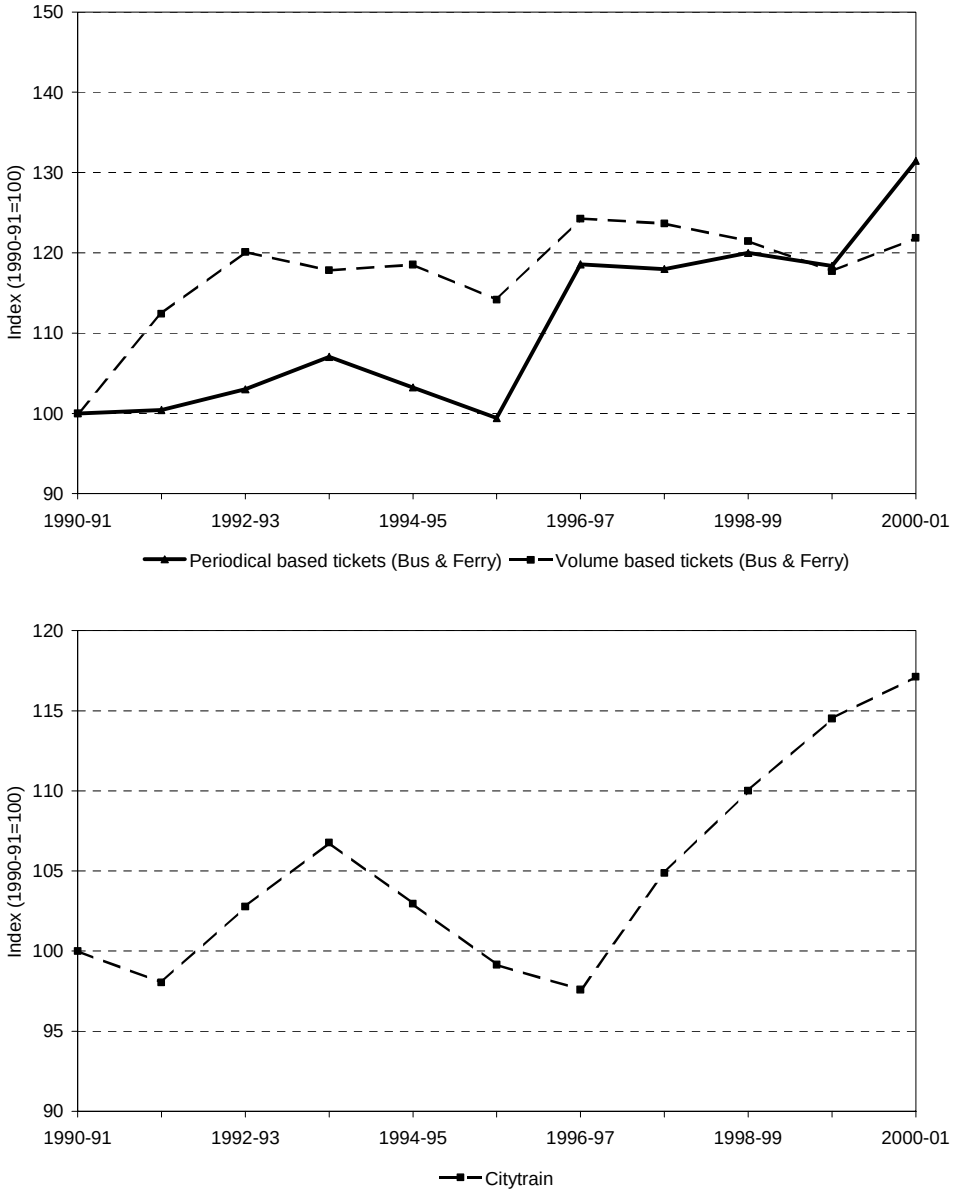
15 Multimodal ticketing exists in both Sydney and Brisbane. In Sydney, multimodal tickets exist in the form of *Travel Passes*. In Brisbane, multimodal tickets are available as *1-2-3*, *Citytrans* and *South East Explorer* tickets.

16 These reforms included the introduction of performance based contracts, the introduction of a system of operator accreditation, greater self-regulation and the gradual abolition of general passenger-based urban bus subsidies and their replacement with fare mark-ups for government specified and required fare concessions (Goebel 1995).

17 The discount rate for 10 Trip Savers decreased from 20 per cent in 1990 to 10 per cent in 1991. In 1998 the discount rate was reinstated at 20 per cent in 1998.

18 A ticket product withdrawal occurred on 30 June 2000, with the removal of Weekly and Monthly tickets.

Figure 5.6 **Real urban transport price trends — Brisbane (Queensland)**
1990-91 to 2000-01



Note The real household price indexes were obtained by rebasing fares to 1990-91 and then deflating by the CPI (All groups) for Brisbane. Brisbane Transport intermodal tickets — 1-2-3 and Citytrans — were introduced in 2000-01 and are not included in the weighted average fare. The fare reported for Citytrain represents that relevant to a journey from Central Station to Northgate Station. Queensland Rail was unable to provide fare schedules from 1990-91 to 1997-98, consequently the series reported represents movements in the overall fare level and not movement in an average weighted fare as reported for BT, STA and SRA. The real price series for 2000-01 include the Goods and Services Tax.

Data Source; PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); BT, Brisbane, pers. comm., 8 October 2001; Queensland Transport, Brisbane, pers. comm., 19 September 2001.

Concessions

Traditionally, urban transport providers have offered a wide range of concessions. These concessions are generally aimed at achieving social objectives. For example, ensuring affordable access to low income groups such as the elderly, the unemployed, sickness beneficiaries, ex-service personnel, children and full time tertiary and secondary students.

Concessions are available in both NSW and Queensland. In general, these concessions take the form of half-price fares and as such exhibit the same price trend as non-concession fares. Half-price fares are available in Sydney, Wollongong, Brisbane and Rockhampton.[19]

In NSW, two notable exceptions to the half-price fare are the pensioner excursion ticket and free travel for students under the School Student Transport Scheme (SSTS).

SSTS provides free travel to and from school for students who have to travel more than 2 km to school. The scheme provides a bus service where there are a sufficient number of eligible students to sustain the service. The level of funding required by SSTS has increased from $228 million in 1989-90 to $403 million in 2000-01.

The pensioner excursion ticket is available to pensioners and seniors. The ticket allows unlimited all-day travel on CityRail trains, Sydney Buses and Sydney Ferries. The ticket is priced on a zone basis and covers metropolitan, outer metropolitan and non-metropolitan areas. The Sydney metropolitan zone is bounded by Cowan, Emu Plains, Macarthur and Otford. Since 1990-91, the ticket has remained at $1 in nominal terms — in real terms the fare has decreased to approximately 80 cents in 2000-01.[20]

In addition to half price concessions, Citytrain (Queensland) offers a school concession for primary and secondary students travelling from their home station. The school concession ticket is valued at one third the full fare.

BT offers two notable exceptions to half price concession fares — tertiary tickets and free travel for children under 5 years of age. Tertiary tickets were available from 1990-91 on a monthly, semester, or annual basis. In addition, there was a monthly intermodal ticket available from 1993. These tickets were withdrawn in

[19] In addition to half price fares Rockhampton also has available — for secondary students — fares at two thirds the price of the full fare.

[20] The pensioner excursion ticket is available on State Transit buses and not on private operator buses. Consequently, the ticket generally applies to inner Sydney and Newcastle metropolitan areas.

January 1999, with the exception of the intermodal ticket, which was withdrawn in July 2000. Over the study period the price of tertiary tickets decreased in real terms by 13 per cent.[21]

5.5 Service quality

Quality of service was examined to see if price trends might be explained by changes in the quality and reliability of services. Lower prices can be achieved by lowering expenditure below that required to maintain service standards. However, lower service standards may take some time to manifest themselves.

Trends in quality of service indicators are not directly comparable between service providers. For example, urban rail tracks are mainly located in their own transport corridors and segregated from other traffic, whereas bus routes are generally located along streets — with or without priority over other traffic. In general, the greater the degree of segregation from other traffic, the higher the average travelling speed. Segregation also reduces the potential for accidents.

Reliability and punctuality

Two common indicators of quality of service in urban transport are reliability and punctuality. Reliability is generally measured in respect of service cancellations. Punctuality is generally measured by on-time running indicators, such as the proportion of services which arrive more than a specified interval outside the scheduled arrival time.

The definition of on-time running varies between modes. For example, in Victoria, on-time running for buses is defined as not more than 2 minutes early or 5 minutes late at scheduled destinations, whereas a metropolitan train is considered on time if it arrives at a destination no more than 59 seconds before and 5 minutes and 59 seconds after the scheduled time.[22]

Other sources of difference include the location and time at which the measurement is taken. For example, on-time running for Melbourne trains and buses is measured at the final journey destination, whereas for trams, on-time running is averaged over a number of points along the route.

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21 The *Tertiary Annual* and *Semester* tickets were replaced by *Monthly Concession* tickets.

22 On-time running indicators may also vary depending on what events — outside of the control of the utility — are excluded. In NSW, such Force Majeure events include an act of God or an unavoidable accident or incident such as suicides or attempted suicides.

CityRail (NSW) measures on-time running as no more than 3 minutes and 29 seconds late for suburban services and no more than 5 minutes and 29 seconds for intercity services. CityRail statistics are measured during 'peak' service hours.[23] Citytrain (Queensland) measures on-time running within 3 minutes 59 seconds over a 24 hour period, and produces statistics for both weekdays and weekend services.

In 1995-96, Citytrain showed a significant decrease in quality of service as measured by service cancellations and on-time running. This is partially attributable to major network track upgrading and lower availability of rolling stock resulting from the expansion of services on the Gold Coast.

The service cancellation and on-time running statistics for STA and CityRail show no marked change in quality of service accompanying fare increases (see figures 5.7 and 5.8).[24]

Vehicle kilometres and patronage

Other possible indicators of service quality include vehicle kilometres and patronage. An increase in vehicle kilometres would tend to indicate an increase in frequency or an expansion of the route, both of which can be viewed as improvements to service quality.

Movements in the level of patronage may indicate the extent to which customers are satisfied with the services provided. However, levels of patronage will be affected by both circumstances outside of the control of service providers and price movements. For example, IPART (1996b) noted that the patronage decline experienced by STA bus services in the early 1990s may be partially attributed to economic downturn and the diminishing importance of the central business district as a commuter destination.

Patronage may also be affected by movements in price. For example, governments may adopt policies targeting peak hour congestion — through increasing peak hour fares relative to off peak fares. If the resulting reduction in peak hour patronage is greater than the increase in off-peak patronage then the overall patronage level will decrease.

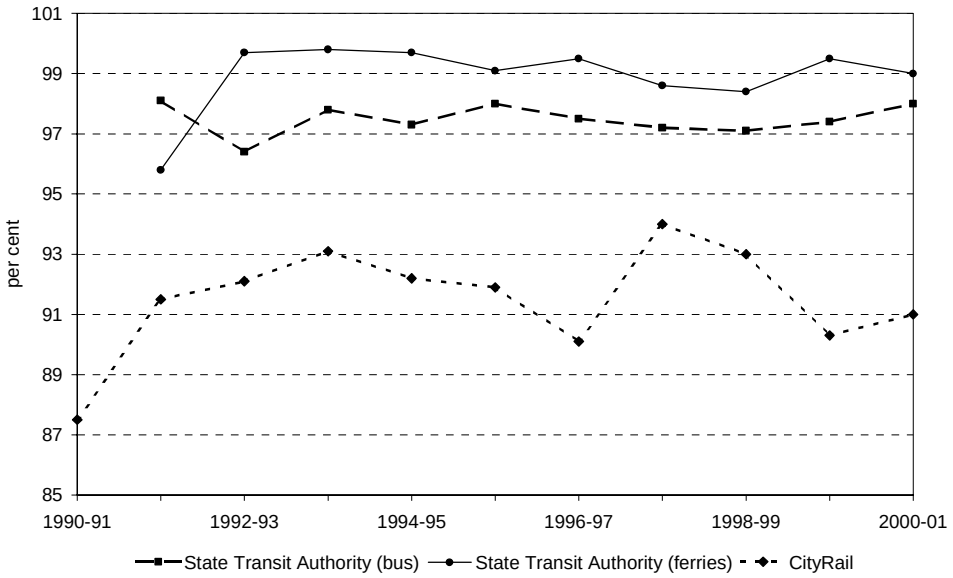
[23] Peak service hours for Sydney are, between the hours of 6.00 a.m. and 9.00 a.m. (morning peak) and between 4.00 p.m. and 6.00 p.m. (evening peak).

[24] Over the study period CityRail has experienced a significant growth in patronage accompanied by a minimal growth in infrastructure, this may impact upon on-time running statistics.

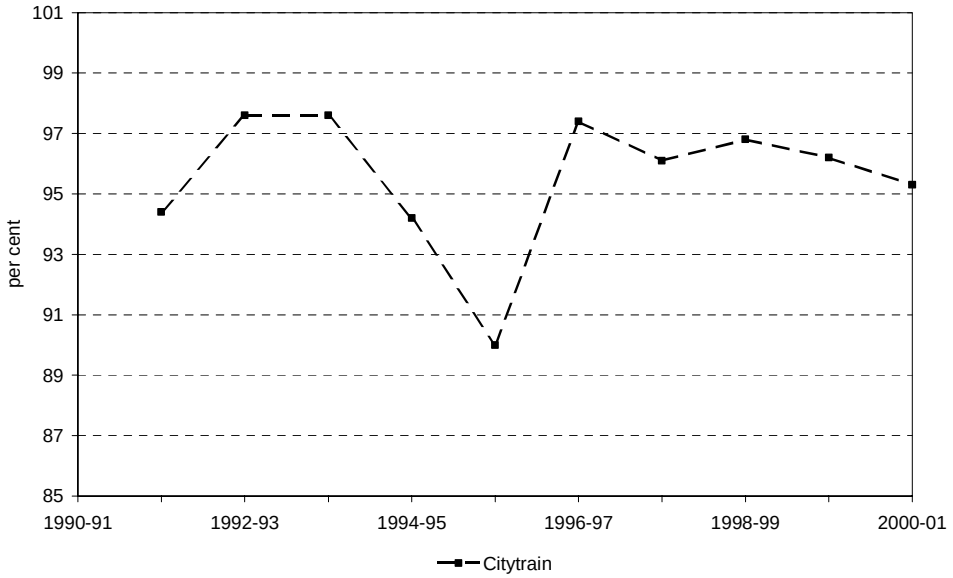
Figure 5.7 **Quality of service measures — on-time running, Sydney (NSW) and Brisbane (Queensland)**

1990-91 to 2000-01

Sydney



Brisbane



Note On-time running for CityRail is reported as peak services arriving no more than 5 minutes and 29 seconds late at their final destination. On-time running for NSW is reported as urban services arriving within 5 minutes of schedule. On-time running in Queensland relates to Citytrain urban inner city and metropolitan weekday services arriving within 3 minutes and 59 seconds of the scheduled time. On-time running statistics for Citytrain do not include services operated by Citytrain for Airtrain. On-time running indicators were not available for BT. In 1995-96, Citytrain showed a significant decrease in quality of service as measured by service cancellations and on-time running. This is partially attributable to major network track upgrading and lower availability of rollingstock resulting from the expansion of services on the Gold Coast.

Data sources: SCNPMGTE (1998 and previous issues); SRA (2001 and previous issues); STA (2001 and previous issues); Queensland Rail, Brisbane, pers. comm., 14 November 2001.

Vehicle kilometres for STA bus and ferry services and BT have increased over the study period (see figure 5.9). Patronage declined in the early 1990s for most metropolitan service providers. However, from 1994-95 to 2000-01 patronage trended upwards.

Service enhancement

A number of improvements in quality of service have occurred that are not evident in the preceding indicators. These include the introduction of real time passenger information services, the granting of bus priority, the construction of bus ways, the refurbishment of passenger carriages, increasing access for the elderly and disabled by means of low floor buses, and the establishment of on demand or 'hail and ride' bus services.

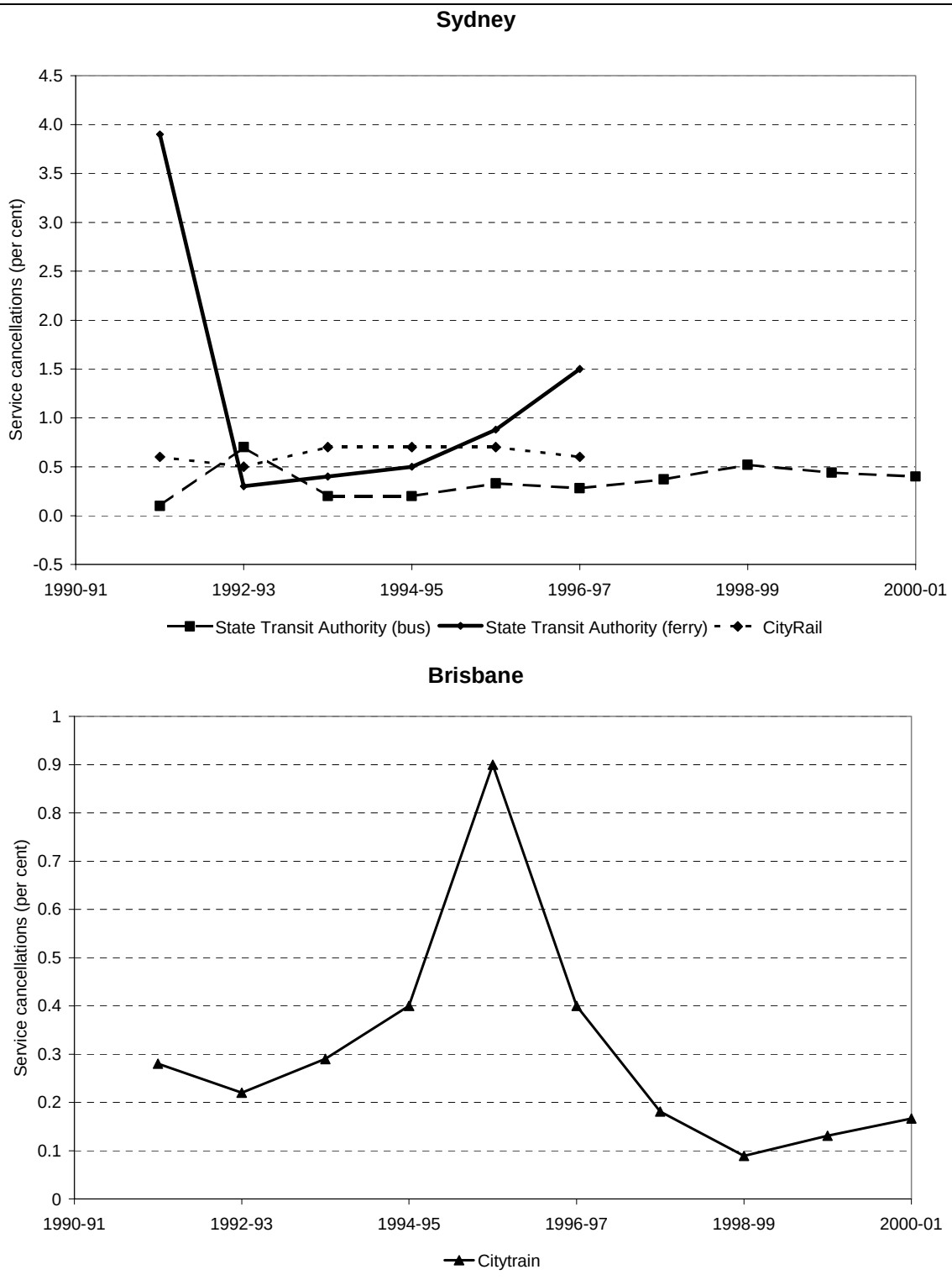
In NSW, specific examples of quality of service enhancements include the fitting of security cameras on STA buses, the acquisition of air-conditioned buses and low floor wheelchair accessible buses.[25] CityRail service enhancements have included 'Easy Access' stations, increased security at stations and improved passenger information provision (State Rail Authority, NSW, pers. comm., 30 April 2002).

In Queensland, specific examples include the 1996-97 introduction by BT of a high speed Citycat ferry service, the purchase of 20 low-floor buses in 1997-98 (improving access for people with disabilities and the elderly) and the introduction of new services such as 'dial and ride'. In 1995-96 Citytrain installed closed circuit television surveillance systems and improved lighting at 47 stations and 15 car parks. In 2000, BT acquired 50 low-floor, easy access, low-emission gas buses

[25] In 2002, 25 per cent of the Sydney bus fleet was wheelchair accessible.

Figure 5.8 **Quality of service measures — service cancellations, Sydney (NSW) and Brisbane (Queensland)**

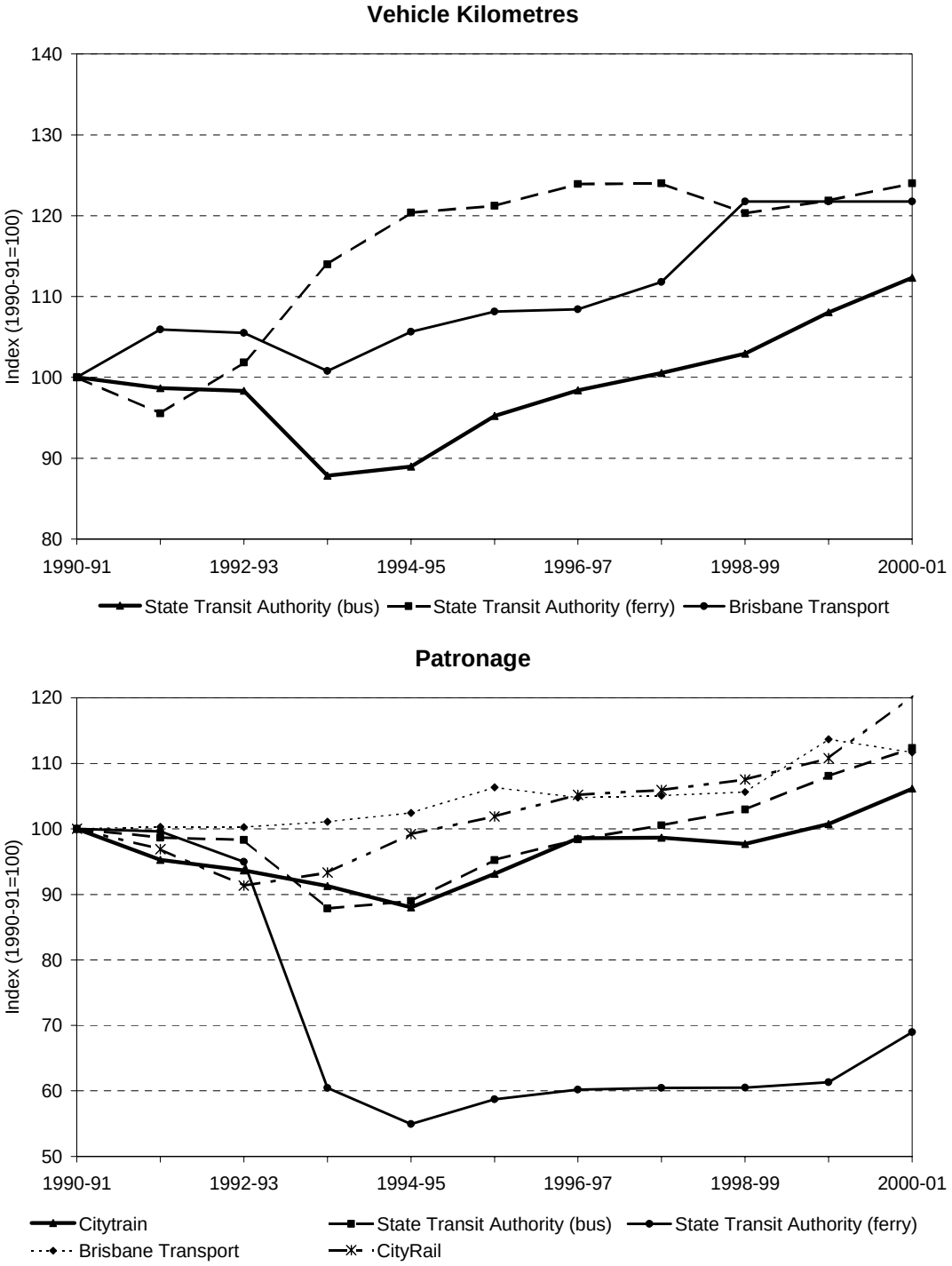
1990-91 to 2000-01



Note Quality of service indicators for the period 1990-91 to 2000-01 were not available for BT.

Data sources: SCNPMGTE (1998 and previous issues); SRA (2001 and previous issues); STA (2001 and previous issues); Queensland Rail, Brisbane, pers. comm., 14 November 2001.

Figure 5.9 **Quality of service measures — vehicle kilometres and patronage, Sydney (NSW) and Brisbane (Queensland)**
1990-91 to 2000-01



Note Quality of service indicators for each utility have been expressed as an index with 1990-91 as the base year. Quality of service indicators for the State Transit Authority exclude services offered by Newcastle Bus and Ferry.

Data sources: Brisbane Transport, Brisbane, Pers comm., 8 October 2001; SCNPMGTE (1998 and previous issues); SRA (2002 and previous issues); STA (2001 and previous issues); Queensland Rail, Brisbane, pers. comm., 14 November 2001.

5.6 Shareholder outcomes

The financial performance of the case study service providers was examined to provide information on the relationship between price trends and financial outcomes, such as the return on assets.

Low prices relative to costs may not achieve a satisfactory return on assets, nor provide sufficient revenue to maintain and replace long-lived infrastructure assets. If services are to be maintained, the community, as owners of the service provider, will have to provide financial support in the form of subsidies. Further, low prices may affect the viability of the business and possibly expose the community to financial risks.

The data used in calculating the shareholder outcomes presented in this section were generally taken from two sources:

- Steering Committee on National Performance Monitoring of Government Trading Enterprises; and
- Productivity Commission reports on Financial Performance of Government Trading Enterprises.

There may be inconsistencies between these two data sets and the information published in the Annual Reports of service providers. These inconsistencies arise because of definitional differences. In addition, there have been changes in accounting policies over the study period which may affect the comparability of data over time.

The financial performance of State Rail Authority (SRA) and Queensland Rail (QR) were examined as representative of the performance of CityRail and Citytrain. The urban rail passenger service providers, CityRail (SRA) and Citytrain (QR) are both business units operating within larger rail utilities. However, there are difficulties in separating the performance of these business units from the performance of their respective rail utilities as a whole, because assets and government funding are shared.

The profitability of privately owned non-metropolitan bus services discussed earlier in the chapter, was not analysed.

Profitability

Return on assets has varied over time and between jurisdictions. Three of the four service providers earned positive returns over most of the period. However, the rates of return earned by the case study transport service providers have in many

years been significantly lower than the risk free rate —as approximated by the 10 year Commonwealth Government bond rate (see figure 5.10).

Returns earned by QR show an upward trend. Returns earned by BT have varied over the period.[26] Returns earned by STA and SRA, although low and sometimes negative, have begun to trend upwards in the latter part of the decade.

IPART (1996c) considered that a weighted average cost of capital (WACC) for an operator in urban public transport with the same capital structure as the STA should be around 11.7 per cent (before tax).[27] The selected urban transport service providers have, in most years, been unable to achieve a return on assets of this order. This suggests that over the study period, the growth in real prices (as presented earlier in this chapter) has not been sufficient to service debt and provide a commercial return on equity.

Comparisons of performance over time that are based on indicators that include an estimate of asset values, have to be interpreted with care. Differences in asset valuation procedures and changes in the size of the asset base can affect the return on assets. Over the study period, there have been significant changes in asset values as a result of asset transfers, revaluations and changes in asset valuation methodologies.

The calculated return on assets is affected by internal structural changes within the service providers. For example, the separation and divestiture of business units can impact significantly upon the asset base and the revenue earning potential of these urban transport providers as a whole (see box 5.2).

[26] Return for BT between 1990-91 and 1996-97 were published by the Steering Committee on National Performance Monitoring of Government Trading Enterprises. The financial statistics required to construct comparable return on asset ratios for the period 1997-98 to 2000-01 are not publicly available.

[27] The WACC is the weighted-average of the risk-adjusted cost of debt and equity capital.

Box 5.2 Issues affecting comparability between asset-based performance indicators — State Rail Authority (SRA).

Asset revaluation and structural change within SRA provide examples of the factors affecting comparability between asset-based performance indicators. SRA's return on assets, which is dependent on asset values, has changed markedly in particular years — notably in 1994-95 and in 1997-98 (see figure 5.10).

Asset revaluation

Return on assets for SRA decreased by around 3 percentage points in 1994-95. This fall was the consequence of a change in asset valuation methodology. The value of total assets increased in that year by 103.7 per cent from $6 031 million to $12 283 million. The increase in asset values resulted from the revaluation of non-current assets using current value methodologies. Previously, non-current asset values were based on historical cost.

Structural change

On 1 July 1996, SRA was vertically and horizontally separated into four smaller entities — SRA, Rail Access Corporation (RAC), Rail Services Australia (RSA) and Freight Rail Corporation.

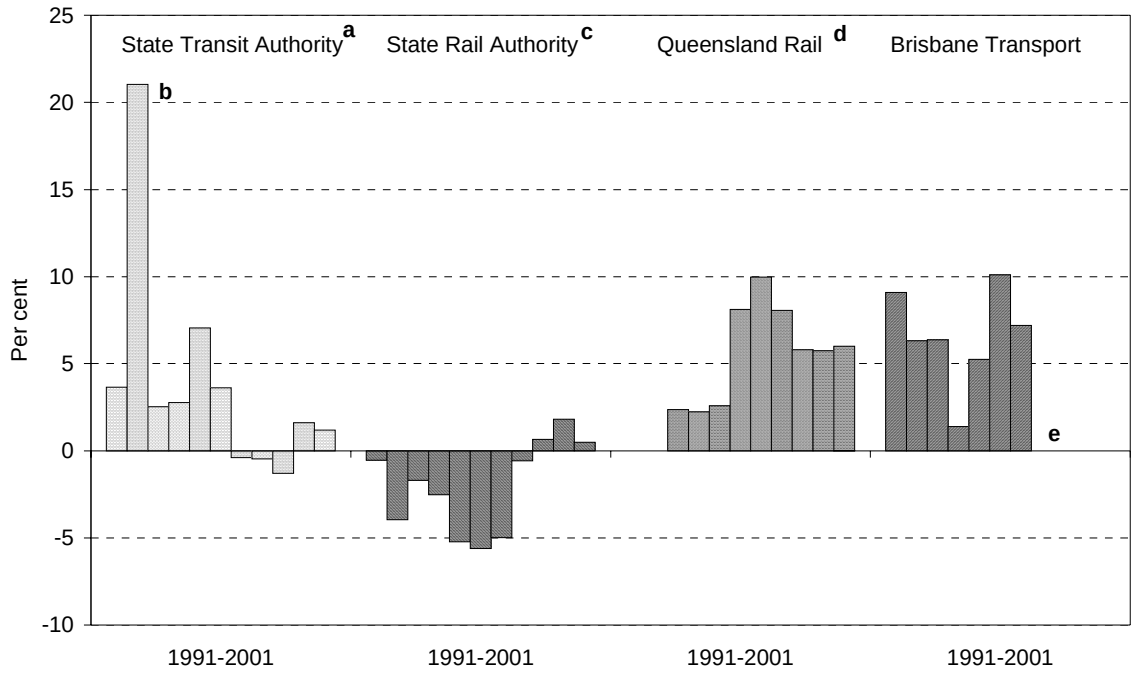
SRA retained responsibility for the provision of city and country passenger rail services. RAC assumed ownership of rail infrastructure from SRA and was responsible for negotiating the use of the track by rail operators and funding the upkeep of the track. RSA assumed responsibility for maintenance of the track under contract to RAC and also provided construction and rolling stock overhaul and repair services. The Freight Rail Corporation provides freight services throughout NSW.

On 1 January 2001, the RAC merged with RSA to form the Rail Infrastructure Corporation.

As part of the restructuring process in 1996, a significant proportion of SRA's assets were transferred to the three new entities. Some of the key financial consequences of the restructure include a general divesture of assets totalling $6.4 billion to other entities, a de-recognition of land controlled by RAC of approximately $857 million and an agreement by Treasury to assume, and subsequently fund, certain personnel liabilities to the value of approximately $918 million.

Sources: SRA (1995 and 1997); PC (2000).

Figure 5.10 **Return on assets — selected urban transport providers**
1990-91 to 2000-01



Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. **a** Statistics reported for the State Transit Authority (STA) are inclusive of Newcastle bus services. **b** The high return evident in 1991-92 for STA relates to a decrease in total assets of $28 million and an increase in operating profit of $79.3 million — partly attributable to receipt of redundancy funding from the NSW state government and increased CSO payments. **c** The financial information reported for the State Rail Authority (SRA) refers to the whole rail entity and not to the individual urban passenger transport business unit — CityRail. SRA's returns have been affected by costs incurred through infrastructure replacement and refurbishment, as a consequence of deferred maintenance. **d** The financial information reported for Queensland Rail (QR) refers to the whole rail entity and not to the individual urban passenger transport business unit — Citytrain. Financial information was not available for QR for the years 1990-91 and 1991-92. **e** The relevant financial information is not publicly available for BT from 1997-98 onwards.

Data sources: SCNPMGTE (1998 and previous issues), PC (2002 forthcoming).

Payments to government

Government-owned service providers are often required to return some of their earnings to their owner governments in the form of dividend payments. This is justified on competitive neutrality and cost recovery grounds.

Where a service provider is not required to pay dividends, it has proportionately more funds available for re-investment into its business, either for the development of new services or the improvement of existing ones. Further, a service provider

need not rely on debt-financing to the extent that its rivals must, and thus incurs lower overall operating costs.

With the exception of QR, most of the case study service providers have not paid dividends consistently over the period. This is reflected in their dividend payout and dividend to equity ratios (see figures 5.11 and 5.12).

Figure 5.11 **Dividend payout ratio — selected urban transport providers**
1990-91 to 2000-01

Note Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Dividend payout ratios are not reported for the State Rail Authority, as the utility is not required to make dividend payments to the NSW Government. **a** Statistics reported for the State Transit Authority are inclusive of Newcastle bus services. **b** The financial information reported for Queensland Rail refers to the whole rail entity and not to the individual urban passenger transport business unit — Citytrain. **c** The high dividend ratio payout ratio for BT in 1996-97 relates to commercialisation and the readjustment of CSO payments. **d** The relevant financial information is not publicly available for BT from 1997-98 onwards.

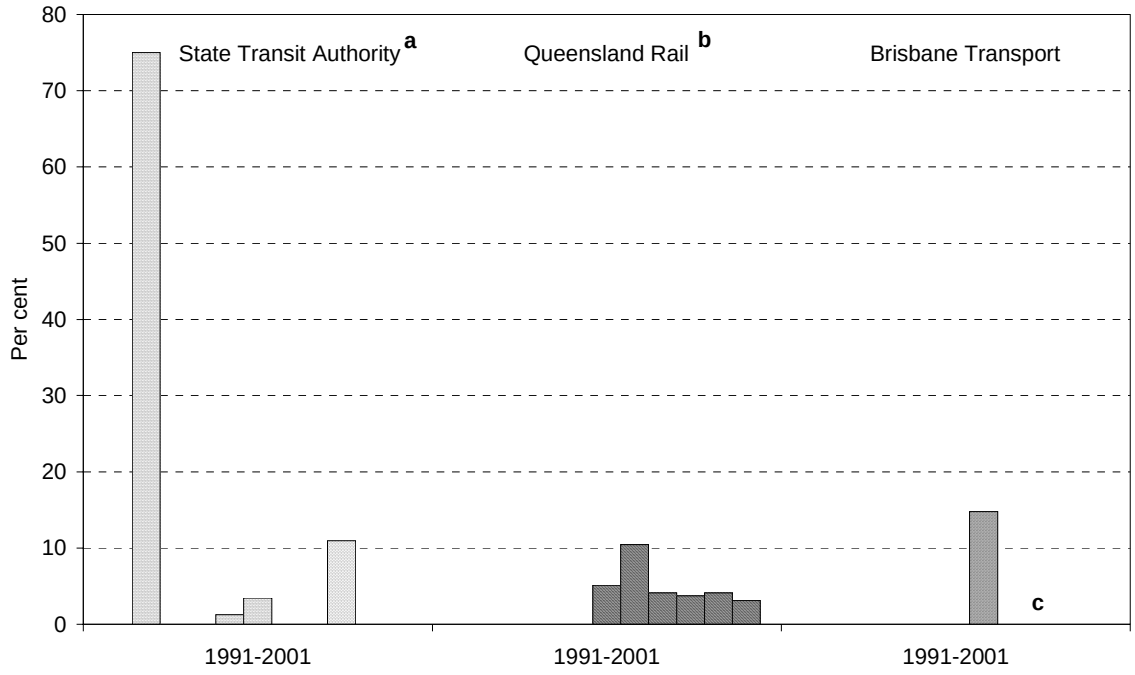
Data sources: ; SCNPMGTE (1998 and previous issues), PC (2002 forthcoming).

The negative dividend payout ratio for STA in 1998-99 was due to the payment of a special dividend at the same time that the service provider recorded an operating loss.[28] The high dividend to equity ratio recorded for STA in 1991-92 resulted from the payment of a $58 million dividend. The method of calculating CSOs in 1991-92

[28] STA sold land for $20 million, and paid the net sale proceeds to the NSW Treasury as a special dividend. In 1998-99 STA had an operating loss (before tax and including abnormal items) of $9.6 million.

resulted in STA earning a profit in that year and the profit was returned to government as a dividend. The dividend payout ratios are not reported for SRA, as the utility is not required to make dividend payments to the NSW Government.

Figure 5.12 **Dividend to equity ratio — selected urban transport providers**
1990-91 to 2000-01



Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. Dividend to equity ratios are not reported for the State Rail Authority, as the utility is not required to make dividend payments to the NSW Government. **a** Statistics reported for the State Transit Authority are inclusive of Newcastle bus services. **b** The financial information reported for Queensland Rail refers to the whole rail entity and not to the individual urban passenger transport business unit — Citytrain. **c** The relevant financial information is not publicly available for Brisbane Transport from 1997-98 onwards.

Data sources: SCNPMGTE (1998 and previous issues), PC (2002 forthcoming).

QR has consistently paid dividends since corporatisation in 1995-96. However, the increases in fares have not resulted in increased dividend payments to government (see figure 5.11 and 5.12).

The return on assets, dividend to equity and dividend payout ratios suggest that the substantial real price increases — experienced by all case study service providers over the last ten years — may not have been sufficient to allow commercial financial performance targets to be met.[29]

29 The financial indicators for SRA and QR include activities outside of urban passenger transport.

Payments by governments and implicit subsidies

As part of urban transport reforms, governments have set out to increase cost recovery through the farebox. This policy has implications for the level of explicit payments made by governments and implicit subsidies.

Requiring full cost recovery, including the cost of capital, imposes disciplines for good financial management and signals the full cost of providing the service. There may also be adverse productive and dynamic efficiency consequences of not fully recovering costs if there are insufficient funds to invest. Further, there are equity considerations as to whether the community in general should bear some of the cost.

That said, urban transport services have traditionally been heavily reliant on taxpayer contributions and payments. Indeed, there can be disadvantages to full cost recovery that have to be weighed up against the advantages.

First, non-user benefits sometimes result from public transport investment and the substitution of public transport for car use. It has been argued that by reducing car use there is an associated reduction in traffic congestion, public car park provision and pollution resulting from motor vehicle emissions. A more recent concern regarding increasing car use has been the effects of expanding road networks on the urban environment (Mees 2000).

Second, pricing for full cost recovery can foreclose efficient demand if marginal costs are lower than average costs. This can have the effect of denying access to some low income groups for whom governments may wish to provide low cost transport services, but are unable to through targeted concessions.

Third, there are benefits that flow from reducing prices to increase patronage. If this leads to more frequent services, the overall cost of trips, taking waiting time into account, may be reduced — providing that it does not result in peak hour congestion.

A fourth point, is that public transport also addresses equity issues such as improved mobility for people without access to cars.

Payments by government

Explicit payments made by government to service providers include payments to offset operating deficits, payments for delivering CSOs, and reimbursement for the provision of concessions. The nature and purpose of explicit government payments is not always clearly identified in published records.

The proportion of funding directly attributable to CityRail through CSO and Social Program funding has increased in real terms by 84 per cent — from $191 million in 1992-93 to $352 million in 1999-00 (in real terms).[30] However, it was not possible to establish the proportion of other explicit government payments made to SRA that were attributable to CityRail. Such payments include State, Commonwealth and departmental capital grants.

QR began receiving explicit payments in the form of CSOs and receipts for concession passengers in 1993-94.[31] While explicit payments for QR have increased in real terms between 1995-96 and 2000-01, the CSO payments attributable to passenger services — Citytrain and Traveltrain — have decreased in real terms from $257 million in 1995-96 to $232 million in 2000-01. The proportion of other explicit government payments made to QR that were attributable to Citytrain could not be identified. Such payments include amounts received from various State Government departments as direct reimbursement for concessions provided to pensioners and school children.

Over the course of the study period, STA has received CSO payments, reimbursement for travel concessions and government grants such as contributions for redundancy packages.[32] Total explicit payments (in real terms) have declined from 1990-91 to 1999-00 by 19 per cent (see figure 5.13). The increase in 1991-92 is attributable to a $67 million growth in CSO payments.[33]

The decline in explicit payments received by BT towards the end of the study period may reflect the State Government reduction in the service providers general

30 Government CSO funding is provided to CityRail in respect of targeted concessions, pricing (low fare) policies, and non-commercial services. Over the course of the study period CityRail has also received capital grants from Commonwealth, State, and Local Governments as well as government departments.

31 QR receives CSO payments from the Queensland Government for certain freight and passenger rail services. Contributions received in respect of passenger services are for the Citytrain and Traveltrain services and the Brisbane to border portion of interstate services. QR also receives amounts from various State Government departments as direct reimbursement for concessions provided to senior citizens, pensioners and students. The government payments considered are net of transfers from utility to government, such as dividends.

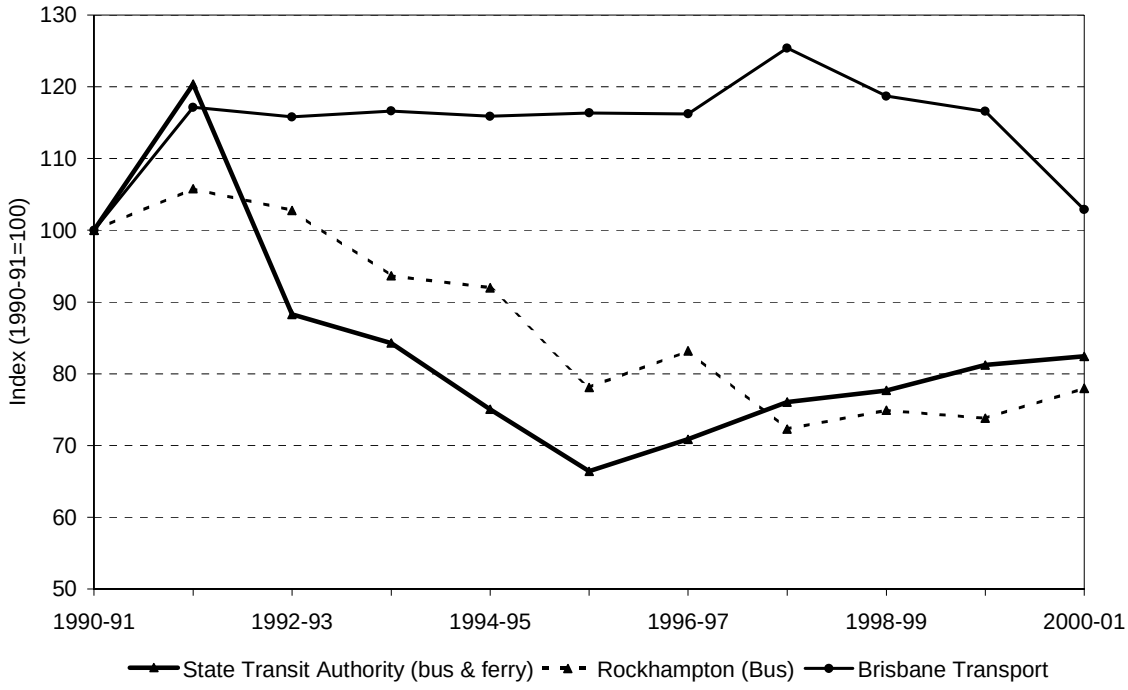
32 STA receives government payments as reimbursement for free travel by school students and concession travel by pensioners and other groups. In 2000-01, STA received government payments for pricing CSOs — fares held below commercial levels in order to increase patronage — and service level CSOs. The Authority provided services in excess of its minimum service level requirements and received payment for the operation of some non-commercial services provided by Sydney Ferries and Newcastle Services. No payments were received for operating these non-commercial services by Sydney Buses.

33 The method of calculating CSO payments for STA in 1991-92 resulted in STA earning a profit in that year. The profit was returned to government as a dividend.

subsidy by $1 million each year. (Queensland Transport, Brisbane, pers. comm., 5 February 2002).

Figure 5.13 **Real explicit government funding — selected urban transport providers**

1990-91 to 2000-01



Note Explicit payments made by government to service providers include payments to offset operating deficits, payments for delivering CSOs, reimbursement for the provision of concessions and grants. The real explicit funding index for service provider was obtained by re-basing explicit funding to 1990-91 and then deflating by the CPI (All groups) for each capital city. **a** Government funding for the bus and ferry operations of State Transit Authority (STA) includes a government contribution towards a redundancy program in 1990-91 and 1991-92. Statistics reported for STA are inclusive of Newcastle bus services.

Data Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); BT, Brisbane, pers. comm., 5 February 2002; STA (2002 and previous issues); Queensland Transport, Brisbane, pers. comm., 14 November 2001.

Payments by government have decreased in Rockhampton (see figure 5.13). The decrease in Rockhampton is partly the result of the withdrawal of payments by the Rockhampton City Council that occurred from 1994-95, when responsibility for service provision transferred from the Rockhampton City Council to SunBus.[34]

[34] Urban bus transport providers receive funding in accordance with individual contracts between bus operators and the government. The current contract in Rockhampton was issued after a public tender and is for a fixed amount plus escalation for cost movement. The current contract with the Brisbane City Council (BCC), who provide transport services through BT, is also for a fixed amount. In addition, BCC has received $1 million per year since 1999 to assist with the

The reduction in payments by the council was offset by additional revenue from fare increases (see figure 5.5).

Implicit subsidies

Implicit subsidies arise when the achieved rate of return on assets by service providers (after including revenue from CSO payments and explicit subsidies) is less than 'normal' or commercially acceptable. The Commonwealth Government 10 year bond rate plus a premium for risk may be used as an approximate estimate of a 'normal' rate of return.

Risk premiums will vary over time and across service providers.[35] Estimates of the implicit subsidy are in figure 5.14. They are based solely on the risk free rate — Commonwealth Government 10 year bond rate — due to difficulties in obtaining risk premiums specific to the case study service providers.

Consequently, the levels of subsidies reported are lower than they would be if based on a 'commercial' rate of return. The Commonwealth Competitive Neutrality Complaints Office (CCNCO 1998) has stated that typical rate of return targets for low risk business should include a nominal pre-tax premium of 3 percentage points, and that high risk business should include a premium of 7 percentage points.

The implicit subsidy received by SRA and QR could not be estimated because there are problems in isolating the payments and revenues received that are specific to urban transport activities — CityRail and Citytrain.

The level of explicit government payments will reduce the size of any implicit subsidy. All things being equal, the greater the explicit payments by government, the greater the return earned by the service provider, thereby decreasing its implicit subsidy.

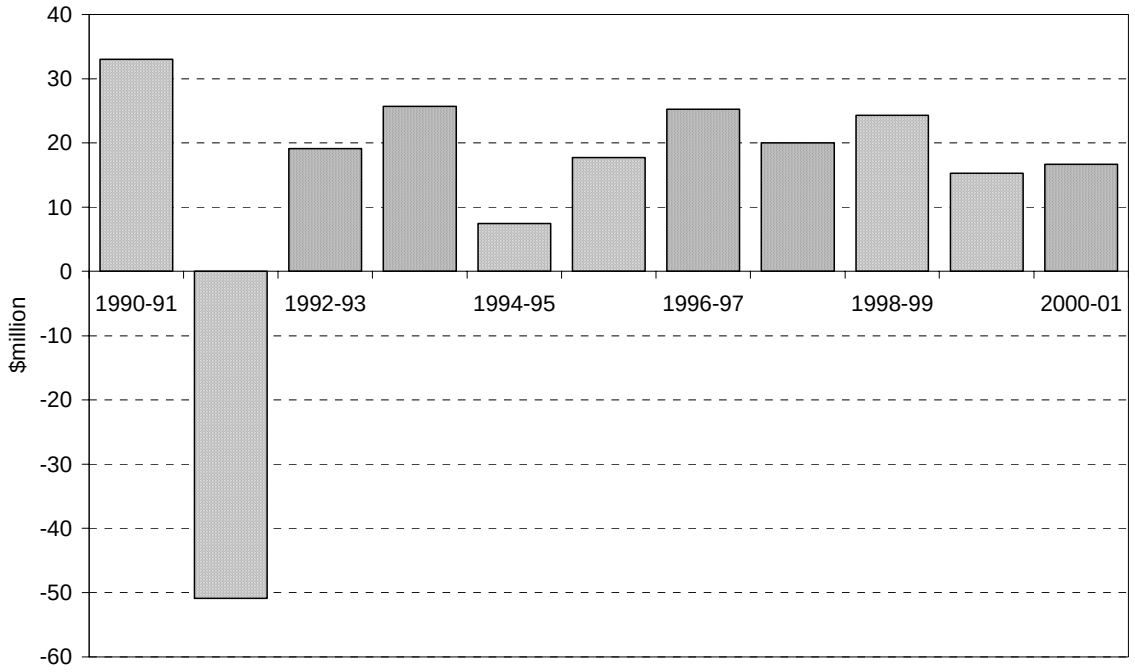
The implicit subsidy for STA has decreased over the study period from $33 million in 1990-91 to $15 million in 1999-2000 (see figure 5.14). The large decrease in

purchase of accessible buses and received an additional $1 million in 2000 for fuel cost rises. Prior to 1995-96, payments to bus operators were made as a percentage of cash fare revenue, 60 per cent for BCC and 30 per cent for Rockhampton City Council.

35 Premiums for risk are generally composed of two parts — the equity premium and the market risk. The equity premium is the market rate of return less the risk free rate of return, often around 6 or 7 per cent. The market risk is an estimate of the level of market risk associated with the business or utility. The market risk, usually expressed as a 'beta', will vary over time and across service providers (CCNCO 1998). Some examples of the betas used in the calculation of risk premiums for Australian industries are 0.6 (energy), 1.0 (transport) and 0.9 (healthcare) (CCNCO 1998).

implicit subsidy in 1991-92 may be attributable in part to an increase in explicit payments from government — CSO payments and also an abnormal revenue item relating to redundancy funding.

Figure 5.14 **Real implicit subsidy — State Transit Authority**
1990-91 to 2000-01



Note Statistics reported for STA are inclusive of Newcastle bus services. The implicit subsidy is an estimate based on the difference between STA's return on assets and the risk free rate of return (as measured by the Commonwealth Government 10 year bond rate). The subsidy is measured in absolute terms in relation to the value of the utility's asset base. A negative implicit subsidy implies that the utility did not receive a subsidy but rather earned a return greater than the Commonwealth Government 10 year bond rate. The real implicit subsidy index for service provider was obtained by re-basing implicit subsidies to 1990-91 and then deflating by the CPI (All groups) for Sydney. Return on assets is measured as earnings before interest and tax payments (EBIT) as a proportion of average total assets. EBIT is measured before transfer payments from service providers to government, such as dividends, tax equivalents and debt guarantee fees.

Data sources: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); PC (2002 forthcoming); RBA (2002); SCNPMGTE (1998 and previous issues); STA (2001 and previous issues).

For the case study service providers, it appears that there has been a general improvement in financial performance. Returns have increased towards the end of the study period. These improvements, together with evidence of enhancement of service — such as the introduction of new rolling stock and air-conditioned buses — suggests that the substantial real price increases over the last ten years, may have facilitated improved financial performance and paid for improved service quality.

Improvements in financial performance and service quality do not take into account any flow-on costs that may have been generated by increased fares.

One consequence of increases in urban transport prices may be an increase in the spillover costs associated with substitute modes of transport, such as car use. For example, if rising urban transport prices result in greater car use, this may cause an increase in pollution and congestion.

Attachment A – Data tables

Table A5.1 Real urban transport price trends, — metropolitan households

1990-91 to 2000-01 (index 1990-91=100)

	Sydney	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*	*Canberra*
1990-91	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991-92	102.6	102.7	101.6	121.8	110.2	105.4	101.1	104.1
1992-93	105.6	113.7	106.1	120.0	112.0	104.0	99.7	108.8
1993-94	106.6	113.9	108.6	122.9	120.1	102.8	103.7	114.2
1994-95	105.1	115.2	108.0	125.1	121.0	107.4	100.8	112.5
1995-96	105.4	111.1	110.1	122.5	123.7	103.5	102.4	116.5
1996-97	111.6	113.7	114.8	125.4	132.7	120.6	106.4	125.0
1997-98	113.3	114.7	114.9	128.7	140.6	121.1	106.7	127.6
1998-99	111.4	116.6	118.4	138.1	141.3	119.9	111.3	127.3
1999-00	120.1	114.6	118.9	134.8	137.4	118.1	119.7	125.0
2000-01	122.0	123.5	130.9	134.9	143.1	125.9	131.1	133.6

Note The real price index for each capital city was obtained by rebasing the CPI (urban transport)indexes to a base year of 1990-91 and then deflating the rebased indexes by the rebased CPI (All groups) price index for each capital city. The CPI (urban transport) price indexes for 2000-2001 include the GST.

Data source: ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0).

Table A5.2 Real urban transport price trends — taxis

1990-91 to 2000-01 (index 1990-91=100)

	Sydney	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*[a]	*Canberra*
1990-91	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991-92	99.6	97.9	98.0	97.5	105.6	94.3	102.7	97.5
1992-93	102.8	103.3	98.7	95.5	105.3	93.1	101.3	97.8
1993-94	101.4	101.2	96.9	93.7	107.0	90.4	113.9	96.1
1994-95	98.8	107.8	97.3	95.8	103.4	87.7	110.7	95.0
1995-96	99.1	103.9	99.7	94.9	107.6	84.5	92.6	95.7
1996-97	110.5	102.6	101.0	97.4	112.0	89.6	91.0	103.3
1997-98	110.4	110.4	109.5	101.7	117.4	92.0	91.3	110.8
1998-99	109.6	109.4	108.3	102.9	115.4	91.1	90.5	112.3
1999-00	112.6	117.6	111.7	100.4	112.7	91.2	112.7	112.5
2000-01	114.2	131.5	127.3	107.8	124.8	107.2	122.6	123.3

Note Real taxi price indexes were constructed for all capital cities based on a common reference journey — distance of 10 kilometres, with one flagfall and 3 minutes waiting time. Booking fees were not included. The real price index for each capital city was obtained by rebasing taxi fares to 1990-91 and then deflating by the CPI (All groups) for each capital city. Prices for 2000-01 include the GST. **a** Fare determinations for Darwin 1991 were not available, therefore the 1992 fare was extrapolated backwards based on the CPI for Darwin.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Canberra Cabs, Canberra, pers. comm., 26 September 2001; Department of Infrastructure, Energy and Resources, Hobart, pers. comm., 27 August 2001; Department of Transport and Works, Darwin, pers. comm., 9 August 2001; Department of Transport, Perth, pers. comm., 27 August 2001; Passenger Transport Board, Adelaide, pers. comm., 29 August 2001; Queensland Transport, Brisbane, pers. comm., 21 August 2001; Transport NSW, Sydney, pers. comm., 17 September 2001; Urban Service, Canberra, pers. comm., 31 August 2001; Victorian Taxi Directorate, Melbourne, pers. comm., 28 August 2001.

Table A5.3 **Real urban transport price trends — excluding taxis**

1990-91 to 2000-01 (index 1990-91=100)

	Sydney	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*	*Canberra*
1990-91	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991-92	103.5	104.1	104.0	133.3	112.5	113.5	99.2	110.7
1992-93	106.5	116.8	111.1	131.5	115.4	112.1	97.9	119.9
1993-94	108.3	117.7	116.7	136.8	126.6	111.8	91.6	132.4
1994-95	107.0	117.4	115.4	139.0	129.8	121.8	89.0	130.1
1995-96	107.4	113.2	117.4	135.6	131.7	117.4	113.9	137.3
1996-97	112.0	116.9	124.4	138.7	143.1	143.3	124.7	146.7
1997-98	114.3	115.9	118.7	141.4	152.2	142.5	125.0	144.4
1998-99	112.0	118.8	125.4	154.8	154.2	141.1	136.2	142.3
1999-00	122.4	113.7	124.0	151.0	149.7	137.9	128.1	137.7
2000-01	124.4	121.1	133.5	147.8	152.2	139.5	141.2	143.9

Note Taxis were separated from the CPI series using weights derived from ABS HES (1998-99) expenditure on taxis as a proportion of urban transport expenditure. The exact algorithm for calculating the urban transport component of the CPI (inclusive of taxis) can not be disclosed by the ABS. Therefore, the indexes in table 5.3 act as an approximation only.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Canberra Cabs, Canberra, pers. comm., 26 September 2001; Department of Infrastructure, Energy and Resources, Hobart, pers. comm., 27 August 2001; Department of Transport and Works, Darwin, pers. comm., 9 August 2001; Department of Transport, Perth, pers. comm., 27 August 2001; Passenger Transport Board, Adelaide, pers. comm., 29 August 2001; Queensland Transport, Brisbane, pers. comm., 21 August 2001; Transport NSW, Sydney, pers. comm., 17 September 2001; Urban Service, Canberra, pers. comm., 31 August 2001; Victorian Taxi Directorate, Melbourne, pers. comm., 28 August 2001.

Table A5.4 **Real urban transport price trends Sydney (NSW)**

1990-91 to 2000-01 (index 1990-91=100)

	Bus	*Ferry*	*Rail*	*Bus & Ferry*	*Bus, Ferry & Rail*
1990-91	100.0	100.0	100.0	100.0	100.0
1991-92	102.6	102.8	102.5	103.9	103.5
1992-93	105.5	107.4	107.1	112.8	112.8
1993-94	105.3	108.0	108.3	116.7	121.3
1994-95	103.0	105.7	104.7	116.4	122.1
1995-96	99.8	106.3	105.3	116.3	120.9
1996-97	100.7	115.6	110.7	120.1	123.8
1997-98	101.7	117.0	111.8	123.0	128.3
1998-99	101.2	120.9	110.0	125.8	130.7
1999-00	113.5	134.7	127.6	137.1	145.3
2000-01	115.9	137.2	131.9	137.9	149.2

Note Real household price indexes for Sydney were constructed based on the cost of a 10 kilometre journey from the city centre. Where service providers offered more than one ticket type, the index prices were based on an average fare, in which differing ticket types were weighted according to their usage. The real price index was obtained by re-basing fares to 1990-91 and then deflating by the CPI (All groups) for Sydney.

Data Source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); IPART (2001 and previous determinations)

Table A5.5 **Real urban transport price trends — non-metropolitan bus services, Wollongong (NSW) and Rockhampton (Queensland)**

1990-91 to 2000-01 (index 1990-91=100)

	Wollongong	*Rockhampton single*	*Rockhampton weekly*
1990-91	100.0	100.0	100.0
1991-92	109.1	106.9	106.9
1992-93	118.9	105.5	105.5
1993-94	117.2	112.1	110.9
1994-95	131.1	108.1	106.9
1995-96	134.8	156.1	178.4
1996-97	137.8	165.5	189.2
1997-98	137.7	172.5	188.2
1998-99	140.3	170.7	186.2
1999-00	146.5	167.8	183.1
2000-01	151.3	158.5	181.1

Note Real household price indexes for non-metropolitan areas of NSW and Queensland were constructed based on the cost of a 10 kilometre journey from the city centre. The real price index for Wollongong and Rockhampton was obtained by rebasing fares to 1990-91 and then deflating by the CPI (All groups) for each capital city.

Data sources: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Dions Bus Service, Wollongong, pers. comm., 22 October 2001; Queensland Transport, Rockhampton, pers comm., 2 November 2001; Transport NSW, Wollongong, pers. comm., 6 September 2001.

Table A5.6 **Real urban transport price trends — Brisbane (Queensland)**

1990-91 to 2000-01 (index 1990-91-100)

	Periodical based tickets[a]	*Volume based tickets*[a]	*Citytrain*[b]
1990-91	100.0	100.0	100.0
1991-92	100.4	112.4	98.0
1992-93	103.0	120.1	102.8
1993-94	107.0	117.8	106.8
1994-95	103.2	118.5	103.0
1995-96	99.4	114.1	99.2
1996-97	118.6	124.3	97.6
1997-98	118.0	123.6	104.9
1998-99	120.0	121.5	110.0
1999-00	118.4	117.7	114.5
2000-01	131.5	121.8	117.1

Note The real household price indexes for Brisbane were obtained by rebasing fares to 1990-91 and then deflating by the CPI (All groups) for Brisbane. **a** Brisbane Transport intermodal tickets — 1-2-3 and Citytrans — were introduced in 2000-01 and are not included in the weighted average fare. **b** The fare reported for Citytrain represents that relevant to a journey from Central Station to Northgate Station. Queensland Rail was unable to provide fare schedules from 1990-91 to 1997-98, consequently the series reported represents movements in the overall fare level and not movement in an average weighted fare as reported for BT, STA and SRA..

Data Source; PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0); Brisbane Transport, Brisbane, pers. comm., 8 October 2001; Queensland Transport, Brisbane, pers. comm., 19 September 2001.

Table A5.7 Quality of service measures — on-time running, Sydney (NSW) and Brisbane (Queensland)

1990-91 to 2000-01 (per cent)

	State Transit Authority			
	Bus	*Ferries*	*CityRail*[a]	*Citytrain*[b]
1990-91	**n.a.**	**n.a.**	87.5	**n.a.**
1991-92	98.1	95.8	91.5	94.4
1992-93	96.4	99.7	92.1	97.6
1993-94	97.8	99.8	93.1	97.6
1994-95	97.3	99.7	92.2	94.2
1995-96	98.0	99.1	91.9	90.0[c]
1996-97	97.5	99.5	90.1	97.4
1997-98	97.2	98.6	94.0	96.1
1998-99	97.1	98.4	93.0	96.8
1999-00	97.4	99.5	90.3	96.2
2000-01	98.0	99.0	91.0	95.3

Note On-time running indicators are not available for BT. [a] On-time running for CityRail is reported as peak services arriving no more than 5 minutes and 29 seconds late at their final destination. On-time running for NSW is reported as urban services arriving within 5 minutes of schedule. [b] On-time running in Queensland relates to Citytrain urban inner city and metropolitan weekday services arriving within 3 minutes and 59 seconds of the scheduled time. On-time running statistics for Citytrain do not include services operated by Citytrain for Airtrain. [c] In 1995-96, Citytrain showed a significant decrease in quality of service as measured by service cancellations and on-time running. This is partially attributable to major network track upgrading and lower availability of rollingstock resulting from the expansion of services on the Gold Coast. **n.a.** Not available.

Data sources: SCNPMGTE (1998 and previous issues); SRA (2001 and previous issues); STA (2001 and previous issues); Queensland Rail, Brisbane, pers. comm., 14 November 2001

Table A5.8 Quality of service measures — service cancellations

1990-91 to 2000-01 (per cent)

	State Transit Authority			
	Bus	*Ferries*	*CityRail*	*Citytrain*
1990-91	**n.a.**	**n.a.**	**n.a.**	**n.a.**
1991-92	0.1	3.9	0.6	0.3
1992-93	0.7	0.3	0.5	0.2
1993-94	0.2	0.4	0.7	0.3
1994-95	0.2	0.5	0.7	0.4
1995-96	0.3	0.9	0.7	0.9
1996-97	0.3	1.5	0.6	0.4
1997-98	0.4	**n.a.**	**n.a.**	0.2
1998-99	0.5	**n.a.**	**n.a.**	0.1
1999-00	0.4	**n.a.**	**n.a.**	0.1
2000-01	0.4	**n.a.**	**n.a.**	0.2

Note Quality of service indicators for the period 1990-91 to 2000-01 were not available for BT. **n.a.** Not available.

Data sources: SCNPMGTE (1998 and previous issues); SRA (2001 and previous issues); STA (2001 and previous issues); Queensland Rail, Brisbane, pers. comm., 14 November 2001

Table A5.9 Quality of service measures —vehicle kilometres, Sydney (NSW) and Brisbane (Queensland)

1990-91 to 2000-01 (index 1990-91=100)

	State Transit Authority		
	Bus	*Ferries*	*Brisbane Transport*
1990-91	100.0	100.0	100.0
1991-92	98.7	95.6	105.9
1992-93	98.3	101.9	105.5
1993-94	87.9	114.0	100.8
1994-95	89.0	120.4	105.7
1995-96	95.3	121.2	108.1
1996-97	98.4	123.9	108.4
1997-98	100.5	124.0	111.8
1998-99	102.9	120.3	121.8
1999-00	108.1	121.9	121.8
2000-01	112.3	124.0	121.8

Note Quality of service indicators for each utility have been expressed as an index with 1990-91 as the base year. Quality of service indicators for STA exclude services offered by Newcastle Bus and Ferry.

Data sources: Brisbane Transport, Brisbane, Pers comm., 8 October 2001; SCNPMGTE (1998 and previous issues); SRA (2001 and previous issues); STA (2001 and previous issues); Queensland Rail, Brisbane, pers. comm., 14 November 2001.

Table A5.10 Quality of service measures — patronage

1990-91 to 2000-01 (index 1990-91=100)

		State Transit Authority			
	Citytrain	*Bus*	*Ferry*	*Brisbane Transport*	*CityRail*
1990-91	100.0	100.0	100.0	100.0	100.0
1991-92	95.3	98.7	99.6	100.3	96.9
1992-93	93.7	98.3	95.0	100.3	91.3
1993-94	91.3	87.9	60.5	101.1	93.3
1994-95	88.0	89.0	54.9	102.5	99.2
1995-96	93.2	95.3	58.7	106.3	101.9
1996-97	98.6	98.4	60.2	104.8	105.2
1997-98	98.7	100.5	60.4	105.1	105.9
1998-99	97.7	102.9	60.5	105.6	107.5
1999-00	100.7	108.1	61.3	113.7	110.8
2000-01	106.1	112.3	69.0	111.7	120.3

Note Quality of service indicators for each utility have been expressed as an index with 1990-91 as the base year. Quality of service indicators for STA exclude services offered by Newcastle Bus and Ferry.

Data sources: Brisbane Transport, Brisbane, Pers comm., 8 October 2001; SCNPMGTE (1998 and previous issues); SRA (2001 and previous issues); STA (2001 and previous issues); Queensland Rail, Brisbane, pers. comm., 14 November 2001.

Table A5.11 **Return on assets — selected urban transport providers**

1990-91 to 2000-01 (per cent)

	State Transit Authority[a]	*State Rail Authority*[c]	*Queensland Rail*[b]	*Brisbane Transport*[d]
1990-91	3.7	-0.5	**n.a.**	9.1
1991-92	21.0[b]	-4.0	**n.a.**	6.3
1992-93	2.5	-1.7	2.4	6.4
1993-94	2.8	-2.5	2.2	1.4
1994-95	7.0	-5.2	2.6	5.3
1995-96	3.6	-5.6	8.1	10.1
1996-97	-0.4	-5.0	10.0	7.2
1997-98	-0.5	-0.6	8.1	**n.a.**
1998-99	-1.3	0.6	5.8	**n.a.**
1999-00	1.6	1.8	5.7	**n.a.**
2000-01	1.2	0.5	6.0	**n.a.**

Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. **a** Statistics reported for the State Transit Authority (STA) are inclusive of Newcastle bus services. **b** The high return evident in 1991-92 for STA relates to a decrease in total assets of $28 million and an increase in operating profit of $79.3 million — partly attributable to receipt of redundancy funding from the NSW state government and increased CSO payments **c** The financial information reported for the State Rail Authority (SRA) refers to the whole rail entity and not to the individual urban passenger transport business unit — CityRail. SRA's returns have been affected by costs incurred through infrastructure replacement and refurbishment, as a consequence of deferred maintenance. **d** The financial information reported for Queensland Rail (QR) refers to the whole rail entity and not to the individual urban passenger transport business unit — Citytrain. Financial information was not available for QR for the years 1990-91 and 1991-92. **d** The relevant financial information is not publicly available for BT from 1997-98 onwards. **n.a.** Not available.

Data sources: SCNPMGTE (1998 and previous issues), PC (2001a).

Table A5.12 **Dividend payout ratio — selected urban transport providers**

1990-91 to 2000-01 (per cent)

	State Transit Authority[a]	*Queensland Rail*[b]	*Brisbane Transport*[c]
1990-91	0.0	0.0	0.0
1991-92	73.0	0.0	0.0
1992-93	0.0	0.0	0.0
1993-94	0.0	0.0	0.0
1994-95	7.5	0.0	0.0
1995-96	77.0	80.0	0.0
1996-97	0.0	91.3	341.1[d]
1997-98	0.0	53.4	**n.a.**
1998-99	-171.9	91.1	**n.a.**
1999-00	0.0	55.8	**n.a.**
2000-01	0.0	63.5	**n.a.**

Note Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Dividend payout ratios are not reported for the State Rail Authority, as the utility is not required to make dividend payments to the NSW Government. [a] Statistics reported for the State Transit Authority are inclusive of Newcastle bus services. [b] The financial information reported for Queensland Rail refers to the whole rail entity and not to the individual urban passenger transport business unit — Citytrain. [c] The relevant financial information is not publicly available for Brisbane Transport from 1997-98 onwards. [d] The high dividend ratio payout ratio for BT in 1996-97 relates to commercialisation and the readjustment of CSO payments. **n.a.** Not available.

Data sources: SCNPMGTE (1998 and previous issues), PC (2001a).

Table A5.13 **Dividend to equity ratio — selected urban transport providers**

1990-91 to 2000-01 (per cent)

	State Transit Authority[a]	*Queensland Rail*[b]	*Brisbane Transport*[c]
1990-91	0.0	0.0	0.0
1991-92	75.0	0.0	0.0
1992-93	0.0	0.0	0.0
1993-94	0.0	0.0	0.0
1994-95	1.3	0.0	0.0
1995-96	3.5	5.1	0.0
1996-97	0.0	10.5	14.8
1997-98	0.0	4.1	**n.a.**
1998-99	11.0	3.7	**n.a.**
1999-00	0.0	4.1	**n.a.**
2000-01	0.0	3.1	**n.a.**

Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. Dividend to equity ratios are not reported for the State Rail Authority, as the utility is not required to make dividend payments to the NSW Government. [a] Statistics reported for the State Transit Authority are inclusive of Newcastle bus services. [b] The financial information reported for Queensland Rail refers to the whole rail entity and not to the individual urban passenger transport business unit — Citytrain. [c] The relevant financial information is not publicly available for Brisbane Transport from 1997-98 onwards. **n.a.** Not available.

Data sources: SCNPMGTE (1998 and previous issues), PC (2001a).

Table A5.14 **Real explicit government funding — selected urban transport providers**

1990-91 to 2000-01

	State Transit Authority[a]	*Brisbane Transport*	*Rockhampton*
1990-91	100.0	100.0	100.0
1991-92	120.4	117.1	105.8
1992-93	88.3	115.8	102.8
1993-94	84.3	116.6	93.7
1994-95	75.0	115.9	92.0
1995-96	66.4	116.4	78.1
1996-97	70.8	116.2	83.2
1997-98	76.1	125.4	72.3
1998-99	77.7	118.7	74.9
1999-00	81.2	116.6	73.8
2000-01	82.4	102.9	78.0

Note Explicit payments made by government to service providers include payments to offset operating deficits, payments for delivering CSOs, reimbursement for the provision of concessions and grants. The real explicit funding index for service provider was obtained by rebasing explicit funding to 1990-91 and then deflating by the CPI (All groups) for each capital city. [a] Government funding for the bus and ferry operations of the State Transit Authority (STA) includes a government contribution towards a redundancy program in 1990-91 and 1991-92. Statistics reported for STA are inclusive of Newcastle bus services.

Data sources: PC estimates based on ABS 2001a, (*Consumer Price Index, Australia*, Cat. no. 6401.0); PC (2001a); RBA (2002); SCNPMGTE (1998 and previous issues); STA (2001 and previous issues).

Table A5.14 **Real implicit subsidy — State Transit Authority**

1990-91 to 2000-01 ($ million)

	Sate Transit Authority
1990-91	33.0
1991-92	-50.9
1992-93	19.1
1993-94	25.7
1994-95	7.5
1995-96	17.8
1996-97	25.3
1997-98	20.0
1998-99	24.3
1999-00	15.3
2000-01	16.7

Note Statistics reported for the State Transit Authority (STA) are inclusive of Newcastle services. The implicit subsidy is an estimate based on the difference between STA's return on assets and the risk free rate of return (as measured by the Commonwealth Government 10 year bond rate). The subsidy is measured in absolute terms in relation to the value of the utility's asset base. A negative implicit subsidy implies that the utility did not receive a subsidy but rather earned a return greater than the Commonwealth Government 10 year bond rate. The real implicit subsidy index for service provider was obtained by rebasing implicit subsidies to 1990-91 and then deflating by the CPI (All groups) for Sydney. Return on assets is measured as earnings before interest and tax payments (EBIT) as a proportion of average total assets. EBIT is measured before transfer payments from service providers to government, such as dividends, tax equivalents and debt guarantee fees.

Data sources: PC estimates based on STA (2001 and previous issues); SCNPMGTE (1998 and previous issues), PC (2001a); RBA (2002).

6 Ports and rail freight

Key outcomes

Ports

- Between 1990-91 and 2000-01, port authority charges for container ships fell in real terms at the ports of Sydney (53 per cent), Melbourne (62 per cent), Brisbane (24 per cent), Fremantle (20 per cent) and Burnie (17 per cent).
- Port authority charges for bulk ships have fallen in real terms at the ports of Sydney (28 per cent), Melbourne (52 per cent), Fremantle (23 per cent) and Burnie (17 per cent).
- Shareholder outcomes, as measured by return on assets, dividend payout and dividend to equity ratios, have been variable over the study period. Falls in real charges for container and bulk ships will have placed downward pressure on the return on assets and dividend ratios, with some port authorities earning a return less than the weighted average cost of capital.

Rail freight

- Between 1996-97 and 2000-01, average rail freight charges for the transport of wheat from the silo to the port have fallen in real terms in NSW (22 per cent), Victoria (20 per cent), Queensland (17 per cent), SA (6 per cent) and WA (9 per cent).
- Between 1995-96 and 2000-01, average rail freight charges for the transport of coal have fallen in real terms in NSW (52 per cent) and Queensland (26 per cent).
- Between 1990-91 and 2000-01, coal freight rates in the Hunter Valley fell in real terms (61 per cent).
- A real index of general freight prices showed similar trends.
- Shareholder outcomes, as measured by return on assets, dividend payout and dividend to equity ratios, have been variable over the study period, consistent with a period of significant restructuring and transition. Most rail authorities earned rates of return at or slightly above the risk free rate. In these cases, rail authorities have been able to deliver real falls in freight charges without reducing profitability.

Over the last decade, State governments have introduced a range of reforms aimed at improving the performance of government-owned port and rail authorities by making them more commercially focused. The reforms have included

corporatisation, restructuring, privatisation and the contracting out of some functions.

In this chapter, trends in the real prices paid by businesses for port and rail freight services are presented for the period 1990-91 to 2000-01. Real price indexes were constructed using tariff schedules and information provided by suppliers and users.

For port authority price trends, charges that are levied directly on ship and cargo owners for containerised and bulk freights were examined. Indirect charges for ancillary marine (pilotage, towage and mooring) and stevedoring services were excluded.

In the case of rail freight price trends, charges levied for the transport of wheat, coal and general freight are presented. In some cases, pricing information was only available for a part of the study period. Charges levied for urban rail passenger services are incorporated in the price trends presented in Chapter 5.

The financial performance of port and rail authorities was examined to see if price declines have been associated with falling rates of return.

Quality of service measures can also be examined to determine whether price reductions or increased profitability have been achieved by lowering quality of service. Typical indicators of quality of service for ports and rail freight include berth availability and on-time running, respectively. Consistent measures of these indicators over the study period were unavailable.

6.1 Ports

Ports play a significant role in the transport of international and domestic freight. In 2000-01, over 3.3 million twenty foot equivalent units (TEUs) (89.7 per cent of all containers handled at Australian ports) and 58.6 million tonnes of bulk cargo (11.1 per cent of all bulk cargo handled by Australian ports) were shipped through the ports of Sydney, Melbourne, Brisbane, Fremantle and Burnie (AAPMA 2002).[1]

These port authorities are typically involved in the provision and management of infrastructure, such as navigation channels and aids, berths, cargo storage areas and other wharf facilities. Some, such as the Victorian Channels Authority (VCA), provide and manage infrastructure at more than one port. Others, such as the

[1] A TEU or twenty foot equivalent unit is a unit of measurement used to describe containers, with each unit equal to a 20 foot international Standards Organisation container size.

Brisbane Port Corporation and the Burnie Port Corporation, also have a shareholding in or operate an airport.

The terminology and structure of port authority charges varies between ports (see box 6.1). There are both ship-based and cargo-based charges. Ship-based charges are levied on the basis of ship size and, in some cases, on the time the ship is berthed. Cargo-based charges, such as *wharfage*, are typically levied on a per TEU basis in the case of container cargo, or on a per tonne basis in the case of bulk cargo. Cargo-based charges might also vary on the basis of whether cargo is being shipped into (loaded inwards) or shipped out of (loaded outwards) the port. As port authorities have no direct relationship with importers or exporters, cargo-based charges are generally collected by ship operators.

Box 6.1 **Structure of port authority charges 2001**

Sydney

A *navigation services charge* is levied per ship visit and is based on ship size measured in terms of gross tonnage (GT). An additional environmental services charge is levied on ships transporting noxious bulk liquid, gas and oil cargoes. *Wharfage* is levied per twenty foot equivalent unit (TEU) for containerised cargo and per revenue tonne for bulk cargo. A revenue tonne is the greater of the mass or the volume of the cargo measured in units of tonnes, cubic metres or kilolitres. Incorporated into the wharfage charge is the port cargo access charge which is levied by the NSW Government.

Melbourne

Tonnage is levied per ship visit, by the Victorian Channels Authority, on the basis of the ship's GT. The Melbourne Port Corporation (MPC) levies a ship-based *berth hire* charge based on the time the ship is at berth. Depending on which berth is used, berth hire is levied either on the ship operator or the terminal operator. In most cases, terminal operators pass this charge onto ship operators. The MPC also levies *wharfage* on a per TEU basis for containerised cargo and on the greater of the weight or the volume in the case of bulk cargo.

Brisbane

The Port of Brisbane Corporation levies both *wharfage* and *harbour dues* on the owners of cargo. These charges are levied on a per TEU basis for containerised cargo and per weight or volume for bulk cargo, whichever is the greater.

Fremantle

Tonnage is levied per ship visit on the basis of the GT of the ship. A different rate is applied depending on whether the ship has an inboard incinerator and is berthed in the inner or outer harbour. *Wharfage* is levied on a per TEU basis for containerised cargo and on a per tonne, kilolitre or cubic metre basis for bulk cargoes. Wharfage is not levied on bulk cargo loaded and discharged at privately operated facilities in Fremantle's outer harbour.[a] Instead a *port administration fee* is levied on the private operators of these facilities. A *cargo berth hire* charge is also levied on cargo loaded onto or discharged from a ship berthed at a heavy duty berth.

Burnie

Tonnage rates are levied per visit on the basis of the GT of the ship. The daily rate varies with the number of days the ship is berthed. However, there is a limit to the total daily charge for the first day and the next nine days, as well as a total overall charge for any period up to and including the tenth day. *Wharfage* is levied on a per TEU basis for containerised cargo and on a per tonne, kilolitre, or cubic metre basis for bulk cargo.

a Over the study period, between 88 and 95 per cent of all bulk tonnes were handled at privately operated facilities at the Port of Fremantle.

Sources: Burnie Port Corporation, pers. comm., 14 November 2001; Fremantle Port Authority, pers. comm., 28 September 2001; Melbourne Port Corporation, pers. comm., 24 September 2001; Port of Brisbane Corporation, pers. comm., 28 September 2001; Sydney Ports Corporation, pers. comm., 3 October 2001; VCA (2001).

Industry reforms affecting prices

Reforms have involved corporatisation, restructuring and contracting out of some functions and, in some cases, privatisation. A greater emphasis has also been placed on the commercial role of port authorities to create incentives for efficient management.

In general, the reform process has been consistent with the recommendations set out in the 1993 Industry Commission report *Port Authority Services and Activities* (IC 1993). The report recommended, among other things, that:

- ports should be constituted as statutory bodies, which are separate from the departmental structure of government;
- ports should be exposed to a tax-equivalent regime, be reimbursed for any community service obligations, and pay dividends from after-tax profits;
- governments should adopt the landlord model of operation where cost efficient;[2] and
- where the landlord model is adopted, governments should identify and divest non-core activities and contract out core activities, where cost effective.

Market reforms

Most of the port authorities included in the study were corporatised during the study period. Key initiatives associated with corporatisation included separation of commercial and regulatory functions, provision for the identification and costing of community service obligations, and the introduction of dividend and tax-equivalent regimes.

The Fremantle Port Authority has not been corporatised, but was commercialised in 1996 and like the corporatised ports in other States, is required to pay dividends and tax-equivalent payments. However, the WA Government retains a power of veto over charges.

As a part of the corporatisation process, a number of port authorities have also been restructured. The Sydney Port Corporation (SPC) was established following the restructure of the Maritime Services Board (MSB) in 1995.[3] Two other

2 The landlord model is characterised by the port authority concentrating on the supply of core activities, such as the provision of safe access and harbouring for ships only, with the more contestable non-core waterfront services, such as stevedoring and pilotage, supplied privately.

3 The MSB was responsible for administering the Ports of Sydney and Newcastle and Port Kembla.

corporations, the Waterways Authority and the Office of Marine Administration, were also established.[4]

All the port authorities considered in the study have moved to the landlord model of operation to varying degrees. In Melbourne for example, the Port of Melbourne Authority was restructured in 1996 into a port landlord (Melbourne Port Corporation) and a channel operator (VCA). Melbourne Port Services was also established to provide services such as security, cleaning and general maintenance, previously provided by the Melbourne Port Authority (MPA). Melbourne Port Services was sold to Skilled Engineering in 1997. As part of the move to a landlord model, responsibility for the regulation of environmental, safety and pricing matters was transferred to independent regulatory agencies, and non-core assets, such as the World Trade Centre, were sold.

Most of the other port authorities have also contracted out or privatised, to varying degrees, non-core activities such as stevedoring, pilotage, mooring, general maintenance and cleaning.

Tariff reforms

Over the last decade, consumption-based charging has been progressively introduced, resulting in charges that relate more closely to individual service requirements, rather than the value of cargo. For example, the MSB began phasing in a new pricing structure in 1990-91. It was based on user-pays principles and aimed to be more reflective of the costs incurred by users in each of the individual ports under its control.

Most State Governments have now established independent prices oversight bodies as a part of their obligations under the National Competition Policy agreements. Of the ports included in this study, only the Victorian port industry has been declared for prices oversight. Both the MPC and the VCA are subject to an average revenue cap administered by the Office of the Regulator-General (ORG) in accordance with the *Port Services Act 1995*.

In meeting its revenue cap, the MPC was required to provide an average real annual reduction in wharfage, berth hire and area hire charges of 10 per cent over the period 1997-98 to 1999-2000. The VCA was required to reduce channel use charges by 12 per cent per annum in real terms from 1 July 1997 until 30 June 2000.

4 The Waterways Authority is responsible for recreational and commercial boating and the Office of Marine Administration is responsible for the administration of marine safety in NSW.

During 2000, the ORG finalised price determinations for the period 1 July 2000 to 30 June 2005. The determinations provide for real annual price reductions of 5.2 per cent for the MPC and 2.1 per cent for the VCA.

Price outcomes

Most port authorities levy a mix of ship and cargo-based charges. Consequently, the total charge per ship visit and hence the charge per unit of cargo will depend on a range of factors, including:

- the ship size;
- the time the ship is at berth (in the case of some ports);
- the type and size of cargo exchanged (measured in TEUs or tonnes); and
- the composition of cargo (loaded inwards, outwards or empty).

In order to estimate port authority charges, it is necessary to make certain assumptions about these factors. As one of the objectives of this study is to present information on price trends, it was decided to keep the ship visit parameters constant over the study period. If the ship visit parameters were not kept constant, estimates of port authority charges would more closely reflect the actual level of charges incurred by ship and cargo owners at any one point in time. However, the resulting price trends would reflect both changes in the ship visit parameters and changes in the charges levied.

In the case of container ships, a consistent and publicly available source for ship visit parameters was available through the Bureau of Transport Economics as part of its Port Interface Cost Index (PICI) published in the *Waterline* series (see box 6.2).

Box 6.2 **Port interface cost index**

The Port Interface Cost Index (PICI) was developed by the Bureau of Transport Economics and is published in alternate issues of *Waterline* (published quarterly). The PICI provides a measure of shore-based shipping costs for container ships, incorporating the charges for various waterfront services. The PICI includes the Goods and Services Tax.

The major components of the PICI include:

- port and related charges — ship and cargo-based charges levied by port authorities, government charges, pilotage, towage and mooring charges;
- stevedoring charges; and
- land-based charges — custom brokers fees and road transport charges.

The PICI is calculated for each six month period, that is January to June and July to December, for the ports of Sydney, Melbourne, Brisbane, Adelaide and Fremantle. The PICI for the port of Burnie is calculated on an irregular basis.

The parameters used to estimate the components of the PICI relate to a port call by a representative container ship. The representative ship is selected from the ship size range that had the most port calls during the particular period. The other parameters are then determined by taking the mean of all port calls by ships in the range that contains the representative ship.

The PICI has been published on a regular basis since 1994-95. Over this period, the gross tonnage of the representative ship has remained constant at 17 125. The other parameters have varied over the period, reflecting differences in average cargo exchange and time at berth.

Sources: BTCE (1998); BTE (2001).

The PICI provides information on shore-based costs for container ships and is broader than the indexes presented in this study. The ship visit parameters used in this study are based on the PICI for January to June 2001 and are presented in table 6.1.

In the case of bulk ships, a consistent and publicly available source for ship visit parameters was unavailable and port authorities were approached directly for this information. The ship visit parameters used to construct price indices for bulk ships are presented in Table 6.2.

Table 6.1 **Ship visit parameters — container ships**

January to June 2001

	Sydney	*Melbourne*	*Brisbane*	*Fremantle*	*Burnie*[a]
Ship size					
GT	17 215	17 215	17 215	17 215	17 215
TEUs exchanged					
Total	834	1 215	540	533	458
Loaded	669	1 011	418	401	277
Empty	165	204	122	132	181
Loaded inwards	397	511	170	200	51
Loaded outwards	271	500	248	202	226
Time at berth	37	36	22	20	**n.a.**

Note The ship visit parameters are those used by the Bureau of Transport Economics (BTE) in constructing its Port Interface Cost Index. The BTE derives these parameters for a representative ship. The representative ship is selected from the ship size range that had the most port calls during the particular period. The other cost parameters are then determined by taking the mean of all port calls in the range that contains the representative ship. [a] The Port of Burnie is not regularly included in the BTE's Port Interface Cost Index, the ship call parameters are taken from the last time Burnie was included (1995-96). **N.a.** not available

Sources: BTCE (1997); BTE (2001).

Table 6.2 **Ship visit parameters — bulk ships**

	Sydney	*Melbourne*	*Fremantle*	*Burnie*
Ship size (GT)	11 754	17 453	24 873	17 255
Cargo size (Tonnes)	14 700	9 464	30 192	10 144

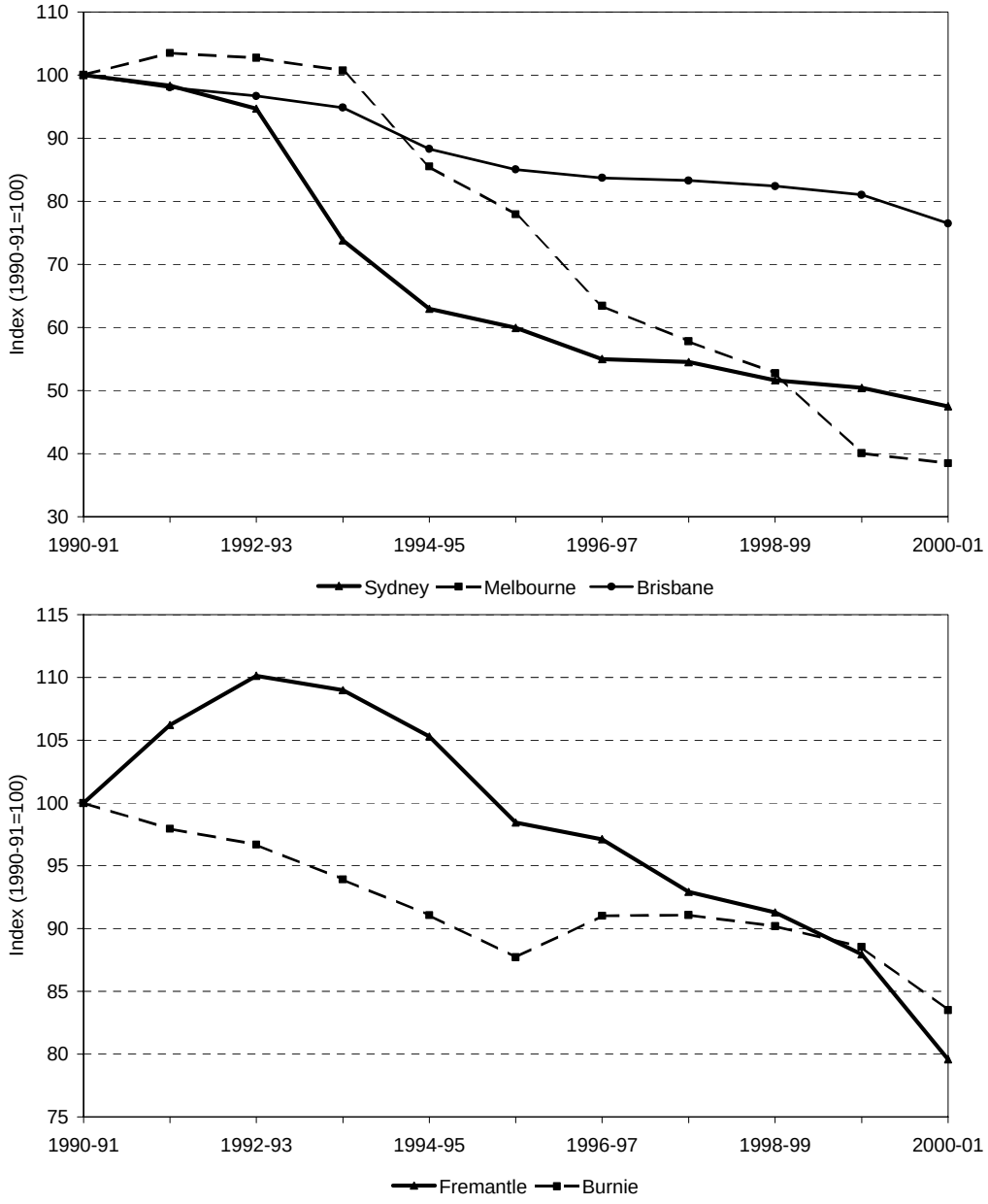
Sources: Burnie Port Corporation, pers. comm., 14 November 2001; Fremantle Port Authority, pers. comm., 18 December 2001; Melbourne Port Corporation, pers. comm., 1 February 2002; Sydney Ports Corporation, pers. comm., 11 December 2001.

Container ships

Using tariff schedules provided by port authorities and the ship visit parameters in table 6.1, a real price index (base year of 1990-91) for container ships was estimated for each port. The Goods and Services Tax (GST), introduced in July 2000, was excluded from the nominal price series because businesses are able to claim a GST rebate on their inputs. However, GST is included in the CPI (All groups) index used to deflate nominal prices to real prices. An index could not be constructed for the Port of Adelaide because tariff schedules were unavailable.

Over the study period, real prices fell by 53 per cent at the Port of Sydney, 62 per cent at Melbourne, 24 per cent at Brisbane, 20 per cent at Fremantle and 17 per cent at Burnie (see figure 6.1).

Figure 6.1 **Real port authority price trends — container ships**
1990-91 to 2000-01 (per TEU exchanged)



Note A real price index was constructed for Sydney, Melbourne, Brisbane, Fremantle and Burnie by estimating the ship and cargo-based charges levied using the ship visit parameters in table 6.1. The price per TEU exchanged was deflated by the relevant capital city CPI (All groups) and expressed as an index with 1990-91 as the base year. The price index for Sydney is based on charges levied by the Marine Services Board between 1990-91 and 1995-96, and by the Sydney Ports Corporation between 1996-97 and 2000-01. The price index for Melbourne is based on charges levied by the Melbourne Port Authority between 1990-91 and 1994-95 and the Melbourne Port Corporation (MPC) and the Victorian Channels Authority between 1995-96 and 2000-01. It was assumed that the ship is berthed at a dock for which the MPC does not levy a berth hire charge. The nominal price series for 2000-01 exclude the Goods and Services Tax.

Data source: Table A6.1.

Most port authorities reduced both ship and cargo-based charges in nominal terms over the study period. For example, at the Port of Sydney, wharfage on loaded containers was reduced in each year between 1992-93 and 1994-95. The navigation services charge was reduced in 1996-97 and again in 1997-98. Some ports have also abolished charges. At Brisbane, berthage (the only ship-based charge) was abolished in 1994-95 and at Fremantle, berth hire on empty containers was abolished in 1995-96. Wharfage on empty containers was abolished at Sydney and Melbourne in 1999-2000. From 1999-2000, Fremantle has exempted wharfage on empty containers where shipping lines submit electronic manifests.[5]

Bulk ships

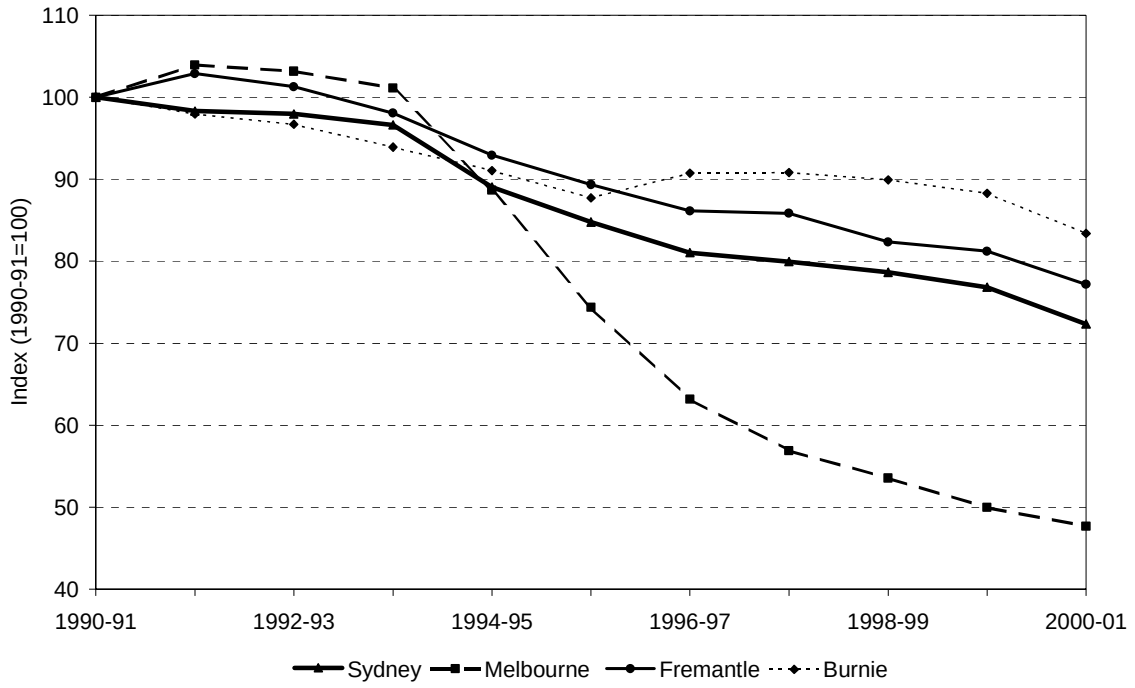
The cargoes carried on bulk ships include wheat, coal, ore, cement, sand, petroleum and oils. They are carried loose and take up the shape of the ship's hold.

Using tariff schedules and information on a representative ship size and cargo exchange provided by port authorities (see table 6.2), a real price index (base year of 1990-91) for bulk ships was estimated for the ports of Sydney, Melbourne, Fremantle and Burnie. The Goods and Services Tax was excluded in estimating port authority charges for 2000-01.

Over the study period, real prices fell by 28 per cent at the Port of Sydney, 52 per cent at the Port of Melbourne, 23 per cent at Fremantle and 17 per cent at Burnie (see figure 6.2).

5 38.8 per cent of empty containers were exempt in 1999-2000 and 70.1 per cent in 2000-01.

Figure 6.2 **Real port authority price trends — bulk ships**
1990-91 to 2000-01 (per tonne exchanged)



Note A real price index was constructed for each port by estimating the ship and cargo-based charges levied using the ship visit parameters in table 6.2. The price per tonne exchanged was deflated by the relevant capital city CPI (All groups) and expressed as an index with 1990-91 as the base year. The price index for Sydney, is based on charges levied by the Marine Services Board between 1990-91 and 1995-96, and by the Sydney Ports Corporation between 1996-97 and 2000-01. The price index for Melbourne is based on charges levied by the Melbourne Port Authority between 1990-91 and 1994-95, and the Melbourne Port Corporation (MPC) and the Victorian Channels Authority between 1995-96 and 2000-01. It was assumed that the ship is berthed at a dock for which the MPC does not levy a berth hire charge. Wharfage is not levied on bulk cargo loaded and discharged at privately operated facilities in Fremantle's outer harbour. Instead, a port administration fee is levied on the private operators of these facilities. The price index for Fremantle incorporates the port administration fee on a per tonne basis. The nominal price series for 2000-01 exclude the Goods and Services Tax.

Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); Burnie Port Corporation, pers. comm., 14 November 2001; Fremantle Port Authority, pers. comm., 18 December 2001; Melbourne Port Corporation, pers. comm., 1 February 2002; Sydney Ports Corporation, pers. comm., 11 December 2001; VCA (2001) and ship visit parameters in table 6.2.

Estimating the effect of price changes on business costs

Trends in real port authority charges indicate whether expenditure on port authority services as a business input cost is greater or less than it would have been if charges had increased at the same rate as general inflation.

Trends in port authority charges have been such that the charges levied on container and bulk ships have declined in nominal terms at all ports included in the study, with an even greater decline in real terms.

For each port authority, an approximation of the real change in business costs in 2000-01 was obtained by multiplying current port authority revenues from charges on ships and cargo, by the ratio of the CPI (All groups) index number and the real price index number for port authorities in the relevant capital city. For this calculation, the impact of price changes on consumption of port authority services was ignored.

This approach was used to estimate the real change in business costs for both container and bulk ships, where trends in port authority charges were available. A simple average of the two was taken as an indication of the total change in business costs for each port.

For all the ports for which data was available, revenues earned from container and bulk ships would have been approximately $261.6 million higher if port authority charges had risen in line with inflation rather than falling (see table 6.3). This suggests that business costs were around 53 per cent lower than if prices had risen with the general inflation rate.

Table 6.3 **Real reductions in business costs — ports**
2000-01

	$ million	*Per cent*
Sydney	88.2	54.8
Melbourne	109.8	65.8
Brisbane	30.4	39.4
Fremantle	30.2	36.4
Burnie	3.0	33.7
Total	261.6	52.7

Source: PC estimates.

Shareholder outcomes

The financial performance of port authorities was examined to provide information on the relationship between price trends and financial outcomes, such as the return on assets.

Low prices relative to costs may not achieve a satisfactory return on assets, nor provide sufficient revenue to maintain and replace long-lived infrastructure assets. If services are to be maintained, the community, as owners of the utility, will have to provide financial support in the form of subsidies. Further, low prices may affect the viability of the business and possibly expose the community to financial risks.

The data used in calculating the shareholder outcomes presented in this section were generally taken from two sources:

- Steering Committee on National Performance Monitoring of Government Trading Enterprises; and
- Productivity Commission reports on Financial Performance of Government Trading Enterprises.

There may be inconsistencies between these two data sets and the information published in the Annual Reports of port authorities. These inconsistencies arise because of definitional differences.

Changing market conditions can also have an impact on shareholder outcomes from year to year. The level of earnings generated by port Government Trading Enterprises (GTEs) is strongly linked to trade throughput. Trade throughput, and hence earnings, is susceptible to changes in both domestic and international markets, particularly shifts in demand for key traded commodities.

In the case of the ports considered in this study, only part of their revenue is earned by levying the ship and cargo-based charges discussed in the price outcomes section of this chapter. However, the shareholder outcomes presented in this section reflect the revenue earned from all aspects of their business. Consequently, it is difficult to draw strong conclusions about the significance of shareholder outcomes over the study period.

Profitability

Return on assets has generally fallen over the period for Sydney, Brisbane and Burnie and has increased for Melbourne and Fremantle. However, returns have been fairly variable (see figures 6.3 and 6.4), with asset transfers, revaluations and changes in asset valuation methodologies accounting for most of this variation (see box 6.3).

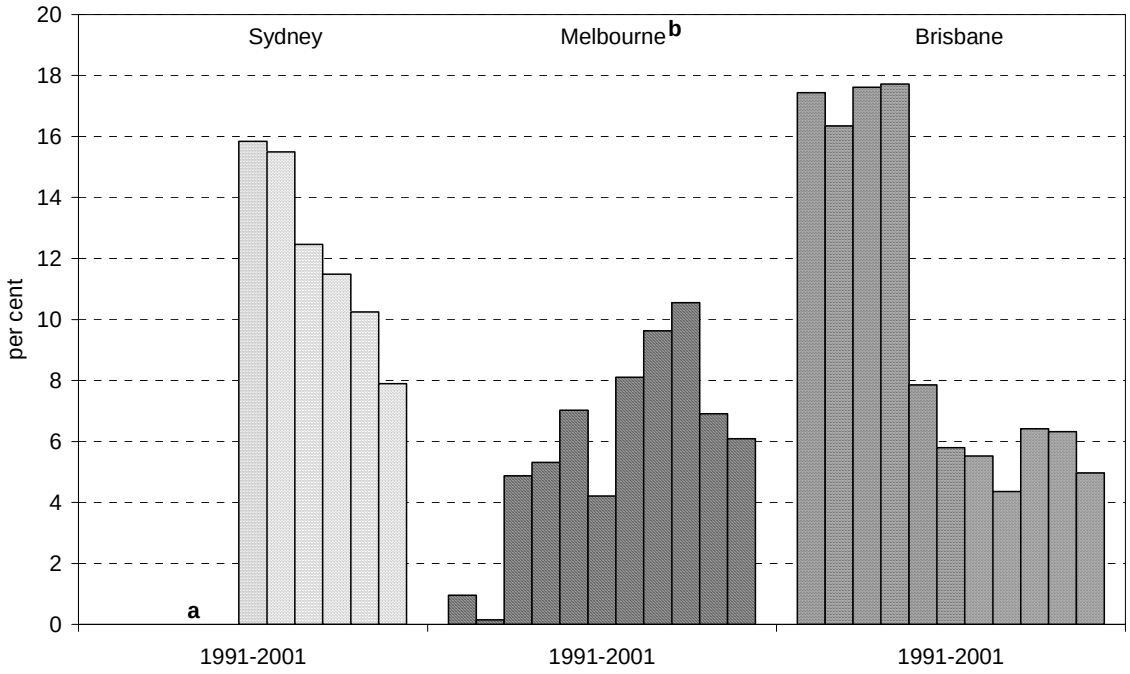
Over the last 6 years, Sydney and Fremantle have generally earned nominal pre-tax rates of return above 10 per cent, Melbourne between 4 and 11 per cent and Brisbane between 5 and 6 per cent. By comparison, the ORG has estimated that a real pre-tax weighted average cost of capital for the MPC and VCA of about 8.5 per cent would be sufficient to meet the risk adjusted cost of capital (ORG 2000c).[6]

[6] The weighted average cost of capital is the weighted average of the risk-adjusted cost of equity and debt capital.

At all ports included in the study, falls in real charges have been associated with falling rates of return. Moreover, some are now earning below the weighted average cost of capital.

Comparisons of performance over time that are based on indicators that include an estimate of asset values, have to be interpreted with care. Differences in asset valuation procedures and changes in the size of the asset base can affect the return on assets. Over the study period, there have been significant changes in asset values as a result of asset transfers, revaluations and changes in asset valuation methodologies.

Figure 6.3 **Return on assets — Sydney, Melbourne and Brisbane**
1990-91 to 2000-01



Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. **a** Prior to 1995-96, the Port of Sydney was operated by the Marine Services Board, and estimates of the return on assets are unavailable. **b** The return on assets ratio for the Port of Melbourne is based on the operations of the Melbourne Port Authority between 1990-91 and 1994-95 and on the combined operations of the Melbourne Port Corporation and the Victorian Channels Authority between 1995-96 and 2000-01.

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Box 6.3 **Major changes in return on assets — 1990-91 to 2000-01**

Sydney

- Property, plant and equipment were revalued upwards in 1997-98. The increase in asset values resulted in a fall in the return on assets.

Melbourne

- The return on assets for Melbourne was for the Melbourne Port Authority between 1990-91 and 1994-95. Between 1995-96 and 2000-01, a combined return on assets ratio was estimated based on the operations of both the Melbourne Ports Corporation (MPC) and the Victorian Channels Authority (VCA).
- The VCA earned an extraordinarily high return on assets in 1996-97 as a result of the decision to value channels at zero in the financial statements prior to 1997-98. Asset values increased in 1999-2000 following the inclusion of channels transferred to the VCA from predecessor bodies.
- The MPC's assets were revalued upwards in 1997-98 and again in 1999-2000.

Brisbane

- The return on assets fell in 1994-95, when assets were revalued upwards by 67.7 per cent as part of the corporatisation process.
- Asset values increased in 1996-97, following an investment in the Brisbane Airport and an upwards revaluation. Assets were revalued upwards again in 1997-98.

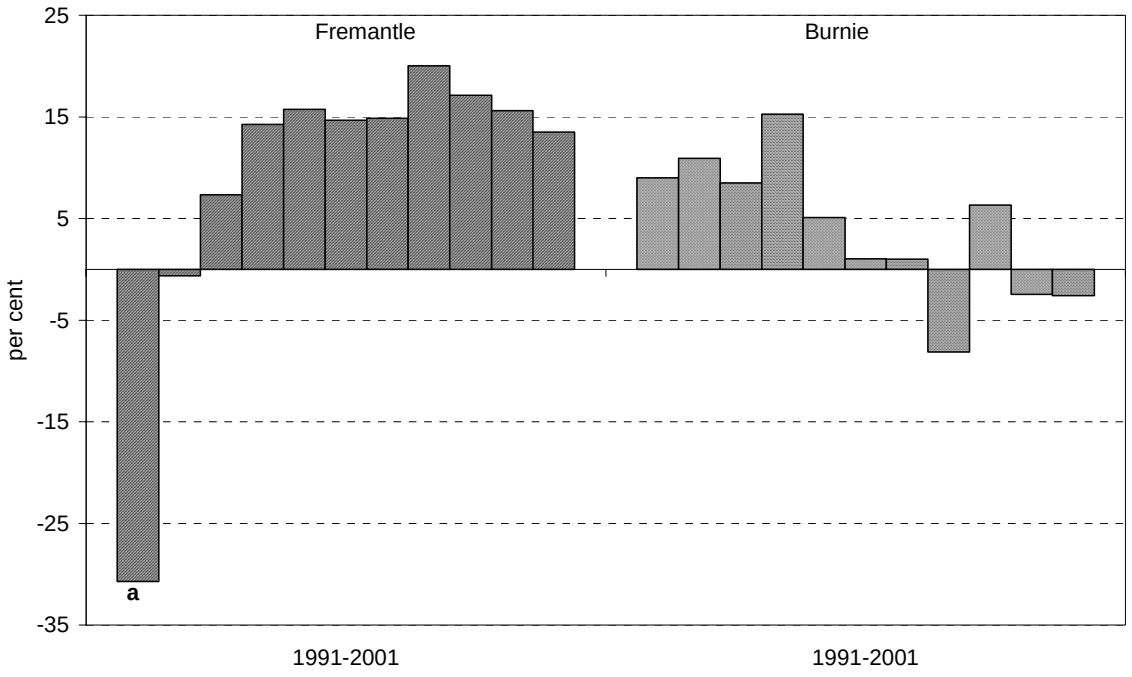
Fremantle

- Abnormal expenses of $26.1 million resulted in an operating loss and a negative return on assets in 1990-91.
- Abnormal revenue relating to payments from the Western Australian Government for the reimbursement of costs incurred in the reclamation of Port Beach land, and the surrender of a lease on the 'A' shed at Victoria Quay led to an increase in the return on assets in 1997-98.

Burnie

- Abnormal revenue contributed to the increase in the ratio in 1993-94 and the loss of stevedoring revenue contributed to its decrease in 1995-96.
- Although non-current assets were revalued downwards, the value of total assets rose in 1997-98 with the inclusion of Burnie Airport's assets. Abnormal expenses relating to the devaluation, the capitalisation of a finance lease, losses due to the obsolescence of an oil berth, and redundancy payments, contributed to an operating loss and a negative return.
- Another downward revaluation of assets in 1999-2000 contributed to an operating loss and a negative return on assets.

Figure 6.4 **Return on assets — Fremantle and Burnie**
1990-91 to 2000-01



Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. **a** Abnormal expenses contributed to an operating loss after tax and a negative return on assets in 1990-91.

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Publicly-owned electricity utilities are often required to return some of their earnings to their owner-governments in the form of dividend payments. This is justified on competitive neutrality and cost recovery grounds.

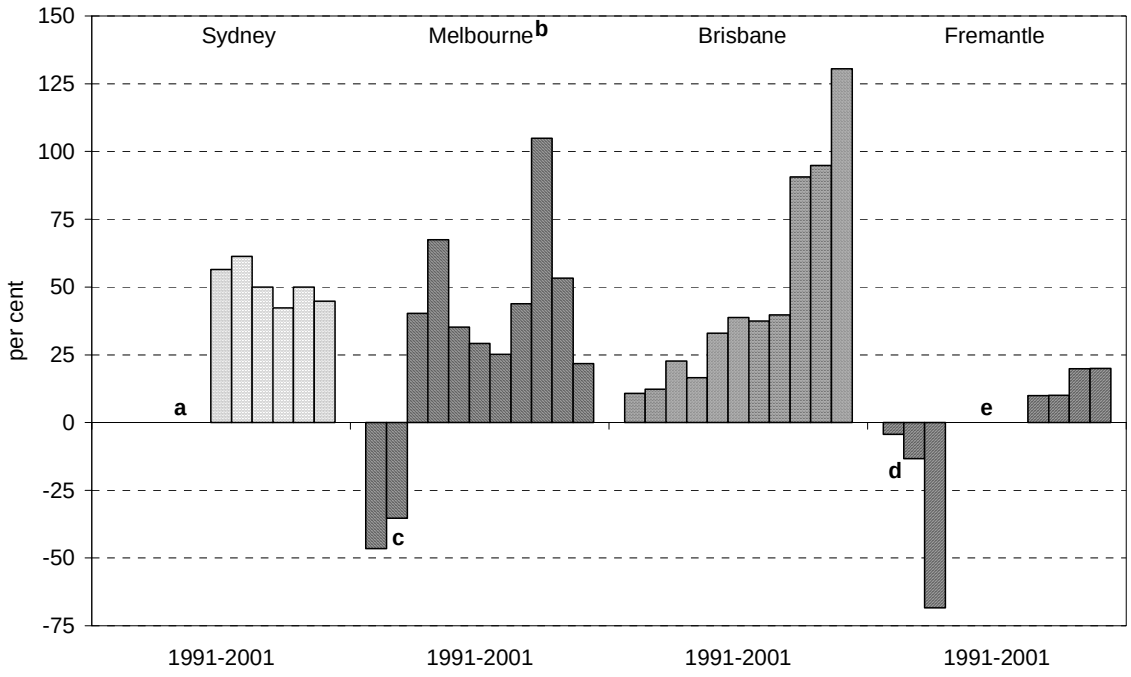
Where a utility is not required to pay dividends, it has proportionately more funds available for re-investment into its business, either for the development of new services or the improvement of existing ones. Further, a utility need not rely on debt-financing to the extent that its rivals must, and thus incurs lower overall operating costs.

Most of the ports included in the study have been required to make dividend payments over the last decade. In the case of Burnie, the policy on dividend payments was first introduced in 1997-98, but the Port of Burnie is yet to make a dividend payment. The amount of dividend paid by each port depends on the dividend policy agreed to with the relevant State government.

The dividend payout and dividend to equity ratios for most of the ports included in the study have been variable (see figures 6.5 and 6.6). Variability in the dividend to equity ratio partly reflects changes in equity levels flowing from changes in asset and liability levels. For example, the fall in SPC's dividend to equity ratio in 1997-98, reflects a significant increase in asset values and hence equity, following an upward revaluation and the purchase of land.

Figure 6.5 **Dividend payout ratio — Sydney, Melbourne, Brisbane and Fremantle**

1990-91 to 2000-01



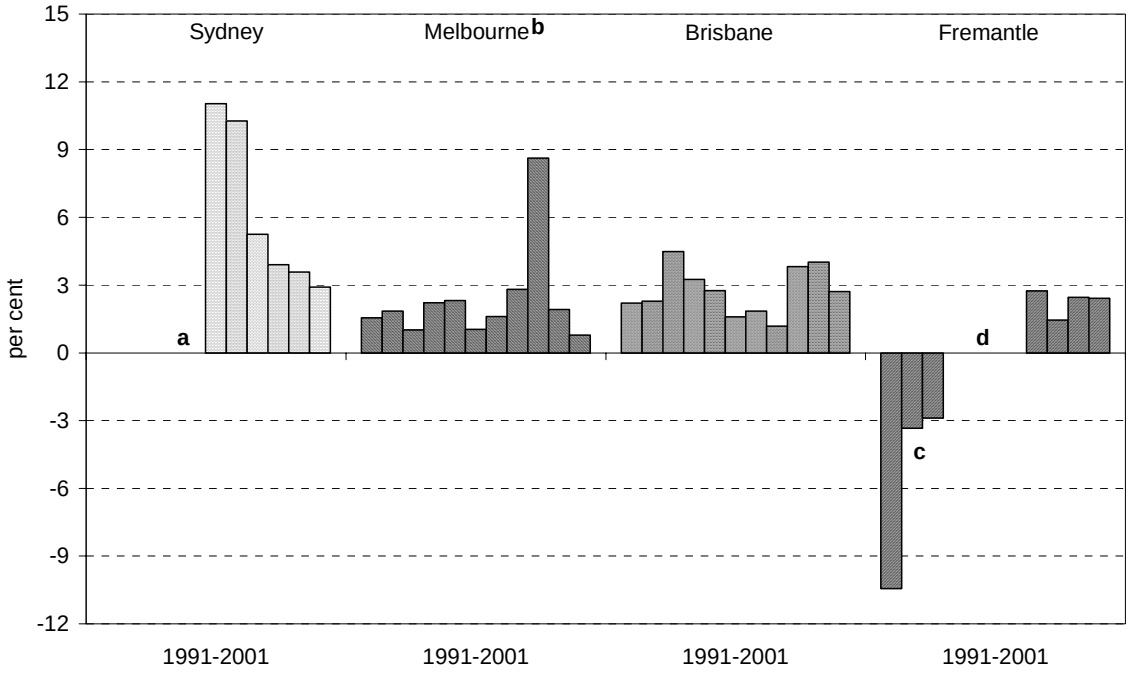
Note Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for includes normal and special dividends and special levies on profits and revenues. **a** Prior to 1995-96, the Port of Sydney was operated by the Marine Services Board. Estimates of the dividend payout ratio are unavailable. **b** The dividend payout ratio for the Port of Melbourne is based on the operations of the Melbourne Port Authority between 1990-91 and 1994-95 and on the combined operations of the Melbourne Port Corporation and the Victorian Channels Authority between 1995-96 and 2000-01. **c** In 1990-91 and 1991-92, the Melbourne Port Authority earned an operating loss after tax, implying the payment of dividends from sources other than current year profits. **d** Prior to commercialisation in 1996-97, the Fremantle Port Authority was required to pay a levy based on total revenue to the WA Government. Between 1990-91 and 1992-93, Fremantle Port Authority earned an operating loss after tax, implying the payment of the levy from sources other than current year profits. **e** Between 1993-94 and 1995-96, the levy was rebated back to the Fremantle Port Authority, and in 1996-97, no dividend was paid. Consequently, the dividend payout ratio for these years was zero.

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

When dividend payout ratios are greater than 100 per cent it means that the port authority is paying the dividend from sources other than current year profits. If the dividend payout ratio is negative, as has been the case for Melbourne and

Fremantle, this implies that the utility incurred an operating loss after tax in that year but was still required to pay a dividend.

Figure 6.6 **Dividend to equity ratio — Sydney, Melbourne, Brisbane and Fremantle**
1990-91 to 2000-01



Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for includes normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. **a** Prior to 1995-96, the Port of Sydney was operated by the Marine Services Board, estimates of the dividend to equity ratio are unavailable. **b** The dividend to equity ratio for the Port of Melbourne is based on the operations of the Melbourne Port Authority between 1990-91 and 1994-95, and on the combined operations of the Melbourne Port Corporation and the Victorian Channels Authority between 1995-96 and 2000-01. **c** Prior to commercialisation in 1996-97, the Fremantle Port Authority was required to pay a levy based on total revenue to the WA Government. Between 1990-91 and 1992-93, the Fremantle Port Authority had negative equity, resulting in a negative dividend to equity ratio. **d** Between 1993-94 and 1995-96, the levy was rebated back to the Fremantle Port Authority and in 1996-97, no dividend was paid. Consequently, the dividend to equity ratio for these years was zero.

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

The payment of special dividends has also contributed to the variability in the dividend payout and dividend to equity ratios. For example, the MPC made a special dividend payment in 1998-99 of $26 million from cash reserves.

Despite this variation, most of the ports included in the study have delivered dividend to equity ratios of between 2 and 10 per cent. This is broadly comparable to that of private companies operating in the utilities market. In 1999-2000, for example, the dividend to equity ratio of private sector utilities averaged around 5 per cent, but ranged between around 2 and 10 per cent (PC 2001a).

Shareholder outcomes have been variable over the study period and port authority charges for container and bulk ships have fallen in real terms, perhaps too fast for some to achieve a commercial rate of return. Because of restructuring and different approaches to asset valuation, it is difficult to disentangle the effect that falling real charges have had on financial performance measures.

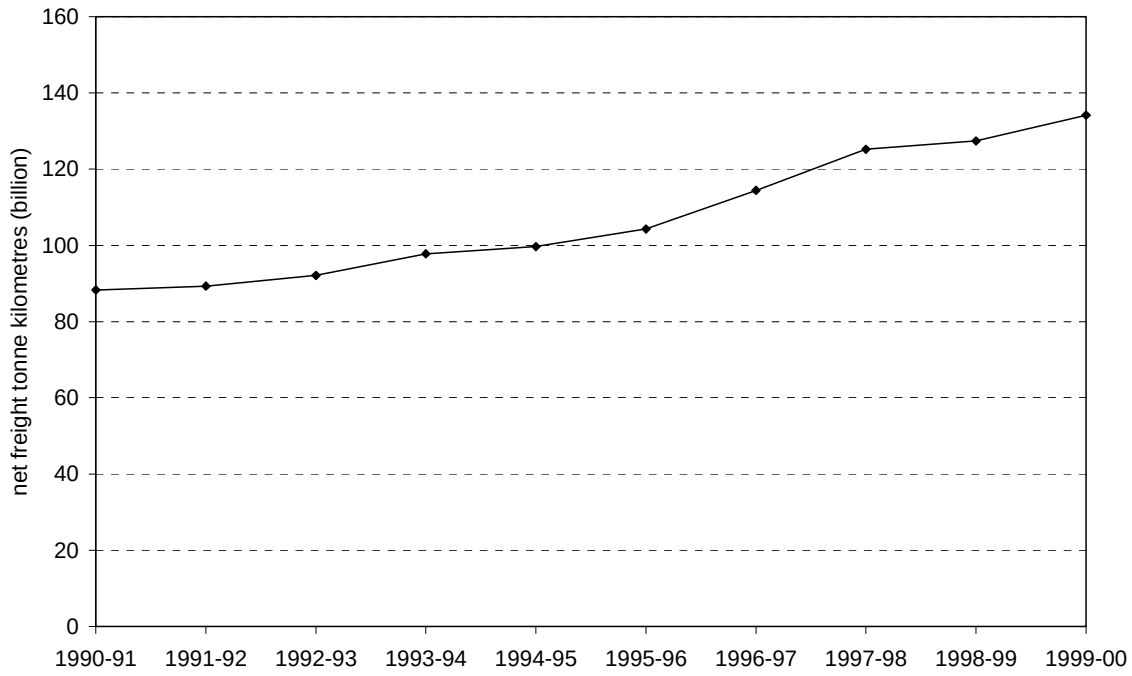
6.2 Rail freight

Rail accounts for over one third of the rail, road and domestic sea freight task. In 1999-2000, government and privately owned railways hauled over 134 billion net freight tonne kilometres (ntkm) (see figure 6.7) (ARA 2001).

Rail carries a range of commodities including coal, grain, sugar, minerals and ores, petroleum, liquids, cement, steel, containers, manufactured products, cars, paper, parcel post, fruit and vegetables and other general freight.

Not all government-owned rail authorities are discussed in this section. The chapter's focus is on GTEs providing rail freight services.

Figure 6.7 **Net freight tonne kilometres carried by rail**
1990-91 to 1999-2000



Source: ARA (2001).

Industry reforms affecting prices

In 1990-91, Australia's rail industry was characterised by integrated, government-owned railways, providing passenger and freight services in their respective jurisdictions, with private operators hauling iron ore in WA. Australian National (AN) provided interstate freight services across jurisdictions and intrastate services in both SA and Tasmania, as well as long distance non-urban passenger services on the Australian mainland.

Following a process which involved structural reform, changes to governance arrangements, and the introduction of third party access arrangements, a number of rail authorities have been restructured and some have been privatised.

The Productivity Commission's report on *Progress in Rail Reform* (PC 1999b) identified a number of factors driving reform in the 1990s, including:

- continued and increasing competition from road transport;
- continued pressure on State government budgets in providing goods and services to the community;
- the pressure on railway freight rates from increasing competition in downstream markets, such as Australia's black coal industry; and
- the implementation of the National Competition Policy (NCP).

Market reforms

During the 1990s, all rail GTEs were commercialised and most were corporatised. This process involved clarifying management objectives and responsibilities, transferring regulatory responsibilities to other agencies, identifying and explicitly funding community service obligations, and introducing stronger financial disciplines.

In 1991-92, the National Rail Corporation (NRC) was established to take over interstate freight traffic from the State rail authorities and AN.[7] AN continued to provide intrastate freight services in SA and Tasmania. The NRC commenced commercial operations in 1993.

[7] The NRC's shareholders are the Commonwealth, NSW and Victorian governments. Queensland and WA, while not shareholders, were involved in the transfer of assets and business to the NRC.

In 1997-98, the Commonwealth Government sold AN's interstate freight businesses in SA and Tasmania, and transferred AN's mainline track to the Australian Rail Track Corporation (ARTC). The ARTC was established as a 'one-stop shop' for rail operators seeking access to the interstate standard gauge rail network between Brisbane and Perth. The ARTC is currently responsible for managing access and track maintenance in South Australia (and parts of NSW and WA) as track owner, and in Victoria as track manager via a lease arrangement.

In 1996-97, the NSW Government restructured the State Rail Authority into four separate entities, with FreightCorp established to provide freight services.[8] In 1995-96, the Victorian Government began a process of dismantling the Public Transport Corporation with the establishment of V/Line Freight and the Victorian Rail Track Access Corporation as body corporates. V/Line freight was sold to Freight Victoria (a consortium headed by RailAmerica) and subsequently renamed FreightAustralia.

In late 2000, the Western Australian Government finalised the sale of Westrail's freight business to the Australian Railroad Group (ARG) (a joint venture between Wesfarmers Ltd and Genesee and Wyoming Inc). As part of the sale, ARG was granted a 49 year lease of the freight rail network infrastructure. In early 2002, FreightCorp and the NRC were both sold to a Lang Corporation and Toll Holdings joint venture.

Third party access to rail infrastructure (essentially the rail track) is seen as a means of increasing the scope for competition. As part of the NCP package, Part IIIA of the *Trade Practices Act 1974* established a national regime for third party access to services provided by 'nationally significant' infrastructure facilities.

The national regime provides a number of alternatives. Access seekers can request that the National Competition Council (NCC) 'declare' access to the services of a particular infrastructure facility. Once declared, the parties enter into negotiation in order to reach agreeable terms and conditions. Alternatively, infrastructure owners can submit an access undertaking to the Australian Competition and Consumer Commission (ACCC) for approval. Such an undertaking outlines the terms and conditions under which third party access will be negotiated. Third, State governments can introduce State-based regimes which outline the terms and

8 The State Rail authority continued to be responsible for the provision of rail passenger services, the Rail Access Corporation was established as owner of the track and the Rail Services Authority was established to provide maintenance services to the other rail businesses. On 1 January 2001, Rail Services Australia and the Rail Access Corporation were merged to form the Rail Infrastructure Corporation.

conditions for negotiating third party access. These regimes can be certified as effective by the NCC.

The introduction of a national regime has encouraged some rail authorities to submit access undertakings for approval as well as the development of State-based rail access regimes.

The ARTC has submitted an undertaking to the ACCC for approval. In its draft decision released at the end of 2001, the ACCC approved the undertaking subject to the ARTC addressing a number of concerns raised in the draft decision. The Queensland Competition Authority gave final approval to Queensland Rail's (QR's) access undertaking in December 2001.

In WA, a State-based access regime came into effect in September 2001. The regime covers the track leased by ARG from the Western Australian Government. ARG has established a subsidiary (WestNet Rail Pty Ltd) to manage the track infrastructure and negotiate terms and conditions with access seekers.

The introduction of third party access arrangements has facilitated the entry of a number of private operators. These include interstate freight operators (Specialised Container Transport, Toll Rail and Patrick) and smaller private operators providing a range of services including crews, locomotives and short haul operations (Northern Rivers Railroad and Great Northern Rail Services) (PC 1999b).

Over the 1990s, governments also removed a number of restrictions on the transport of certain commodities. These restrictions were designed to prevent such commodities from being carried by transport modes other than rail. For example, from 1993, the Victorian Government removed restrictions on the transport by road of bulk oil, minor bulk commodities, timber, cement and briquettes. The Western Australian Government deregulated the transport of bulk fuels, minor bulks and timber in 1992-93, and the transport of major bulk ore, mineral and woodchip traffics in 1994-95.

Price outcomes

Rail freight is typically hauled under commercially negotiated contracts. The Commission approached both providers and major users of rail freight for information on freight rates over the study period. Limited information on freight rates for the transport of wheat was available from the Australian Wheat Board Ltd (AWB), and for the transport of coal from the Queensland Mining Council and FreightCorp.

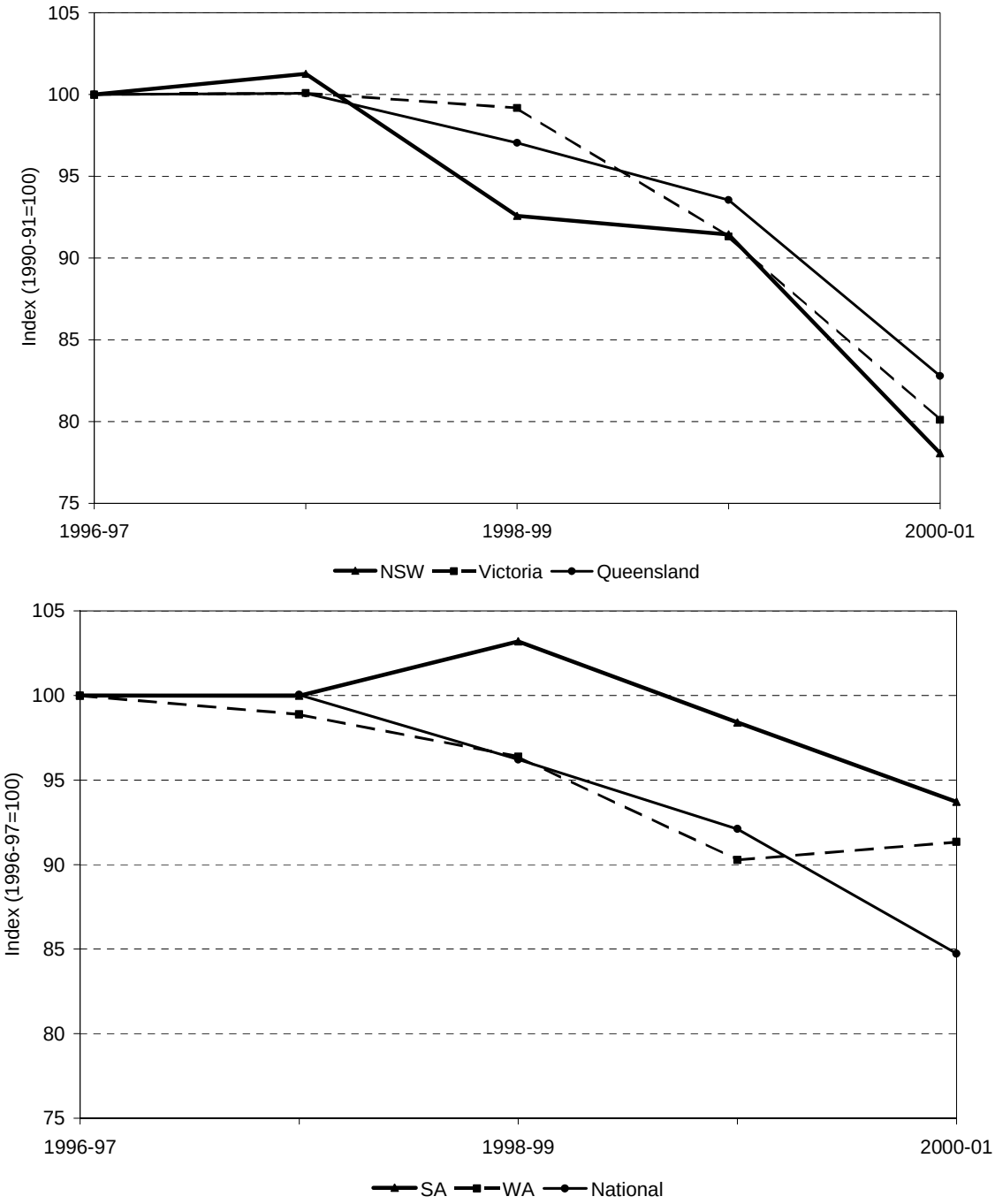
The AWB provided information on the average cost of transporting wheat from silos to the port for each mainland State. The average is equal to the cost of transporting grain from each silo, weighted by the tonnage of Export Pool grain moved from that site as a proportion of the aggregate State tonnage of AWB Pool grain moved to the port for export.

In the case of Export Pool grain, the AWB negotiates fixed term contracts with various freight providers. The freight rates that apply to each contract are normally set for the season, but can change with movement in various cost and efficiency factors included in a rate adjustment mechanism.

Between 1996-97 and 2000-01, real prices for transport of wheat by rail fell nationally by 15 per cent, 22 per cent in NSW, 20 per cent in Victoria, 17 per cent in Queensland, 6 per cent in South Australia and 8 per cent in WA (see figure 6.8).[9]

9 The nominal price series for 2000-01 includes the GST.

Figure 6.8 **Real rail freight price trends — wheat**
1996-97 to 2000-01 (per tonne)

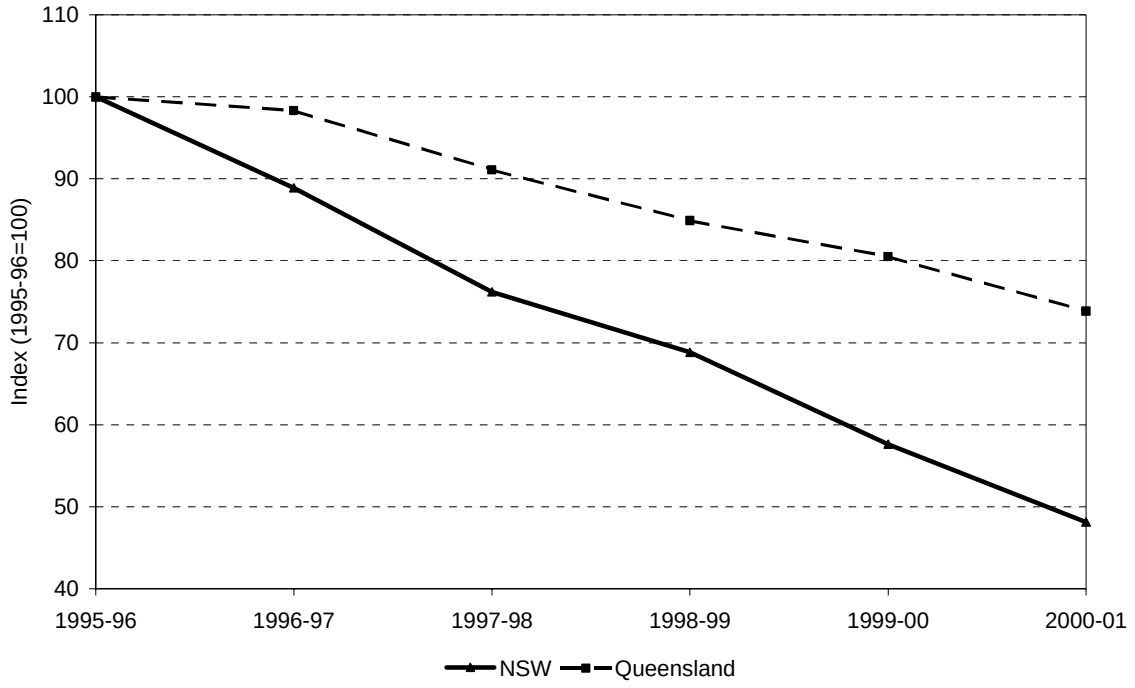


Note The real price index for each State reflects the average cost of transporting wheat from silos to the port. The average is equal to the cost of transporting grain from each silo, weighted by the tonnage of Export Pool grain moved from that site as a proportion of the aggregate State tonnage of Australian Wheat Board Pool grain moved to the port for export. The nominal cost per tonne was deflated by the relevant capital city CPI (All groups) and expressed as an index with 1996-97 as the base year. The nominal price series for 2000-01 include the Goods and Services Tax.

Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); Australian Wheat Board, Melbourne, pers. comm., 8 April 2002.

The Queensland Mining Council provided information on average freight rates for the transport of coal in NSW and Queensland. Between 1995-96 and 2000-01, real prices fell by 52 per cent in NSW and 26 per cent in Queensland (see figure 6.9).[10]

Figure 6.9 **Real rail freight price trends — coal**
1995-96 to 2000-01 (per tonne)



Note Nominal average freight rates were deflated by the relevant capital city CPI (All groups) and expressed as an index with 1995-96 as the base year. Excludes any 'monopoly rent' or 'de facto royalties' collected by the NSW and Queensland governments through the rail freight system. The nominal price series for 2000-01 include the Goods and Services Tax.

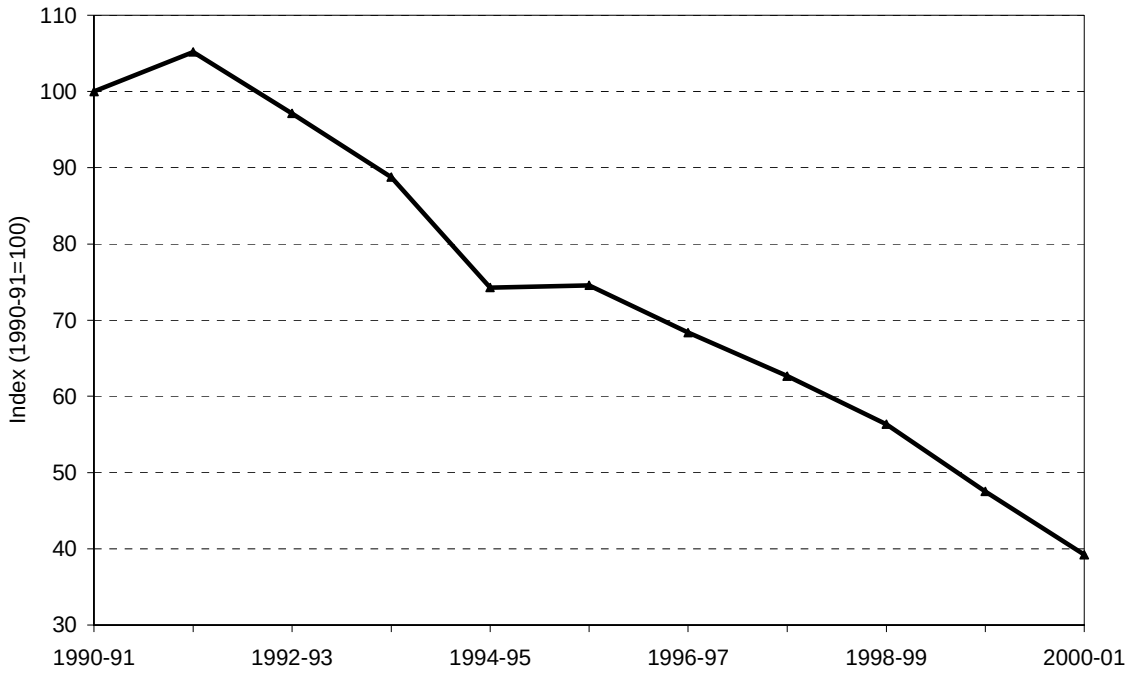
Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); Queensland Mining Council, Brisbane, pers. comm., 21 January 2002.

In NSW, freight services were provided by the State Rail Authority prior to 1996-97, when FreightCorp was established. FreightCorp provided information on Hunter Valley (NSW) export coal freight rates. The majority of NSW export coal is mined in the Hunter Valley Region and transported by rail to the Port of Newcastle. Between 1990-91 and 2000-01, real freight rates for the transport of export coal in the Hunter Valley fell 61 per cent (see figure 6.10).[11]

10 The nominal price series for 2000-01 includes the GST.

11 The nominal price series for 2000-01 includes the GST.

Figure 6.10 **Real rail freight price trends — Hunter Valley export coal**
1990-91 to 2000-01 (per tonne)



Note A nominal price index of rail freight rates with 1990-91 as the base year was deflated by the CPI (All groups) for Sydney. Excludes any 'monopoly rent' collected by the NSW government through the rail freight system. The nominal price series for 2000-01 includes the Goods and Services Tax.

Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); FreightCorp, Sydney, pers. comm., 15 March 2002.

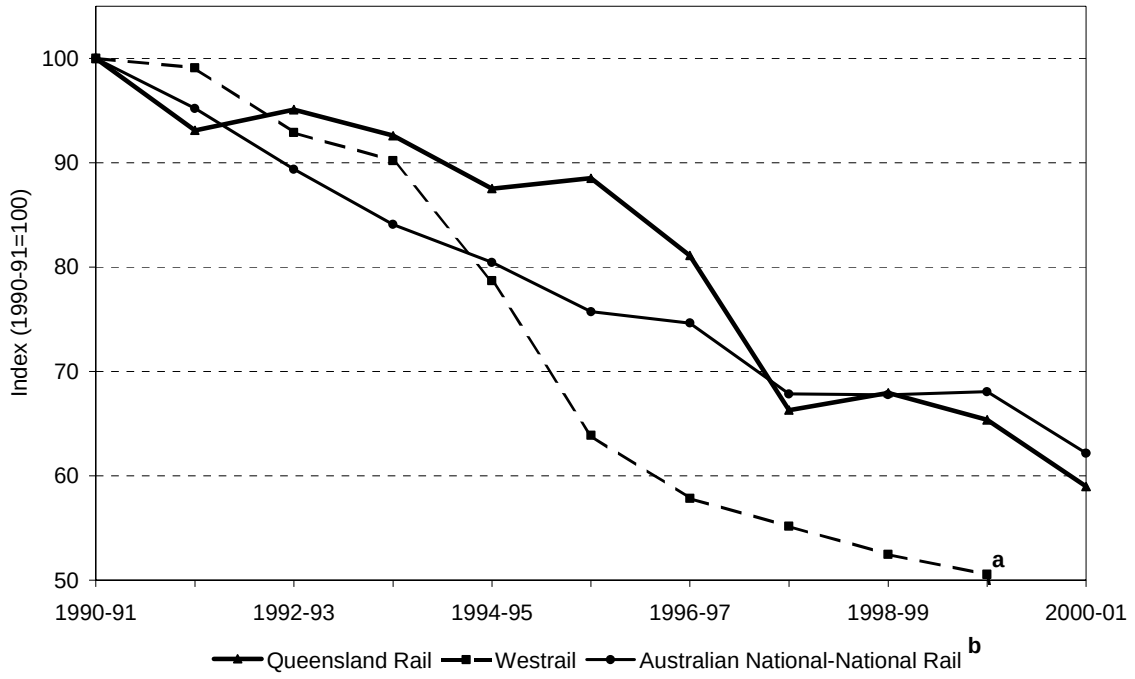
Prices for freight services were also measured as the average revenue from all freight services, that is, the real revenue earned per net freight kilometre. Movements in price indexes constructed using this approach reflect both changes in the mix of cargo carried and changes in the freight rates levied.

Price indexes for QR and Westrail were constructed using this approach. A joint AN-NRC index was constructed because of the restructuring that took place following the establishment of the NRC.

The real price index for QR fell by 41 per cent and the AN-NRC index fell by 38 per cent between 1990-91 and 2000-01. Westrail's index fell by 49 per cent between 1990-91 and 1999-2000 (see figure 6.11).[12]

12 The nominal price series for 2000-01 includes the GST.

Figure 6.11 **Real rail freight price trends — general freight**
1990-91 to 2000-01 (per ntkm)



Note Real price indexes were constructed from average freight rates estimated by dividing freight revenue by net tonne kilometres (ntkm) carried each year. The rate per ntkm was deflated by the relevant capital city CPI (All groups) and expressed as an index with 1990-91 as the base year. **a** Freight revenue figures for Westrail were unavailable for 2000-01. **b** Australian National (AN) provided both inter and intrastate freight services up until 1993-94, when AN's interstate freight business was transferred to the National Rail Corporation (NRC). AN continued to provide intrastate services for SA and Tasmania until November 1997. These services are included in the AN-NRC index. The price nominal prices series for 2000-01 include the Goods and Services Tax.

Data source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); NRC (2001 and previous issues), SCNPMGTE (1998 and previous issues); QR (2001 and previous issues); Westrail (2000 and previous issues).

Estimating the effect of price changes on business costs

Trends in real rail freight rates indicate whether expenditure on rail freight services as a business input cost is greater or less than it would have been if charges had increased at the same rate as general inflation. Trends in rail freight charges have been such that the freight rates levied by all the authorities considered in this study have declined in nominal terms, with even greater declines in real terms.

For each rail authority, an approximation of the real change in business costs was obtained by multiplying current rail authority freight revenue by the ratio of the CPI (All groups) index number and the real price index number for the rail authority in the relevant capital city (see figure 6.11). For this calculation, the impact of price changes on the consumption of rail services was ignored.

For QR, Westrail and the NRC, revenues earned from rail freight services would have been approximately $2.4 billion higher if rail freight rates, rather than falling, had risen in line with inflation (see table 6.4). This suggests that business costs were around 53 per cent lower than if prices had risen with the general inflation rate.

Table 6.4 **Real reduction in business costs — rail freight**
2000-01

	$ million	*Per cent*
Queensland Rail	1 601.5	53.3
Westrail[a]	327.9	56.0
National Rail Corporation	479.0	50.5
Total	2 408.4	53.0

[a] The estimate of gains to business for Westrail was estimated using the freight revenue figure and real price index for 1999-2000.

Source: PC estimates.

Shareholder outcomes

The financial performance of rail GTEs providing freight services was examined to provide information on the relationship between price trends and financial outcomes, such as the return on assets.

Some of the rail GTEs considered in this section provided both passenger and freight services over the study period. Their financial performance reflects both aspects of their business, whereas the price outcomes discussed earlier relate only to rail freight. This makes it difficult to draw strong conclusions about the significance of freight rates and shareholder outcomes over the study period.

Changing market conditions can also affect shareholder outcomes from year to year. Rail plays a dominant role in the transport of bulk commodities such as coal, grain, minerals and ore. Rail GTE's ability to generate revenue is affected by the demand and supply conditions in the markets for these commodities.

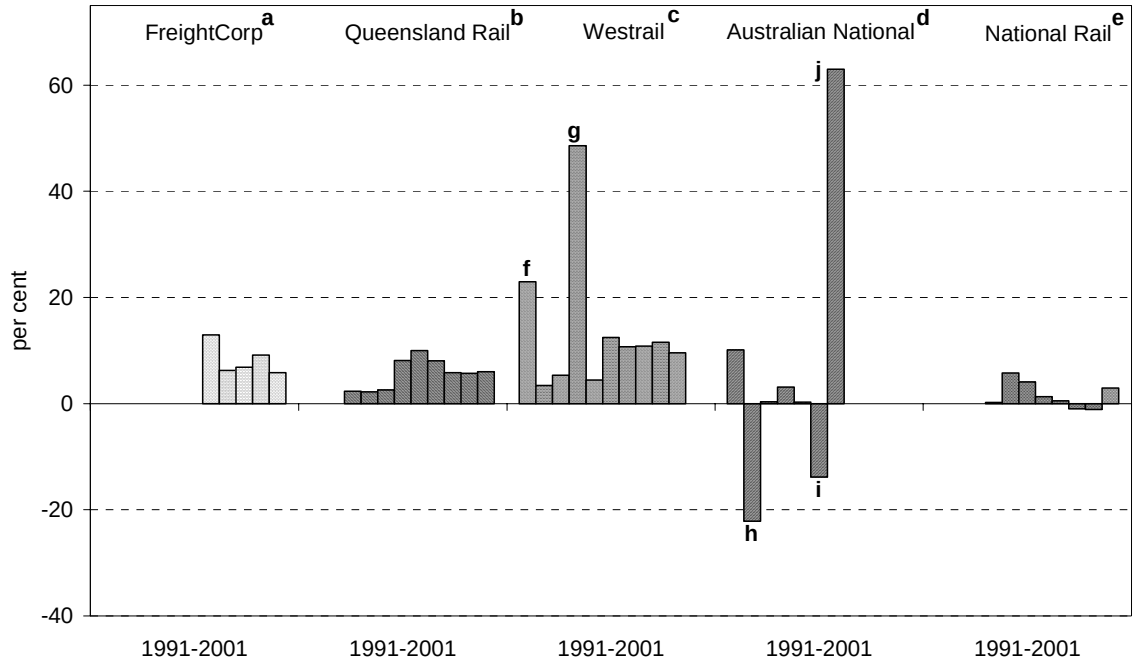
As discussed in section 6.1, the data used in calculating the shareholder outcomes presented in this section were taken from a number of sources. There may be inconsistencies between these data sources and the information published in the Annual Reports of rail GTEs. These inconsistencies arise because of definitional differences.

Profitability

As discussed in section 6.1, low prices relative to costs may not achieve a satisfactory return on assets, nor provide sufficient revenue to maintain and replace long-lived infrastructure assets.

Return on assets has been variable for most rail GTEs (see figure 6.12). Abnormals relating to restructuring, provisions for redundancy payments and changes to superannuation provisions have contributed to this variability.

Figure 6.12 **Return on assets — selected rail GTEs**
1990-91 to 2000-01



Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. **a** FreightCorp commenced operations in 1996-97. **b** The financial information reported for Queensland Rail refers to the whole rail entity and not to its freight operations. Financial information was not available for the years 1990-91 and 1991-92. **c** Financial information reported for Westrail refers to the whole rail entity and not to its freight operations. Westrail was privatised in 2000-01. **d** The financial information reported for Australian National (AN) relates to the whole rail entity and not to its freight operations. AN was privatised in 1997-98. **e** 1993-94 was National Rail Corporation's (NRC) first full year of operation. **f** Abnormal revenue relating to changes in superannuation provisions contributed to higher operating profit and return on assets in 1990-91. **g** Abnormal revenue mainly from a reduction in the provision for superannuation liabilities contributed to higher operating profit and return on assets in 1993-94. **h** Abnormal expenses relating mainly to redundancies contributed to an operating loss and a negative return on assets. **i** Abnormal expenses relating mainly to the transfer of business to the NRC and the restructuring of AN in preparation for its sale contributed to an operating loss and a negative return on assets in 1995-96. **j** Abnormal revenue relating mainly to the transfer of business and assets to the NRC, and the restructuring of AN and its balance sheet prior to sale contributed to a higher operating profit and return on assets.

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Since 1995-96, Westrail has earned a return on assets above the risk free rate (as approximated by the 10 year bond rate).[13] Since 1996-97, FreightCorp and QR have generally earned rates of return that are closer to the risk free rate.

Assessing the financial performance of the NRC and Australian National is difficult because of the restructuring that took place during much of the study period. During a five year establishment period, the NRC's three shareholders — the Commonwealth, NSW and Victorian Governments — agreed to provide the NRC with cash equity injections, the transfer of selected nominated assets, and compensation payments to meet any losses incurred from transferred functions. Company profits during the establishment period do not provide a good indication of financial performance because of payments being made by shareholder governments to the NRC. Shareholder compensation payments ceased in 1998.

That said, the returns earned by the NRC have been below the risk free rate in most years during the study period. In 2000, the Commonwealth Competitive Neutrality Complaints Office (CCNCO) found that the NRC had not earned a commercial rate of return for the years 1995-96 to 1998-99. The CCNCO found that a lower than commercial rate of return reflected the restructuring and delays involved in the formation of the NRC (CCNCO 2000).

Payments to government

Publicly-owned rail authorities are often required to return some of their earnings to their owner-governments in the form of dividend payments. This is justified on competitive neutrality and cost recovery grounds.

It has been a policy requirement that QR make dividend payments from 1995-96 and Westrail and FreightCorp from 1996-97. AN and the NRC were not required to make dividend payments during the study period.

The amount of dividend paid depends on the dividend policy agreed to with the respective State government. When dividend payout ratios are greater than 100 per cent it means that the rail authority is paying the dividend from sources other than current year profits.

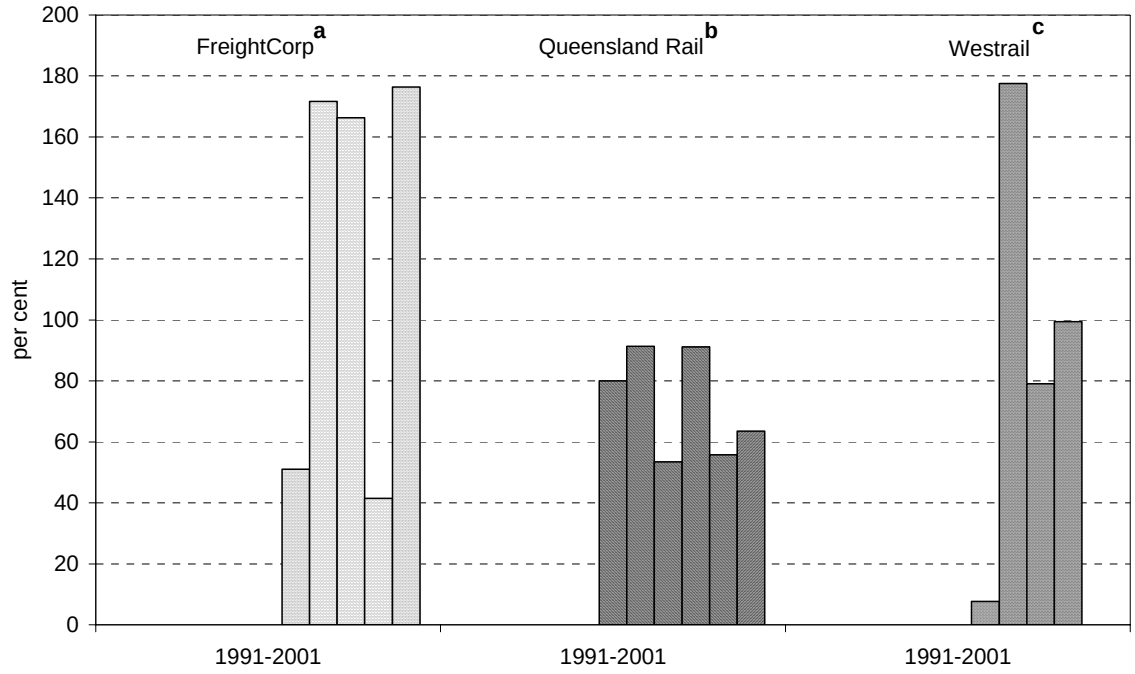
In most years, the dividend payout ratios for FreightCorp, Queensland Rail and Westrail have been higher than the payout rates of the private sector utility firms (see figure 6.13). In 1999-2000, the dividend payout ratios of private sector utilities averaged around 47 per cent and ranged between 27 to 56 per cent (PC 2001a).

[13] The rate of return on long-term bonds at June 2001 was 6 per cent — its lowest level over the study period.

Over the period, the dividend payout ratios of the three rail authorities averaged 72 per cent and ranged between 41 and 176 per cent.

FreightCorp, QR and Westrail have delivered dividend to equity ratios in the range of 3 to 30 per cent over the study period (see figure 6.14) with an average of 6 per cent. This is higher than that of private companies operating in the utilities market. In 1999-2000, for example, the dividend to equity ratio of private sector utility firms averaged around 5 per cent, but ranged between 2 and 10 per cent (PC 2001a).

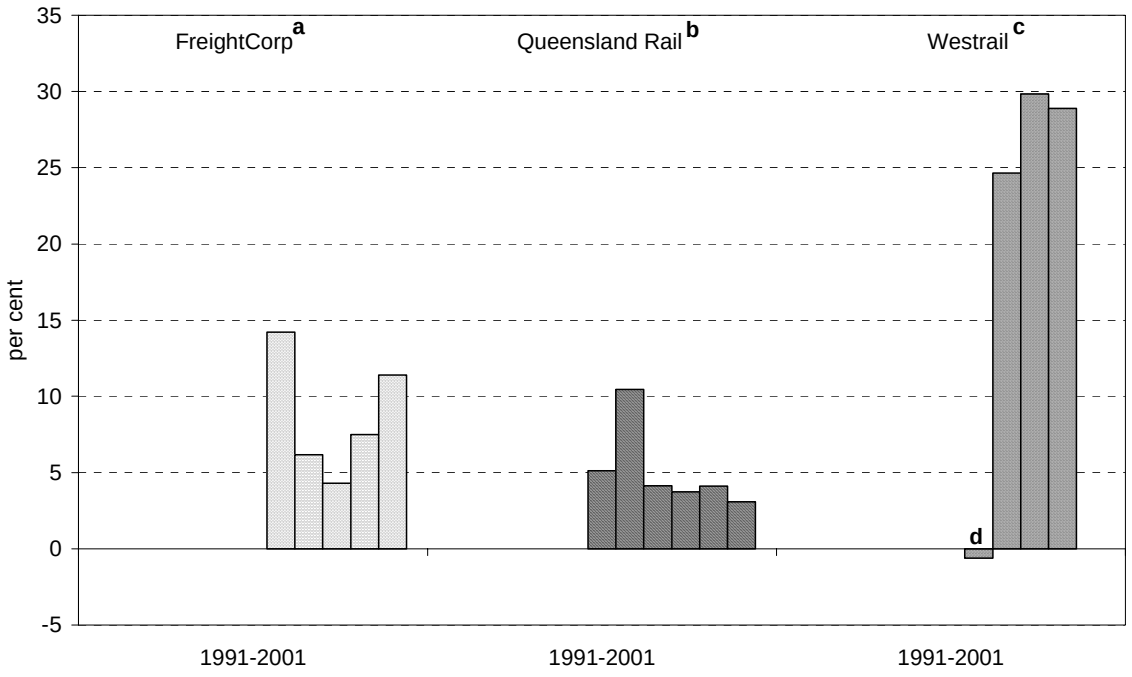
Figure 6.13 **Dividend payout ratio — selected rail GTEs**
1990-91 to 2000-01



Note Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for includes normal and special dividends and special levies on profits and revenues. **a** FreightCorp commenced operations in 1996-97. **b** The financial information reported for Queensland Rail (QR) refers to the whole rail entity and not to its freight operations. QR was first required to make dividend payments in 1995-96.**c** Financial information reported for Westrail refers to the whole rail entity and not to its freight operations. Westrail was privatised in 2000-01. Westrail was first required to make dividend payments in 1996-97.

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Figure 6.14 **Dividend to equity ratio — selected rail GTEs**
1990-91 to 2000-01



Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for includes normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. **a** FreightCorp commenced operations in 1996-97. **b** The financial information reported for Queensland Rail (QR) refers to the whole rail entity and not to its freight operations. QR was first required to make dividend payments in 1995-96. **c** Financial information reported for Westrail refers to the whole rail entity and not to its freight operations. Westrail was privatised in 2000-01. Westrail was first required to make dividend payments in 1996-97. **d** In 1996-97, Westrail had negative equity, resulting in a negative dividend to equity ratio

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Over the study period, shareholder outcomes as measured by return on assets, dividend payout and dividend to equity ratios have been variable, consistent with a period of significant restructuring and transition. Most rail authorities considered in the study have earned rates of return at or slightly above the risk free rate and some have delivered above average dividend payments. In these cases, rail authorities have been able to deliver real falls in freight charges without reducing profitability.

Attachment A — Data tables

Ports

Table A6.1 **Real port authority price trends — container ships (per TEU exchanged)**

1990-91 to 2000-01 (index 1990-91=100)

	Sydney	*Melbourne*	*Brisbane*	*Fremantle*	*Burnie*
1990-91	100.0	100.0	100.0	100.0	100.0
1991-92	98.3	103.5	98.0	106.2	97.9
1992-93	94.7	102.7	96.7	110.1	96.7
1993-94	73.8	100.7	94.8	109.0	93.9
1994-95	63.0	85.5	88.3	105.3	91.1
1995-96	59.9	77.9	85.0	98.4	87.7
1996-97	55.0	63.4	83.7	97.1	91.0
1997-98	54.5	57.8	83.3	92.9	91.1
1998-99	51.6	52.7	82.4	91.3	90.2
1999-00	50.4	40.1	81.0	88.0	88.5
2000-01	47.5	38.5	76.5	79.6	83.5

Note A real price index was constructed for Sydney, Melbourne, Brisbane, Fremantle and Burnie by estimating the ship and cargo-based charges levied using the ship visit parameters in table 6.1. The price per TEU exchanged was deflated by the relevant capital city CPI (All groups) and expressed as an index with 1990-91 as the base year. The price index for Sydney is based on charges levied by the Marine Services Board between 1990-91 and 1995-96, and by the Sydney Ports Corporation between 1996-97 and 2000-01. The price index for Melbourne is based on charges levied by the Melbourne Port Authority between 1990-91 and 1994-95 and the Melbourne Port Corporation (MPC) and the Victorian Channels Authority between 1995-96 and 2000-01. It was assumed that the ship is berthed at a dock for which the MPC does not levy a berth hire charge. The nominal price series for 2000-01 exclude the Goods and Services Tax.

Source: PC estimates based on ABS (Consumer Price Index, Australia, Cat. no. 6401.0); Burnie Port Corporation, pers. comm., 14 November 2001; Fremantle Port Authority, pers. comm., 28 September 2001; Melbourne Port Corporation, pers. comm., 24 September 2001; Port of Brisbane Corporation, pers. comm., 28 September 2001; Sydney Ports Corporation, pers. comm., 3 October 2001; VCA (2001) and ship visit parameters in table 6.1.

Table A6.2 **Real port authority price trends — bulk ships (per tonne exchanged)**

1990-91 to 2000-01 (index 1990-91=100)

	Sydney	*Melbourne*	*Fremantle*	*Burnie*
1990-91	100.0	100.0	100.0	100.0
1991-92	98.3	103.9	102.9	97.9
1992-93	98.0	103.2	101.3	96.7
1993-94	96.6	101.1	98.1	93.9
1994-95	89.0	88.6	92.9	91.1
1995-96	84.8	74.4	89.4	87.7
1996-97	81.0	63.2	86.1	90.8
1997-98	80.0	56.9	85.8	90.8
1998-99	78.7	53.5	82.4	89.9
1999-00	76.8	49.9	81.2	88.3
2000-01	72.3	47.7	77.2	83.4

Note A real price index was constructed for each port by estimating the ship and cargo-based charges levied using the ship visit parameters in table 6.2. The price per tonne exchanged was deflated by the relevant capital city CPI (All groups) and expressed as an index with 1990-91 as the base year. The price index for Sydney, is based on charges levied by the Marine Services Board between 1990-91 and 1995-96, and by the Sydney Ports Corporation between 1996-97 and 2000-01. The price index for Melbourne is based on charges levied by the Melbourne Port Authority between 1990-91 and 1994-95, and the Melbourne Port Corporation (MPC) and the Victorian Channels Authority between 1995-96 and 2000-01. It was assumed that the ship is berthed at a dock for which the MPC does not levy a berth hire charge. Wharfage is not levied on bulk cargo loaded and discharged at privately operated facilities in Fremantle's outer harbour. Instead, a Port Administration fee is levied on the private operators of these facilities. The price index for Fremantle incorporates the Port Administration Fee on a per tonne basis. The nominal price series for 2000-01 exclude the Goods and Services Tax.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); Burnie Port Corporation, pers. comm., 14 November 2001; Fremantle Port Authority, pers. comm., 18 December 2001; Melbourne Port Corporation, pers. comm., 1 February 2002; Sydney Ports Corporation, pers. comm., 11 December 2001; VCA (2001) and ship visit parameters in table 6.2.

Table A6.3 **Return on assets — port authorities**

1990-91 to 2000-01 (per cent)

	Sydney[a]	*Melbourne*[b]	*Brisbane*	*Fremantle*	*Burnie*
1990-91	**n.a.**	1.0	17.4	-30.7[c]	9.0
1991-92	**n.a.**	0.2	16.3	-0.6	10.9
1992-93	**n.a.**	4.9	17.6	7.4	8.5
1993-94	**n.a.**	5.3	17.7	14.3	15.3
1994-95	**n.a.**	7.0	7.9	15.7	5.1
1995-96	15.8	4.2	5.8	14.6	1.0
1996-97	15.5	8.1	5.5	14.9	1.0
1997-98	12.5	9.6	4.4	20.0	-8.1
1998-99	11.5	10.5	6.4	17.1	6.3
1999-00	10.2	6.9	6.3	15.6	-2.5
2000-01	7.9	6.1	5.0	13.5	-2.6

Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. **a** Prior to 1995-96, the Port of Sydney was operated by the Marine Services Board, and estimates of the return on assets are unavailable. **b** The return on assets ratio for the Port of Melbourne is based on the operations of the Melbourne Port Authority between 1990-91 and 1994-95, and on the combined operations of the Melbourne Port Corporation and the Victorian Channels Authority between 1995-96 and 2000-01. **c** Abnormal expenses contributed to an operating loss after tax and a negative return on assets in 1990-91. **n.a.** Not available.

Sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Table A6.4 **Dividend payout ratio — port authorities**

1990-91 to 2000-01 (per cent)

	Sydney[a]	*Melbourne*[b]	*Brisbane*	*Fremantle*
1990-91	**n.a.**	-46.5	10.7	-4.3[c]
1991-92	**n.a.**	-35.3	12.3	-13.3[c]
1992-93	**n.a.**	40.3	22.7	-68.4[c]
1993-94	**n.a.**	67.5	16.6	0.0[d]
1994-95	**n.a.**	35.2	33.0	0.0[d]
1995-96	56.5	29.2	38.8	0.0[d]
1996-97	61.3	25.2	37.5	0.0[d]
1997-98	50.0	43.9	39.7	10.0
1998-99	42.2	104.9	90.5	10.0
1999-00	50.0	53.3	94.8	19.9
2000-01	44.8	21.7	130.5	20.0

Note Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for includes normal and special dividends and special levies on profits and revenues. **a** Prior to 1995-96, the Port of Sydney was operated by the Marine Services Board, estimates of the dividend payout ratio are unavailable. **b** The dividend payout ratio for the Port of Melbourne is based on the operations of the Melbourne Port Authority between 1990-91 and 1994-95, and on the combined operations of the Melbourne Port Corporation and the Victorian Channels Authority between 1995-96 and 2000-01. **c** In 1990-91 and 1991-92, the Melbourne Port Authority earned an operating loss after tax, implying the payment of dividends from retained earnings. **c** Prior to commercialisation in 1996-97, the Fremantle Port Authority was required to pay a levy based on total revenue to the Western Australian Government. Between 1990-91 and 1992-93, Fremantle Port Authority earned an operating loss after tax, implying the payment of the levy from retained earnings. **d** Between 1993-94 and 1995-96, the levy was rebated back to the Fremantle Port Authority and in 1996-97, no dividend was paid. Consequently, the dividend payout ratio for these years was zero. **n.a.** Not available.

Sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Table A6.5 **Dividend to equity ratio — port authorities**

1990-91 to 2000-01 (per cent)

	Sydney[a]	*Melbourne*[b]	*Brisbane*	*Fremantle*[c]
1990-91	**n.a.**	1.6	2.2	-10.4[c]
1991-92	**n.a.**	1.9	2.3	-3.3[c]
1992-93	**n.a.**	1.0	4.5	-2.9[c]
1993-94	**n.a.**	2.2	3.3	0[d]
1994-95	**n.a.**	2.3	2.8	0[d]
1995-96	11.0	1.0	1.6	0[d]
1996-97	10.3	1.6	1.8	0[d]
1997-98	5.2	2.8	1.2	2.7
1998-99	3.9	8.6	3.8	1.5
1999-00	3.6	1.9	4.0	2.5
2000-01	2.9	0.8	2.7	2.4

Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for includes normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. **a** Prior to 1995-96, the Port of Sydney was operated by the Marine Services Board, estimates of the dividend to equity ratio are unavailable. **b** The dividend to equity ratio for the Port of Melbourne is based on the operations of the Melbourne Port Authority between 1990-91 and 1994-95, and on the combined operations of the Melbourne Port Corporation and the Victorian Channels Authority between 1995-96 and 2000-01. **c** Prior to commercialisation in 1996-97, the Fremantle Port Authority was required to pay a levy based on total revenue to the Western Australian Government. Between 1990-91 and 1992-93, the Fremantle Port Authority had negative equity, resulting in a negative dividend to equity ratio. **d** Between 1993-94 and 1995-96, the levy was rebated back to the Fremantle Port Authority and in 1996-97, no dividend was paid. Consequently, the dividend to equity ratio for these years was zero. **n.a.** Not available.

Sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Rail freight

Table 6.6 **Net freight tonne kilometres carried by rail**
1990-91 to 1999-00

	Net freight tonne kilometres
1990-91	88.3
1991-92	89.3
1992-93	92.1
1993-94	97.8
1994-95	99.7
1995-96	104.3
1996-97	114.4
1997-98	125.2
1998-99	127.4
1999-00	134.2

Source: ARA (2001).

Table A6.7 **Real rail freight price trends — wheat (per tonne)**
1995-96 to 2000-01 (index 1996-97=100)

	NSW	*Victoria*	*Queensland*	*SA*	*WA*	*National*
1996-97	100.0	100.0	100.0	100.0	100.0	100.0
1997-98	101.3	100.1	100.1	100.0	98.9	100.0
1998-99	92.6	99.2	97.0	103.2	96.4	96.2
1999-00	91.4	91.3	93.5	98.4	90.3	92.1
2000-01	78.1	80.1	82.8	93.7	91.3	84.7

Note The real price index for each State reflects the average cost of transporting wheat from silos to the port. The average is equal to the cost of transporting grain from each silo, weighted by the tonnage of Export Pool grain moved from that site as a proportion of the aggregate State tonnage of Australian Wheat Board Pool grain moved to the port for export. The nominal cost per tonne was deflated by the relevant capital city CPI (All groups) and expressed as an index with 1996-97 as the base year. The nominal price series for 2000-01 include the Goods and Services Tax.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); Australian Wheat Board, Melbourne, pers. comm., 8 April 2002.

Table A6.8 **Real rail freight price trends — coal (per tonne)**

1995-96 to 2000-01 (index 1995-96=100)

	NSW	*Queensland*
1995-96	100.0	100.0
1996-97	88.9	98.3
1997-98	76.2	91.1
1998-99	68.8	84.9
1999-00	57.6	80.5
2000-01	48.1	73.9

Note Nominal average freight rates were deflated by the relevant capital city CPI (All groups) and expressed as an index with 1995-96 as the base year. Excludes any 'monopoly rent' or 'de facto royalties' collected by the NSW and Queensland governments through the rail freight system. The nominal price series for 2000-01 include the Goods and Services Tax.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); Queensland Mining Council, Brisbane, pers. comm., 21 January 2002.

Table A6.9 **Real rail freight price trends — Hunter Valley export coal (per tonne)**

1990-91 to 2000-01 (index 1990-91=100)

Year	*Per tonne*
1990-91	100.0
1991-92	105.2
1992-93	97.1
1993-94	88.8
1994-95	74.3
1995-96	74.6
1996-97	68.4
1997-98	62.7
1998-99	56.3
1999-00	47.5
2000-01	39.2

Note A nominal price index of rail freight rates with 1990-91 as the base year was deflated by the CPI (All groups) for Sydney. Excludes any 'monopoly rent' collected by the NSW government through the rail freight system. The nominal price series for 2000-01 includes the Goods and Services Tax.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); FreightCorp, Sydney, pers. comm., 15 March 2002.

Table A6.10 **Real rail freight price trends — general freight (per ntkm)**

1990-91 to 2000-01 (index 1990-91=100)

	Queensland Rail	*Westrail*[a]	*Australian National-National Rail*[b]
1990-91	100.0	100.0	100.0
1991-92	93.1	99.1	95.2
1992-93	95.1	92.9	89.4
1993-94	92.6	90.2	84.1
1994-95	87.5	78.7	80.5
1995-96	88.5	63.9	75.7
1996-97	81.1	57.8	74.6
1997-98	66.3	55.2	67.8
1998-99	68.0	52.5	67.8
1999-00	65.4	50.5	68.1
2000-01	59.0	**n.a.**	62.2

Note Real price indexes were constructed from average freight rates estimated by dividing freight revenue by net tonne kilometres (ntkm) carried each year. The rate per ntkm was deflated by the relevant capital city CPI (All groups) and expressed as an index with 1990-91 as the base year. **a** Freight revenue figures for Westrail were unavailable for 2000-01. **b** Australian National (AN) provided both inter and intrastate freight services up until 1993-94, when AN's interstate freight business was transferred to the National Rail Corporation (NRC). AN continued to provide intrastate services for SA and Tasmania until November 1997. These services are included in the AN-NRC index. The nominal price series for 2000-01 include the Goods and Services Tax.

Source: PC estimates based on ABS (*Consumer Price Index*, *Australia*, Cat. no. 6401.0); NRC (2001 and previous issues), SCNPMGTE (1998 and previous issues); QR (2001 and previous issues); Westrail (2000 and previous issues).

Table A6.11 **Return on assets — selected rail GTEs**

1990-91 to 2000-01 (per cent)

	FreightCorp[a]	*Queensland Rail*[b]	*Westrail*[c]	*Australian National*[d]	*National Rail*[e]
1990-91	**n.r.**	**n.a.**	23.0[f]	10.1	**n.r.**
1991-92	**n.r.**	**n.a.**	3.4	-22.2[h]	**n.r.**
1992-93	**n.r.**	2.3	5.4	0.4	**n.r.**
1993-94	**n.r.**	2.2	48.6[g]	3.1	0.2
1994-95	**n.r.**	2.6	4.5	0.3	5.8
1995-96	**n.r.**	8.1	12.5	-13.8[i]	4.1
1996-97	12.9	10.0	10.7	63.1[j]	1.3
1997-98	6.3	8.1	10.8	**n.r.**	0.6
1998-99	6.9	5.8	11.6	**n.r.**	-1.0
1999-00	9.1	5.7	9.6	**n.r.**	-1.1
2000-01	5.8	6.0	**n.a.**	**n.r.**	2.9

Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. [a] FreightCorp commenced operations in 1996-97. [b] The financial information reported for Queensland Rail refers to the whole rail entity and not to its freight operations. Financial information was not available for the years 1990-91 and 1991-92.[c] Financial information reported for Westrail refers to the whole rail entity and not to its freight operations. Westrail was privatised in 2000-01. [d] The financial information reported for Australian National (AN) relates to the whole rail entity and not to its freight operations. AN was privatised in 1997-98. [e] 1993-94 was National Rail Corporation's first full year of operation. [f] Abnormal revenue relating to changes in superannuation provisions contributed to higher operating profit and return on assets in 1990-91. [g] Abnormal revenue mainly from a reduction in the provision for superannuation liabilities contributed to higher operating profit and return on assets in 1993-94. [h] Abnormal expenses relating mainly to redundancies contributed to an operating loss and a negative return on assets. [i] Abnormal expenses relating mainly to the transfer of business to the NRC and the restructuring of AN in preparation for its sale contributed to an operating loss and a negative return on assets in 1995-96. [j] Abnormal revenue relating mainly to the transfer of business and assets to the NRC, and the restructuring of AN and its balance sheet prior to sale contributed to a higher operating profit and return on assets. **n.r.** Not relevant. **n.a.** Not available.

Sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Table A6.12 **Dividend payout ratio — selected rail GTEs**

1990-91 to 2000-01 (per cent)

	FreightCorp[a]	*Queensland Rail*[b]	*Westrail*[c]
1990-91	**n.r.**	**n.r.**	**n.r.**
1991-92	**n.r.**	**n.r.**	**n.r.**
1992-93	**n.r.**	**n.r.**	**n.r.**
1993-94	**n.r.**	**n.r.**	**n.r.**
1994-95	**n.r.**	**n.r.**	**n.r.**
1995-96	**n.r.**	80.0	**n.r.**
1996-97	51.0	91.3	7.6
1997-98	171.6	53.4	177.6
1998-99	166.3	91.1	79.1
1999-00	41.5	55.8	99.4
2000-01	176.4	63.5	**n.a.**

Note Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for includes normal and special dividends and special levies on profits and revenues. [a] FreightCorp commenced operations in 1996-97. [b] The financial information reported for Queensland Rail (QR) refers to the whole rail entity and not to its freight operations. QR was first required to make dividend payments in 1995-96. [c] Financial information reported for Westrail refers to the whole rail entity and not to its freight operations. Westrail was privatised in 2000-01. Westrail was first required to make dividend payments in 1996-97. **n.r.** Not relevant. **n.a.** Not available.

Sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

Table A6.13 **Dividend to equity ratio — selected rail GTEs**

1990-91 to 2000-01 (per cent)

	FreightCorp[a]	*Queensland Rail*[b]	*Westrail*[c]
1990-91	**n.r.**	**n.r.**	**n.r.**
1991-92	**n.r.**	**n.r.**	**n.r.**
1992-93	**n.r.**	**n.r.**	**n.r.**
1993-94	**n.r.**	**n.r.**	**n.r.**
1994-95	**n.r.**	**n.r.**	**n.r.**
1995-96	**n.r.**	5.1	**n.r.**
1996-97	14.2	10.5	-0.6
1997-98	6.2	4.1	24.7
1998-99	4.3	3.7	29.8
1999-00	7.5	4.1	28.9
2000-01	11.4	3.1	**n.a.**

Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for includes normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. [a] FreightCorp commenced operations in 1996-97. [b] The financial information reported for Queensland Rail (QR) refers to the whole rail entity and not to its freight operations. QR was first required to make dividend payments in 1995-96. [c] Financial information reported for Westrail refers to the whole rail entity and not to its freight operations. Westrail was privatised in 2000-01. Westrail was first require to make dividend payments in 1996-97. [d] In 1996-97, Westrail had negative equity, resulting in a negative dividend to equity ratio. **n.r.** Not relevant. **n.a.** Not available.

Sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues).

7 Telecommunications

Key outcomes

- The real price of telecommunications services in Australia fell by more than 20 per cent over the period 1990-91 to 2000-01, or an average of 2 per cent each year.
- Telecommunications expenditure has increased in real terms due to increased demand, with Australian Bureau of Statistics data suggesting that Australian households spent around $7.5 billion on telecommunications services in 2000-01.
- The prices paid by household and business customers appear to have declined at broadly similar rates since June 1998.
- The same appears to be true of metropolitan and non-metropolitan customers, although a different methodology was used and the data is less conclusive.
- Falling real telecommunications prices represented a real saving on telecommunications expenditure by households of up to $2 billion in 2000-01, if demand effects are overlooked.
- The savings by lower income groups are larger when measured as a proportion of their household expenditure, although households in higher income brackets make larger savings in dollar terms.
- Most but not all of the service quality indicators examined showed an improvement, suggesting that price reductions had not been achieved at the expense of service quality.
- Concessions are provided to customers and additional price caps are in place to try to ameliorate the effects of price changes on low-spending customers.
- Telstra has paid a dividend in each year over the study period. Up until 1997-98, all of these dividends were paid to the Commonwealth Government.
- During the period of part private ownership (1997-98 to 2000-01), return on assets has averaged 21 per cent, compared with 13 per cent for the period of full public ownership (1990-91 to 1996-97).

The Australian telecommunications industry has undergone significant reform in the past decade. Beneficial reforms can be expected to lead to reduced prices. Further, if tariff rates are rebalanced from a focus on usage to be more reflective of the costs of supplying network access to customers, observed price trends may vary between

households situated in different areas, and between household and business customers.

In this chapter, trends in real prices paid by household customers for telecommunications services are presented for the period 1990-91 to 2000-01. The impact of these real price trends on household expenditure for a range of income groups is also examined.

Drawing on the results of a study conducted by the Communications Research Unit (CRU) for the Australian Competition and Consumer Commission (ACCC), differences in price trends between metropolitan and non-metropolitan customers, between household and business customers, and between concession and non-concession customers are presented.[1]

Quality of service measures were examined to determine whether any declines in real prices over the study period have been associated with lower service quality. Finally, the financial performance of Telstra was examined to see if price declines have been associated with falling rates of return.

7.1 Industry reforms

In the past decade, market reforms and institutional changes have been introduced in the telecommunications industry. In addition to these developments, there have been major advances in technology.

Market reforms

The main changes to the market and governance of the telecommunications industry in the past decade have included the:

- introduction of competition;
- introduction of telecommunications specific access and conduct arrangements;
- partial privatisation of Telstra following public share offers in 1997 and 1999;
- transfer of regulatory responsibilities from the Australian Telecommunications Authority (AUSTEL) to the Australian Communications Authority (ACA) and the ACCC; and the

[1] The CRU is a research unit within the Commonwealth Department of Communications, Information Technology and the Arts.

- inclusion of contributions by new carriers to the funding of the Universal Service Obligation (USO), in addition to funding by Telstra.

The scope for competition was increased by the removal of regulatory barriers to entry and the introduction of telecommunications specific access arrangements. This liberalisation was introduced by two main pieces of legislation — the *Telecommunications Act 1991* and the *Telecommunications Act 1997*.

Prior to the 1991 legislation, Telecom had a monopoly on the installation, maintenance, and operation of the telecommunications network and the supply of basic telecommunications services within Australia.[2] However, the provision of value added services, private networks, customer equipment and cable installation, was subject to competition. This meant that although alternative service providers could compete with Telecom to provide value added services, they relied on Telecom's network to deliver these services.

The *Telecommunications Act 1991* established a general carrier duopoly with Optus entering the market in competition with Telstra. Initially, Optus only competed in the provision of long-distance services and the effect of competition on long-distance call charges was soon evident. Optus (and, since 1997, other carriers) now compete with Telstra for the provision of local calls and other telecommunications services.

The 1991 Act also provided the legislative foundation for competition in mobile telecommunications services. Optus and Vodafone entered the market in competition with Telecom in 1992 and 1993 respectively (PC 2001c).

One important feature of telecommunications is that services rely on interconnectivity with the network of each carrier. There cannot be effective competition without each carrier being able to access the network of each of the other carriers. As a result, the introduction of the regulated duopoly on the fixed line network required the introduction of arrangements enabling Optus to access Telecom's network. The new mobile telecommunications providers also required access to the fixed line network.

The second period of market reform in the telecommunications industry followed the introduction of the *Telecommunications Act 1997* which remains the governing legislation of the industry. This Act provided for unrestricted entry into the telecommunications market.

[2] Telecom began trading as Telstra in 1995.

In conjunction with the opening up of the industry to competition, new legislative provisions for access were inserted in the *Trade Practices Act 1974* under Part XIC. These provisions provide for carriers to gain access to 'declared' telecommunications services such as originating and terminating access for the Public Switched Telephone Network (PSTN). In addition, specific telecommunications anti-competitive conduct provisions were established in Part XIB of the *Trade Practices Act 1974*.

When a service is declared, the access supplier has obligations to ensure that the operation and technical quality provided to the competing carrier are equivalent to that of the service provided to itself. Access arrangements between carriers may be governed by agreements between the access provider and the access seeker, through undertakings offered by the access provider, or by the ACCC through arbitration (DCITA 2000).

Universal service obligation and retail price controls

There are two main areas of reform which have directly affected the prices of telecommunications services in the last decade — the USO and retail price controls.

The telecommunications industry must comply with a number of regulatory requirements under the *Telecommunications (Consumer Protection and Service Standards) Act 1999*, which affect telecommunications prices. This Act imposes a USO, price controls, obligations under the customer service guarantee, and obligations in relation to the provision of emergency call services and directory assistance services.

Universal service obligation

The telecommunications USO is similar to community service obligations (CSOs) operating in other infrastructure industries. However, it is broader in that services must be available to all customers on an equitable basis, whereas CSOs typically relate to services provided to targeted customer groups.

Telstra (and formerly Telecom) has always been the universal service provider. Although the current legislation allows for alternative providers of the USO, Telstra remains the only declared universal service provider.

Given Telstra's practice of imposing uniform charges across the country, the USO will often necessitate the provision of services at a price below the cost of supplying the service, particularly in rural and remote areas.

During the period of the regulated duopoly, Telstra and Optus contributed to the cost of the USO in proportion to their shares of timed telecommunications traffic. Following the introduction of open competition and the entry of new carriers, the USO is now funded by a levy on each carrier in proportion to its revenue share.

In 1999, a digital data service obligation was imposed on the industry in addition to the voice USO.[3] The current USO requires that standard telephone services, payphone services and digital data services are reasonably accessible to all Australians on an equitable basis.

The net cost of the USO to the universal service provider is the cost to providing the USO, minus the revenue it receives for providing the service. In recent years, the net cost to Telstra of fulfilling the USO has been set by legislation at amounts below what Telstra and the ACA have estimated it to be. That amount forms the basis for calculating contributions by other carriers.

Retail price controls

Typically, telecommunications price structures include access and usage charges. Basic access fees are typically flat fees levied periodically which do not reflect actual usage. Call charges are usage charges which range from a flat fee per call (local calls) to two-part charges consisting of a flagfall and a variable charge which may vary by time-of-day, distance and call duration (long-distance and mobile calls).

The complexity of telecommunications price structures has been increased, particularly in recent years, through the introduction of pricing plans, discounts and special offers.

With the introduction of new services, service types and pricing structures, there has been some rebalancing of tariffs between different services, classes of customer or between customer access charges and usage charges to make them more reflective of costs. However, the imposition of regulatory price controls has restricted the extent to which rebalancing is possible.

The telecommunications industry is subject to regulatory price controls including an untimed local call requirement and retail price caps on service charges. The requirement that local calls be untimed applies to all carriers and to both household and business voice services as well as household data, facsimile and Internet access.

[3] The digital data service obligation requires reasonable and equitable access on a 64 kbps ISDN service or a broadly comparable satellite downlink service be provided to at least 96 per cent of the Australian population.

Telstra's services have been subject to price caps since 1989. Under the (CPI-X) formula, average rates of change in service prices over a period must be kept below the change in the consumer price index (CPI) by a specified amount (X) related to expected productivity improvements. These regulatory price controls are designed to ensure that savings from improved efficiency are passed on to customers. The price controls imposed on Telstra over the past decade are summarised in table 7.1.[4]

An overall price cap has always applied to a comprehensive basket of services. Currently, this basket comprises connections, line rentals, local, trunk and international calls, leased lines and mobile services.

Table 7.1 **Price caps on Telstra's retail charges**
1989–2001

Period	*Price caps for a comprehensive basket of services*	*Price sub-caps*
July 1989 to June 1992	CPI – 4 per cent	Untimed local calls: CPI Household rentals: CPI
July 1992 to December 1995	CPI – 5.5 per cent	Connections: CPI – 2 per cent[a] Rentals: CPI – 2 per cent[a] Untimed local calls: CPI – 2 per cent[a] STD calls: CPI – 5.5 per cent[a] IDD calls: CPI – 5.5 per cent
January 1996 to June 1999	CPI – 7.5 per cent	Untimed local calls: 25 cents (household and business) Local calls from public payphones: 40 cents Connections: CPI – 1 per cent Line rentals: CPI – 1 per cent Trunk calls: CPI – 1 per cent International calls: CPI – 1 per cent
June 1999 to June 2001[b]	CPI – 5.5 per cent[c]	Basket of local calls and line rentals: CPI Basket of connection services: CPI Untimed local calls: 25 cents, 22 cents (from July 2000) Local calls from public payphones: 40 cents (40 cents from July 2000)

a Yearly increases were limited to CPI. **b** These arrangements have been extended to June 2002. **c** A low-spending household sub-cap of CPI – 1 per cent also applies to a basket of services comprising connections, line rentals, local, trunk and international call services, with revenue weights based on the average bill size of the bottom 50 per cent of Telstra's pre-selected customers. In addition, Telstra must obtain consent from the Australian Competition and Consumer Commission for a line rental increase of more than CPI where that increase would affect the bottom 10 per cent of Telstra's pre-selected customers.

Sources: ACCC (2001a); DCITA, Canberra, pers. comm., 2 May 2002; PC (1999c; 2001c).

4 The Minister for Communications, Information Technology and the Arts recently announced changes to these price controls to take effect in July 2002 (Alston 2002).

There are also price sub-caps on some services and sub-sets of services. Sub-caps have taken the form of maximum charges (for example, caps of 25 cents on local calls) or maximum increases to charges in a given period. These sub-caps have varied over the decade and are also summarised in table 7.1.

In addition to imposing the above price caps, the ACCC may also impose tariff filing directions and record keeping rules under Part XIB of the *Trade Practices Act 1974*. Under the tariff filing provisions, the ACCC may require a carrier or carriage service provider with a substantial degree of market power to file certain tariff information with the ACCC. There are also specific tariff filing provisions applicable to Telstra. Under the record keeping provisions, the ACCC may impose rules specifying what records are kept, how reports are prepared and when reports are provided.

Other regulatory obligations

In addition to the USO and price control arrangements, there are a number of other regulatory obligations affecting the telecommunications industry. These obligations are aimed at achieving social objectives or promoting competition in the industry.

Under the *Telecommunications (Consumer Protection and Service Standards) Act 1999*, the industry is required to provide certain services in accordance with government social policy. These include emergency call services, operator services and directory assistance. The Act also establishes the National Relay Service, which enables people with hearing or speech impairments to access telecommunications services using a combination of voice, modem, speech-to-speech or telephone typewriter applications (ACA 2001a).

The telecommunications industry is also subject to carrier pre-selection and number portability requirements. Carrier pre-selection allows customers to change carriers without dialling extra digits each time a call is made. Number portability enables customers to change carriers without changing their telephone number. These requirements have been introduced to facilitate competition between carriers and carriage service providers by promoting customer choice and reducing transaction costs for customers (PC 1999c).

7.2 Price outcomes for metropolitan households

The telecommunications component of the Australian Bureau of Statistics (ABS) CPI was used to indicate the trend in telecommunications prices over the study period.

This price index has been adjusted by the ABS to accommodate substantial changes in telecommunications services, including the introduction of new services and changes in the importance of individual services.

Until the March quarter of 1998, the telecommunications services priced for the CPI included telephone rental, connection and call charges (local, STD and international). From 1998, the ABS also included calls from payphones and mobile phones and from fixed phones to mobile phones, and a selection of pricing plans and discount arrangements. In 1999, Internet services were also added to the index (ABS, Canberra, pers. comm., 29 November 2001).

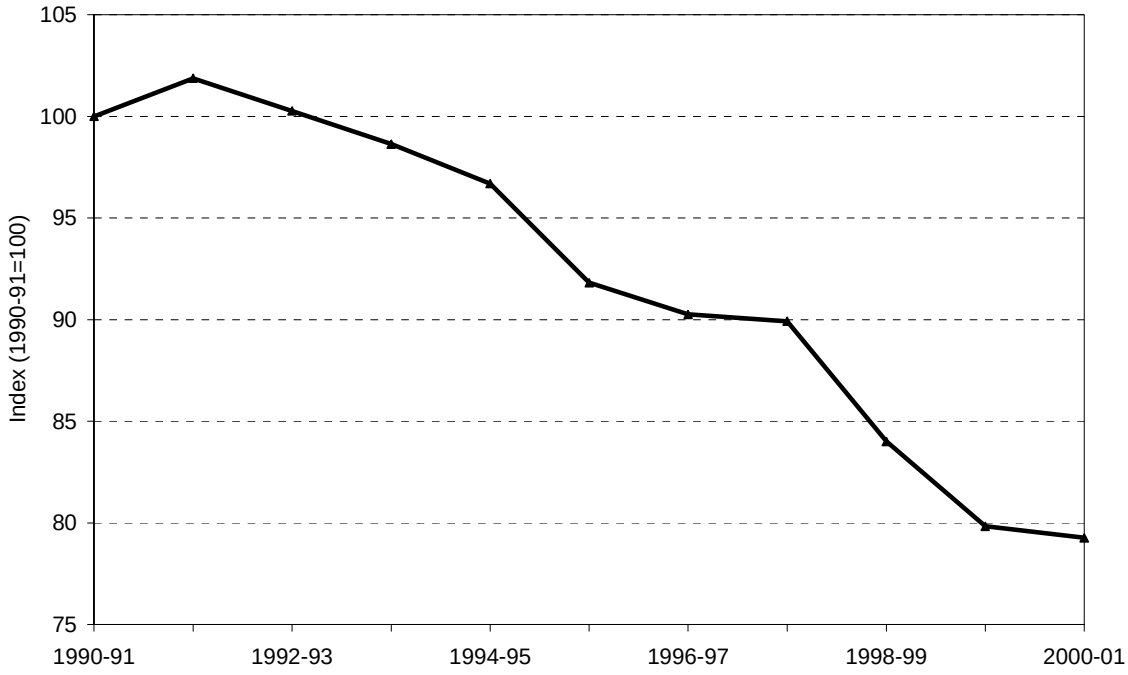
Calls are priced at varying times of the day and for a variety of distances. In addition, the ABS now prices services from a number of providers, whereas at the beginning of the period Telstra was the sole provider (ABS, Canberra, pers. comm., 29 November 2001).

The real price of telecommunications services in Australia dropped by more than 20 per cent over the period, representing an average of 2 per cent each year (see figure 7.1). This decline continues a downward trend in real telecommunications prices which occurred during the 1970s and 1980s.

The downward trend in telecommunications prices may be attributable to a number of factors including the introduction of competition, regulatory price caps, and technology developments. It is likely that each factor has had a different influence on each of the individual telecommunications services.

Figure 7.1 **Real telecommunications price trends — metropolitan households**

Weighted average of all capital cities, 1990-91 to 2000-01



Note The real price index was obtained by rebasing the CPI (telecommunications) price index to a base year of 1990-91 and then deflating the rebased index by the rebased CPI (All groups) price index. In 1998, payphone and mobile phone services were introduced into the series and in 1999 the index changed again to include Internet services. The price index for 2000-01 includes the Goods and Services Tax.

Data source: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0).

Although it is not possible to determine the effect of regulatory price controls on Telstra's prices, the ACCC has published data which compares nominal price changes in a basket of Telstra's services with the regulatory price caps on the same basket of services (see table 7.2) (ACCC 2001a). In recent years, nominal changes in Telstra's prices have closely matched the changes allowed under the price control arrangements.

Table 7.2 **A comparison of nominal price changes with allowed changes under regulatory price controls**

1989-90 to 1999 (per cent)

Year	*CPI factor*	*X factor*	*Maximum nominal increase*[a]	*Actual price change*
1989-90	7.3	4.0	3.3	0.0
1990-91	8.0	4.0	7.3	3.5
1991-92	5.3	4.0	5.1	5.1
1992-93	1.9	5.5	-3.6	-3.6
1993-94	1.0	5.5	-4.5	-3.7
1994-95	1.8	5.5	-4.5	-5.6
1995[b]	1.6	2.8	-0.1	-1.4
1996	4.6	7.5	-2.9	-4.3
1997	2.6	7.5	-3.5	-3.9
1998	0.3	7.5	-6.7	-6.8
1999[c]	0.5	3.8	-3.3	-3.4

[a] Maximum nominal increase is calculated as CPI-X plus any allowance carried forward from the previous year. [b] Year from July only. [c] Year to June only — allowance carried forward is 0.06/2 = 0.03 per cent

Source: ACCC (2001a).

Real price changes of individual services between 1996-97 and 1999-2000 have varied (see table 7.3). The ACCC noted that the increase in the basic access price and the sharp decrease in the price of local calls in 1999-2000 were evidence of rebalancing within the PSTN basket of services (ACCC 2001b).

Table 7.3 **Changes in real prices of telecommunications services**

1996-97 to 1999-2000 (per cent)

Telecommunications service	*Real price change*
Local calls	-13.0
National long-distance calls	-23.5
International calls	-53.0
Mobile services	-18.9[a]
Basic access	8.8[b]

Note A negative sign means that real prices declined over the period. [a] Most of this change occurred between 1998-99 and 1999-2000, when the price of mobile services decreased by around 13 per cent. [b] Between 1998-99 and 1999-2000, basic access charges increased by around 10 per cent.

Source: ACCC (2001b).

Implications for household expenditure

Telecommunications prices have a direct effect on household expenditure. They also have an indirect effect when changes in telecommunications prices paid by businesses, are passed on to customers in the form of higher or lower prices for final

products and services. These indirect effects will be examined in a forthcoming Productivity Commission research study.

The direct impact of changes in the price of telecommunications over the decade on real household expenditure in 2000-01 was estimated. This was done by multiplying the actual household expenditure on telecommunications in 2000-01, by the difference between the movement in its price over the ten years to 2000-01 and the movement in the CPI over the same ten year period. For this calculation, the impact of price changes on consumption was ignored.

In 2000-01, Australian households spent around $7.5 billion on telecommunications services.[5]

Telecommunications price trends were such that prices generally declined faster than the CPI (All groups) in most capital cities. Accordingly, household expenditure decreased relative to the expenditure that would have occurred, if prices had changed by the CPI (All groups) (see table 7.4).

The expenditure changes in 2000-01, arising from price changes over the previous decade and measured in dollars per year per household, were largest for households in the highest income quintile (see table 7.4). However, the changes were more significant, when measured as a percentage of household expenditure per year, for those households in the lowest income quintile (see table 7.4).

Table 7.4 **Real changes to household telecommunications expenditure arising from price changes over the previous decade, by income quintile**

Weighted average of all capital city households, 2000-01

Income quintile	*$ per household*	*% household expenditure*
Lowest 20%	-193.28	-1.01
Second quintile	-240.23	-0.87
Third quintile	-284.97	-0.76
Fourth quintile	-335.47	-0.68
Highest 20%	-386.85	-0.56
All households	-295.01	-0.70

Note A negative sign means that households incurred a real decrease in telecommunications expenditure because real prices declined over the period.

Source: PC estimates based on ABS (*Household Expenditure Survey Australia 1998-99*, Cat. no. 6535.0).

[5] Actual household expenditure in 2000-01 was derived by taking the proportion of total household expenditure that was spent on telecommunications in the 1998-99 Household Expenditure Survey (ABS 2000a). The proportion or expenditure weight from the survey was then multiplied by total household expenditure in 1998-99 and inflated to 2000-01 prices using the CPI deflator, to obtain an estimate of actual household expenditure on telecommunications in 2000-01.

The real decrease in household telecommunications expenditure across all capitals was approximately $2 billion in 2000-01 (see table 7.5).

Table 7.5 **Total change to household telecommunications expenditure arising from price changes over the previous decade**
2000-01

	Households	*Change per household*	*Total change*
	No.	$	$'000
All capital cities	4 533 000	-295.01	-1 337 276
Total Australia[a]	**7 122 800**	**-274.78**	**-1 957 208[a]**

Note A negative sign means that households incurred a real decrease in telecommunications expenditure because real prices declined over the period. **a** The total change for Australia is based on the assumption that price changes in the capital cities are the same as price changes in other areas.

Source: PC estimates based on ABS (*Household Expenditure Survey Australia 1998-99*, Cat. no. 6535.0).

The preceding estimate is indicative only of the general magnitude of the change to household expenditure resulting from prices changes over the previous decade. There are a number of simplifications in these calculations such as overlooking the effects of changes in demand.

Overlooking demand is a particularly simplifying assumption in the case of telecommunications. As technology has changed and the range of available services has expanded, household expenditure on telecommunications has increased (see table 7.6). Further, as just demonstrated, real telecommunications prices have fallen, so that increases in expenditure can be at least partially attributed to price-induced increases in consumption. The rapid growth in demand may be due to a combination of factors, including reductions in real prices, the introduction of new services and improved marketing, together with increases in real household income.

The percentage increase in telecommunications expenditure between 1988-89 and 1998-99 (as measured by the Household Expenditure Survey and expressed in 2000-01 dollars) tended to be greater for households in higher income brackets. Households in rural areas did not increase their telecommunications expenditure by as much as households in urban areas, particularly capital city households (see table 7.6).

Table 7.6 **Real increases in average weekly household expenditure on telecommunications between 1988-89 and 1998-99**

In 2000-01 dollars

Income quintile	*All capital cities*		*Other urban*		*Rural*		*Total Australia*	
	$	%	$	%	$	%	$	%
Lowest 20%	4.70	49.43	3.54	41.19	2.99	29.46	4.20	45.37
Second quintile	6.17	53.66	5.64	53.28	1.71	13.05	5.43	47.58
Third quintile	7.60	56.93	6.47	50.12	1.45	9.91	6.70	50.18
Fourth quintile	10.37	72.56	5.56	38.98	5.80	38.34	8.84	61.67
Highest 20%	11.06	63.67	8.77	51.35	6.15	36.74	10.36	59.90
All households	8.22	61.08	5.77	47.25	2.90	21.17	7.06	53.79

Note This is the difference between the average weekly household expenditure on telecommunications published in the 1988-89 and 1998-99 ABS Household Expenditure Surveys (inflated to 2000-01 dollars). For example, the average weekly household expenditure of all capital city households increased by $8.22 (or 61 per cent) between 1988-89 and 1998-99 (as measured in 2000-01 dollars).

Source: ABS (*Household Expenditure Survey Australia 1988-89*, Cat. no. 6535.0); ABS (*Household Expenditure Survey Australia 1998-99*, Cat. no. 6535.0).

7.3 Price variations

The ACCC released a report in April 2001 in which changes in the prices paid for telecommunications services in Australia from 1996-97 to 1999-2000 were presented (ACCC 2001a). The report was produced as part of the ACCC's reporting obligations under the *Trade Practices Act 1974*.

The ACCC report included price indexes for PSTN services used by both household and business customers, as well as a separate index for mobile telephony. Separate price indexes were also presented for services used in metropolitan and non-metropolitan areas.

Household and business customers

The ACCC reported separate price indexes for household and business customers. The indexes were constructed using prices for a basket of PSTN services — basic access, local calls, national long-distance calls, international calls and calls from fixed to mobile phones. The composition of each basket used in the index was different for each customer group to reflect their different consumption patterns.

The resulting indexes reflect changes in real prices, with all data expressed in 1999-2000 dollars (see table 7.7). The results indicate broadly similar rates of price reduction since 1996-97 for both household and business customers.

Table 7.7 **Real telecommunications price trends — households and businesses**

In 1999-2000 dollars (per cent)

Customer type	*June 1998*[a]	*June 1999*[a]	*June 2000*[a]
Household	-5.3	-5.2	-7.7
Business	-3.4	-5.6	-7.4

a Year ended.

Source: ACCC (2001b).

Metropolitan and non-metropolitan customers

The price indexes used to compare household and business customers were constructed using population data. However, in comparing metropolitan and non-metropolitan customer groups, a different methodology was used.

The metropolitan and non-metropolitan indexes were constructed from sample billing data, because the population data used to construct the household and business indexes referred to in the previous section could not be disaggregated by region and customer type. Accordingly, the metropolitan and non-metropolitan indexes are subject to the variations and errors normally associated with sample data. Therefore, the results presented by the ACCC are indicative, rather than conclusive evidence that the prices paid by these two customer groups decreased at broadly similar rates (see table 7.8).[6]

Table 7.8 **Real telecommunications price trends — metropolitan and non-metropolitan prices**

In 1999-2000 dollars (per cent)

Customer type	*June 1998*	*June 1999*	*June 2000*
Metropolitan	-3.5	-11.7	-11.9
Non-metropolitan	-2.5	-10.9	-10.7

Note Metropolitan and non-metropolitan includes both household and business customers.

Source: ACCC (2001b).

6 Because the ACCC results were prepared using a different methodology from that used by the Productivity Commission, the metropolitan price reductions shown in table 7.8, are similar in direction but different in magnitude, from the price reductions shown (graphically) for the corresponding years in figure 7.1.

Concessions

Subject to a residence requirement, customers holding a Pensioner Concession Card or Commonwealth Seniors Card are able to obtain a Telephone Allowance through Centrelink or the Department of Veterans' Affairs. Eligible customers receive a non-taxable payment of $18 per quarter. The payment is not subject to an assets or income test beyond that applying to the relevant concession card.

The current price sub-caps referred to in note c, table 7.1, are intended to protect low-spending customers from the effects of price rebalancing.[7] Low-spending customers pay a relatively high proportion of their telecommunications bill as access charges and a relatively small proportion as call charges. Consequently, any price rebalancing that increases access charges *vis a vis* call charges, will have a proportionately greater impact on this group of customers.

7.4 Service quality

Quality of service was examined to see if price trends might be explained by changes in the quality and reliability of services. Lower prices can be achieved by lowering expenditure below that required to maintain service standards. That said, improvements in technology may also lead to lower prices.

In the telecommunications industry, quality of service standards are being maintained and improved through codes of practice and legislation. Quality of service standards are legislated through the *Telecommunications (Consumer Protection and Service Standards) Act 1999*. The Act imposes obligations that affect quality of service in a number of areas.

The most significant of these provisions are embodied in the customer service guarantee (CSG). The CSG applies to PSTN services to household and business customers and covers service connection, repair of faults and service difficulties, and the making and keeping of appointments. Under the CSG, carriers and carriage service providers are required to pay compensation to customers if they do not meet specified minimum standards. Quality of service indicators for payphone services form part of the USO.

[7] The Minister for Communications, Information Technology and the Arts recently announced new price control arrangements to take effect in July 2002. Among the new arrangements is a package of measures to protect low-income (rather than low-spending) customers from line rental increases or provide offsetting benefits (see Alston 2002).

In addition to quality of service standards, there are legislative requirements for the ACA (under s105 of the *Telecommunications Act 1997*) to monitor and report annually on certain aspects of the telecommunications industry, including quality of service. The ACA (formerly AUSTEL) also publishes quality of service data in quarterly performance monitoring bulletins. The following aspects of service quality are subject to regulation or monitoring:

- service provision;
- fault clearance;
- network performance;
- payphone services;
- mobile services;
- call centre performance; and
- complaints.

Over the past decade, a significant amount of data on each of these aspects of quality of service has been published by AUSTEL and the ACA in the annual and quarterly publications. However, some service indicators have only been reported in recent years. Also, there have been changes in definitions of indicators and reporting methods, particularly as a result of the introduction of the CSG. These difficulties limit the analysis of quality of service trends over the whole period.

Trends in four quality of service indicators, for which generally consistent data were available for most of the study period, are discussed below.

Service provision

Service provision refers to the speed of connection of a standard telephone service and is typically measured by the proportion of services connected within a specified timeframe. Service connections are also disaggregated by the CSG standard into 'new services' (where no infrastructure is available) and 'in-place' services (where a service has previously been operating).

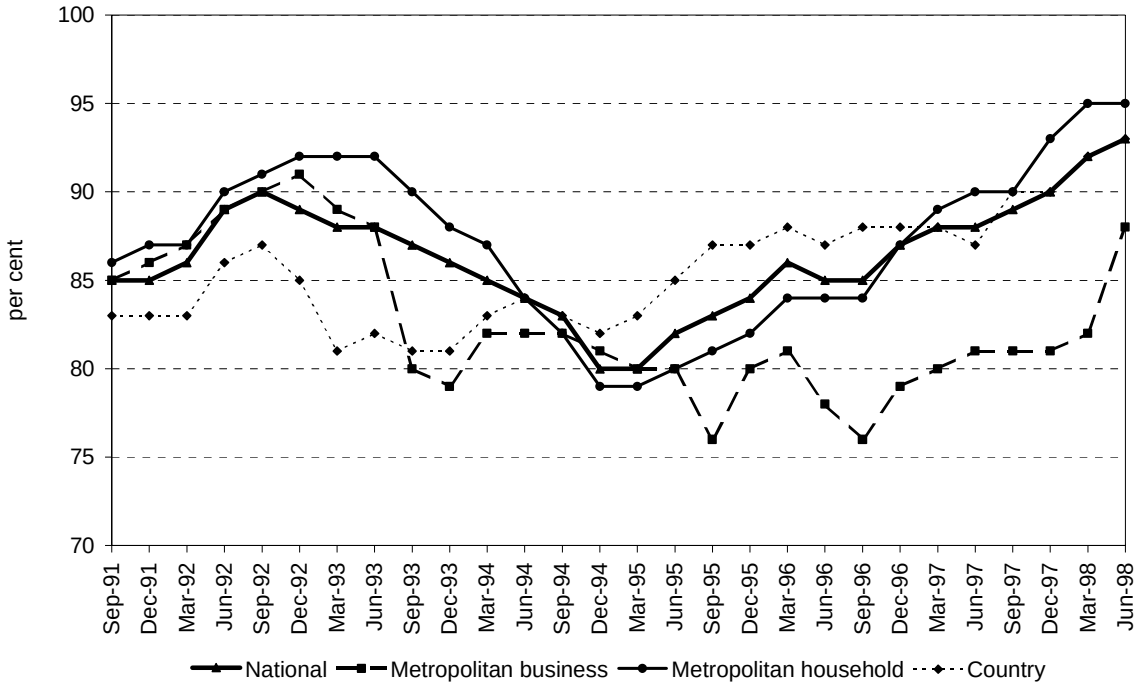
Prior to 1997, connection performance was measured by the proportion of services connected on or before an agreed commitment date (ACD). The ACD refers to the date by which Telstra agrees with the customer to connect the particular service.

Telstra's performance against the ACD for connection of new and in-place services fluctuated between 1991 and 1998. Although it improved over the period for in-

place services, it was generally worse at the end of the period for connection of new services (see figures 7.2 and 7.3).

Figure 7.2 **Provision of in-place services before the agreed commitment date — Telstra**

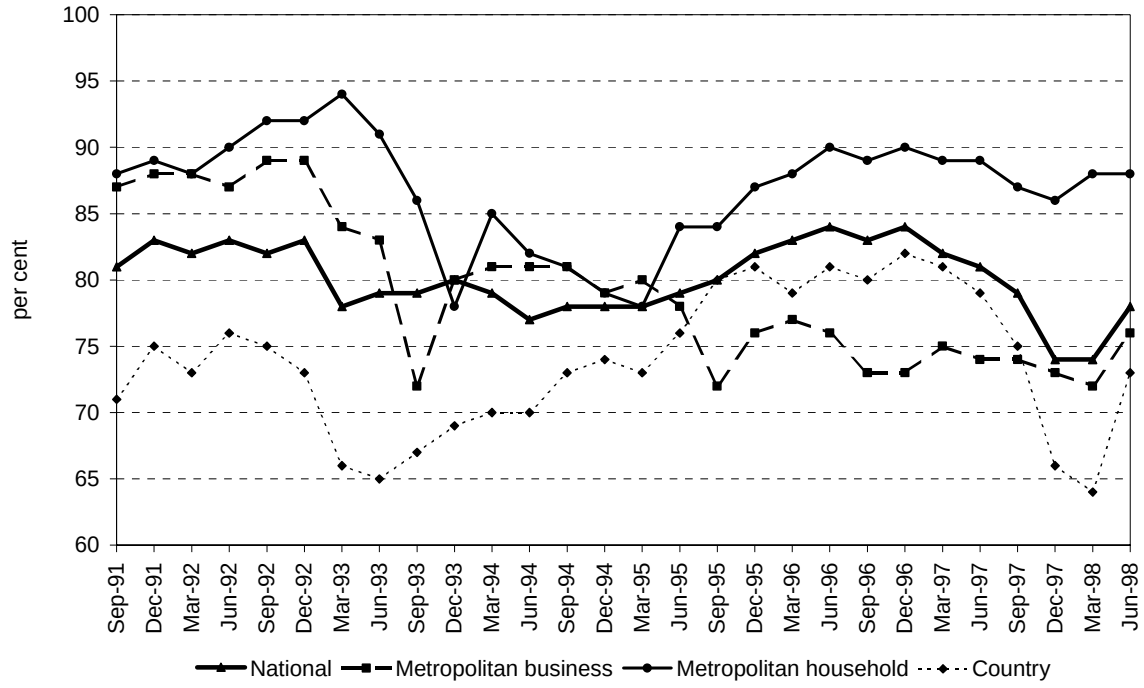
September 1991 to June 1998



Data sources: ACA (1998); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

Figure 7.3 **Provision of new services on or before the agreed commitment date — Telstra**

September 1991 to June 1998



Data sources: ACA (1998); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

The introduction of the CSG in 1997 meant that the government specified standard timeframes for the connection of new services. Since then, performance has been measured by the proportion of services connected within the CSG timeframes rather than by an ACD. New service connection performance, as measured by the CSG timeframes, has improved since 1998 for all customer groups (ACA 2001b and previous issues).

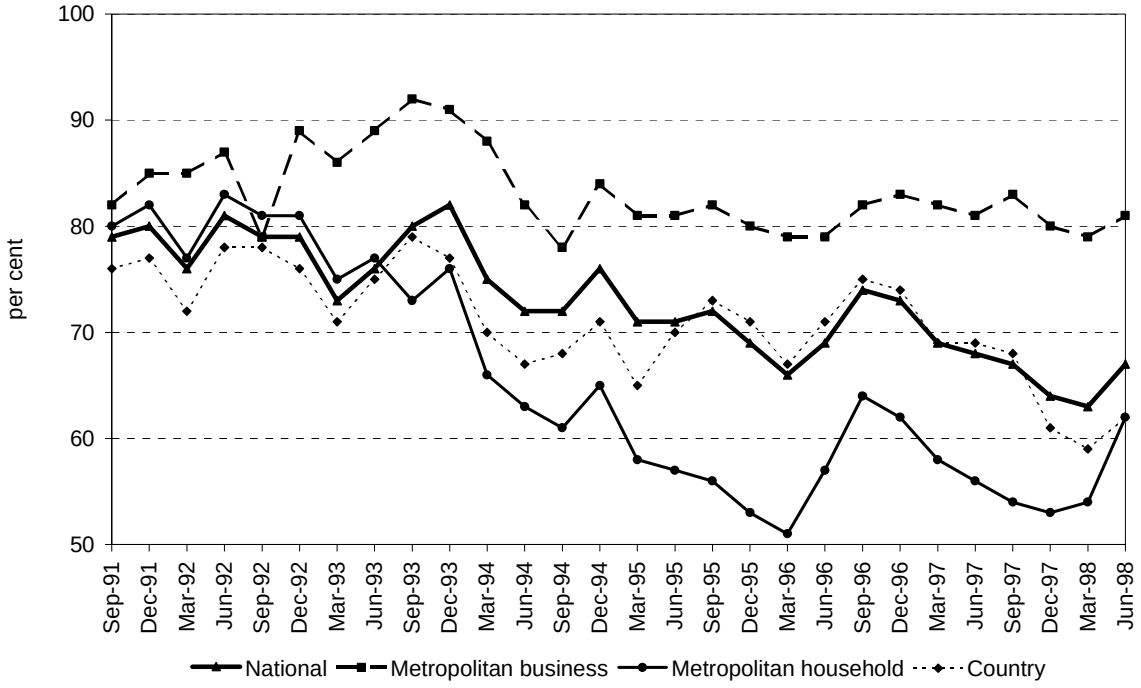
Fault clearance

Fault clearance indicators provide a measure of service responsiveness. Performance is typically measured by the proportion of faults repaired within a specified period after the fault is reported. From September 1991 to June 1998, Telstra's fault clearance performance was measured as the proportion of faults repaired within one working day of notification.

Telstra's performance against this indicator declined for each of the customer groups reported (see figure 7.4), with the biggest decline in fault clearance reported for metropolitan household customers.

Adverse weather conditions have been cited by Telstra as a factor contributing to reduced fault performance (AUSTEL 1996). Increasing demand for new service connections may also put pressure on fault clearance performance because of the need to reallocate staff from fault repair tasks to service connection tasks.

Figure 7.4 **Faults cleared within one working day of notification — Telstra**
September 1991 to June 1998



Note Although the method of reporting Telstra's connection performance changed in 1997, there was an overlap period from December 1997 to June 1998 where performance was measured under both the old and new reporting methods.

Data sources: ACA (1998); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

From the June quarter 1998, fault clearance performance has been measured by the proportion of faults repaired within the CSG timeframes (see figure 7.5). Following the introduction of the CSG, Telstra has been required to either repair faults within a given timeframe or pay compensation to customers. The timeframes vary between geographic regions and in 2002 were one working day for urban, two days for rural and three days for remote areas.[8]

Telstra's fault clearance performance improved between December 1997 and June 2001 in each of the three areas (see figure 7.5).

8 Urban areas are those with a population greater than 10 000 people. Rural areas are those other than urban and remote areas. Remote areas are those with a population less than 200 people.

Figure 7.5 **Faults cleared within the customer service guarantee timeframes — Telstra**

December 1997 to June 2001

Note Urban areas are those with a population greater than 10 000 people. Rural areas are those other than urban and remote areas. Remote areas are those with a population less than 200 people. The customer service guarantee timeframes in 2002 were one full working day for urban, two full working days for rural and three full working days for remote areas. Although the method of reporting Telstra's connection performance changed in 1997, there was an overlap period from December 1997 to June 1998 where performance was measured under both the old and new reporting methods.

Data sources: ACA (2001b and previous issues).

Fault restoration times are influenced by a range of factors. For example, the overall workload and skill of the service staff determine, in part, how quickly a fault can be identified and repaired. Environmental factors, such as weather and geographical network density, influence the time taken to locate and access the fault before repair can begin. Similarly, the level of network intelligence and redundancy determine the ability to restore services. The CSG standard also recognises that other circumstances beyond the control of the provider may affect performance. These include where there has been wilful damage to facilities or a need to obtain access to the land or facilities of a third party.

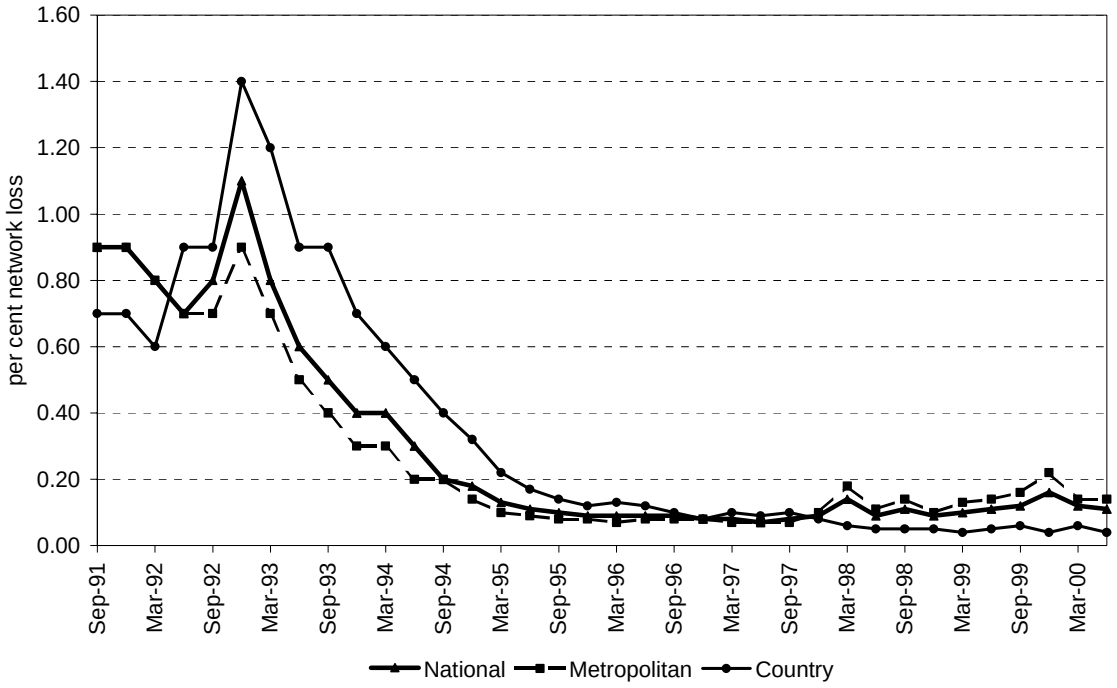
Network performance

Network performance, or call congestion, is normally measured as the proportion of local and long-distance calls where a connection cannot be established due to

congestion. Congestion occurs when the capacity of the PSTN is exceeded, resulting in some call attempts being unsuccessful. Network loss may vary with time-of-day and distance of call.

Telstra's call connection performance has improved significantly over the period for both local and STD weekday calls (see figures 7.6 and 7.7). From June 2000, Telstra has been required to report network loss only if it rose above one per cent, which has not occurred.

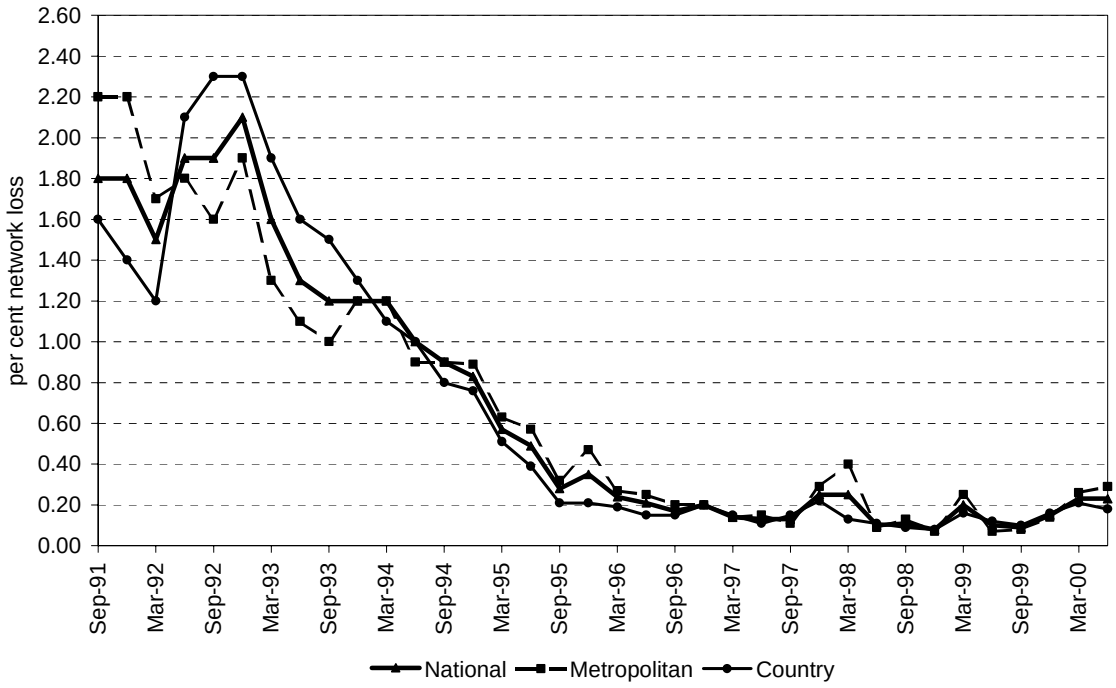
Figure 7.6 **Telstra's local call connection**
September 1991 to June 2000 (per cent network loss)



Note From June 2000, the Australian Communications Authority has only required telecommunications providers to report network loss above one per cent.

Data sources: ACA (1998; 2000a and previous issues); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

Figure 7.7 **Telstra's long-distance STD weekday call connection**
September 1991 to June 2000 (per cent network loss)



Note From June 2000, the Australian Communications Authority has only required telecommunications carriers to report network loss above one per cent.

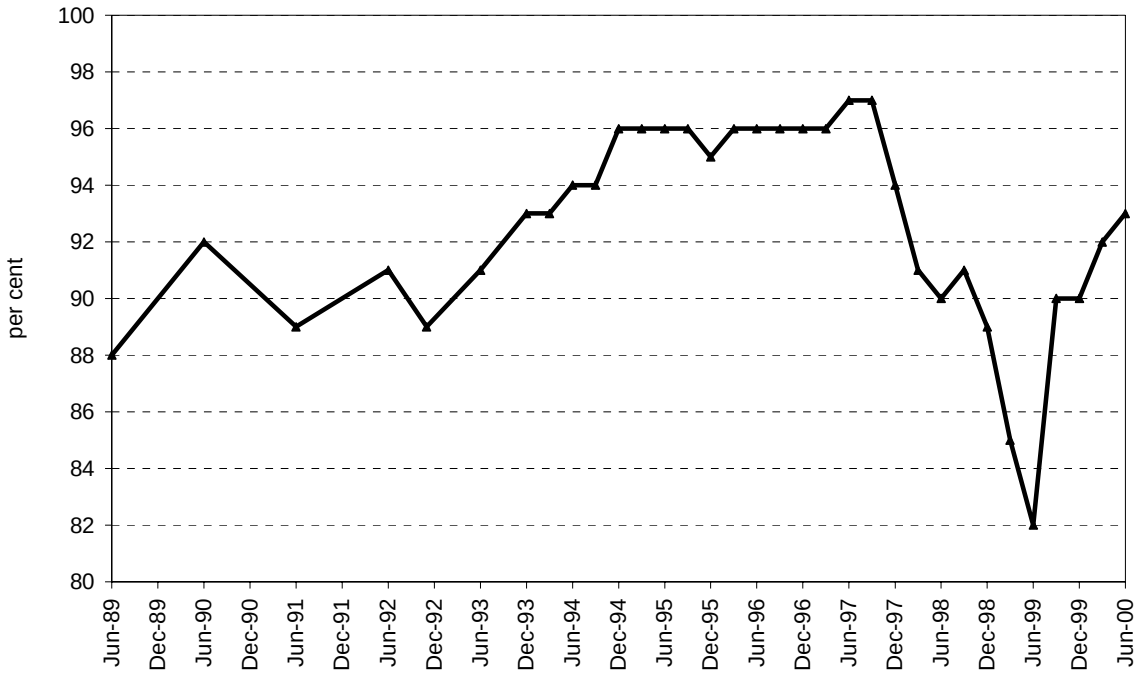
Data sources: ACA (1998; 2000a and previous issues); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

Payphone serviceability

There are several indicators used by the ACA to measure quality of payphone services. However, the only indicator that has been reported consistently over the whole study period is the proportion of payphones operating at any one time. The series extends until June 2000 when Telstra began reporting on a different measure.

The proportion of payphones operating was higher at the end of the period than at the beginning (see figure 7.8). However, Telstra's performance for the provision of payphone services has fluctuated over the period, which it partly attributes to vandalism and other external factors. The ACA also notes that the decline in payphone serviceability between June 1997 and June 1999 coincided with the rollout of the new Smart Payphone which commenced in 1997 (ACA 2000b).

Figure 7.8 **Percentage of public payphones operating at any one time**
June 1989 to June 2000



Note A payphone is said to be operable if transmission and reception are adequate and a successful call can be made using each of the available modes (coin, phonecard). Telstra stopped reporting on this indicator in June 2000.

Data sources: ACA (1998; 2000a and previous issues); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

There does not appear to have been a significant decline in performance for any of the indicators examined above. This suggests that price reductions have not been achieved at the expense of service quality.

7.5 Shareholder outcomes

Telstra was 100 per cent publicly-owned until November 1997 when it became one third privatised through a public share offering. A further public share offering was made in 1999 and it is now 49.9 per cent privately-owned. Consequently, the Commonwealth Government is no longer the sole bearer of potential financial risks involved in operating the business. Further, it no longer receives all the benefits of Telstra's dividend payments.

The financial performance of Telstra was examined to provide information on the relationship between price trends and financial outcomes, such as the return on assets over the study period. Low prices relative to costs may not achieve a

satisfactory return on assets, nor provide sufficient revenue to maintain and replace long-lived infrastructure assets.

The data used in calculating the shareholder outcomes presented in this section were generally taken from two sources:

- Steering Committee on National Performance Monitoring of Government Trading Enterprises; and
- Productivity Commission reports on Financial Performance of Government Trading Enterprises.

There may be inconsistencies between these two data sets and the information published in Telstra's annual reports. These inconsistencies arise because of definitional differences.

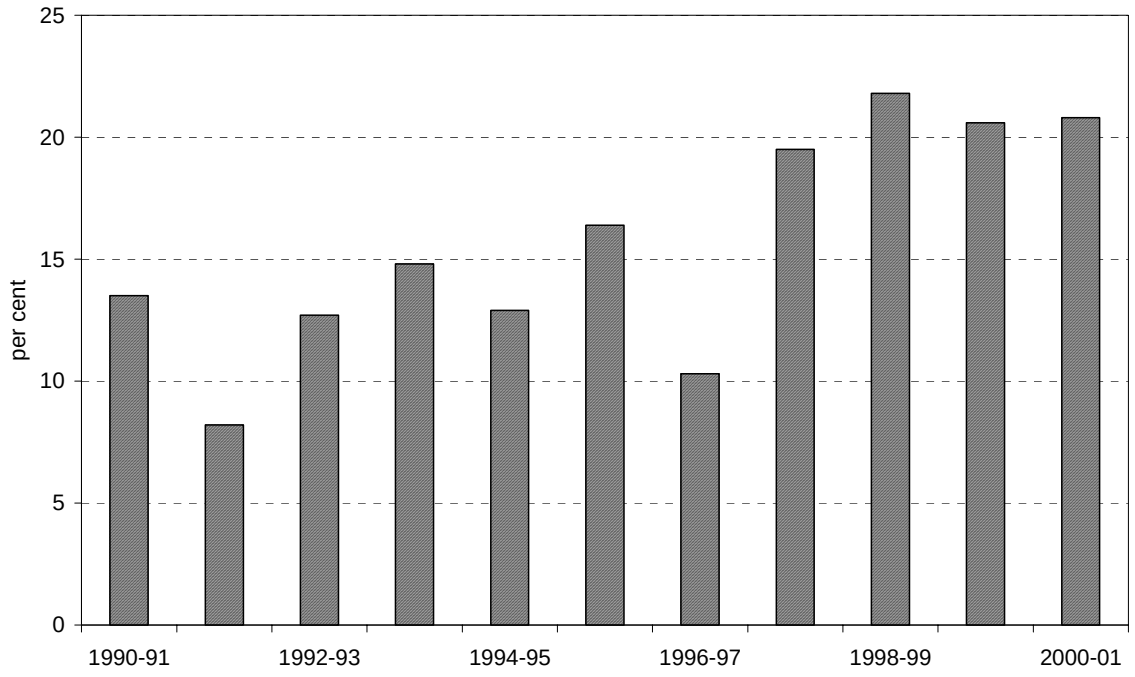
During the period that Telstra was 100 per cent publicly owned (1990-91 to 1996-97), Telstra earned a return on assets of over 10 per cent in all years except 1991-92 (see figure 7.9).

Since the partial privatisation of Telstra in November 1997, shareholders have earned a return on assets of over 20 per cent in all years except 1997-98. During the period of part private ownership (1997-98 to 2000-01), return on assets has averaged 21 per cent, compared with 13 per cent for the period of full public ownership (1990-91 to 1996-97).

The trend and level of return on assets over the study period suggests that declining real prices for customers did not come at the expense of returns on assets.

Comparisons of performance over time that are based on indicators that include an estimate of asset values, have to be interpreted with care. Differences in asset valuation procedures and changes in the size of the asset base can affect the return on assets. Over the study period, there have been significant changes in asset values as a result of asset transfers, revaluations and changes in asset valuation methodologies.

Figure 7.9 **Return on assets — Telstra**
1990-91 to 2000-01



Note Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of each financial year. Prior to 1993, returns were affected by the merger with the Overseas Telecommunications Commission.

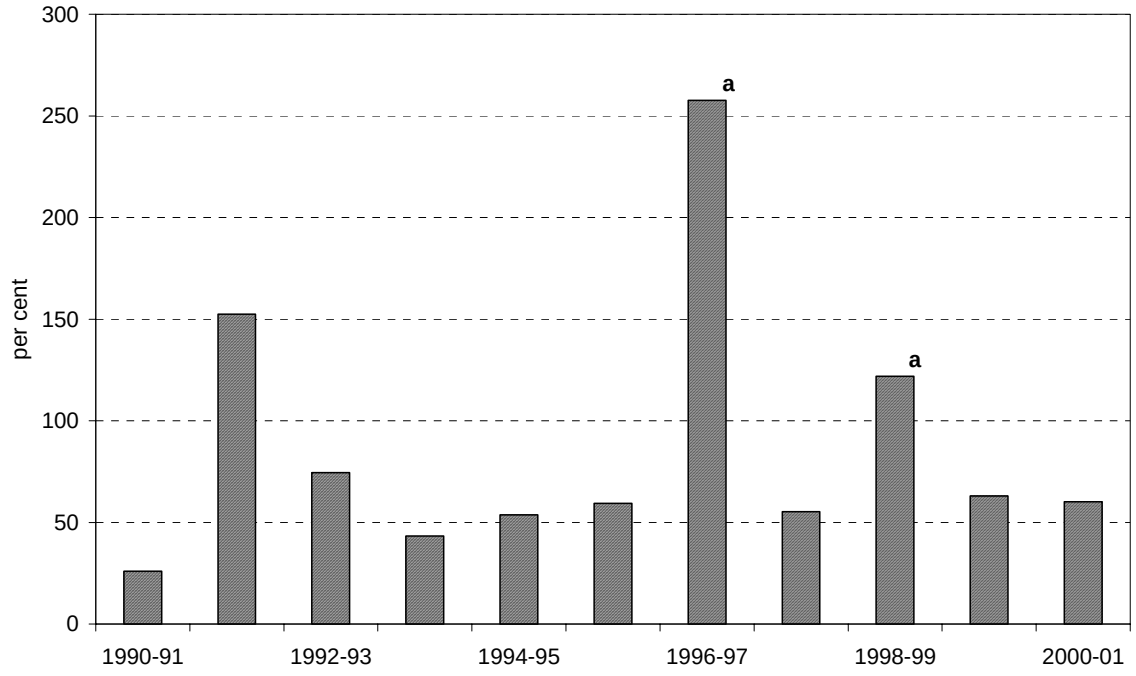
Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues); Telstra, Sydney, pers. comm., 6 May 2002.

Telstra has paid a dividend in each year over the study period. Up until 1997-98, all of these dividends were paid to the Commonwealth Government. Special dividends were paid in 1996-97 ($3.0 billion) and 1998-99 ($2.1 billion) to restructure Telstra's capital base prior to each privatisation sale (Telstra 1997 and 1999).

The relative size of dividend payments is represented by the dividend payout ratio (dividends as a proportion of profit after tax) and the dividend to equity ratio (dividends as a proportion of average total equity).

The dividend payout ratio has fluctuated from year-to-year (see figure 7.10). Part of this variability is due to the payment of special dividends in 1996-97 and 1998-99. In the absence of special dividends, the dividend payout ratio has averaged 39 per cent over the study period. In 1999-2000, the dividend payout ratios of private sector telecommunications utilities averaged around 55 per cent, and ranged from 0 to 100 per cent (PC 2001a).

Figure 7.10 **Dividend payout ratio — Telstra**
1990-91 to 2000-01

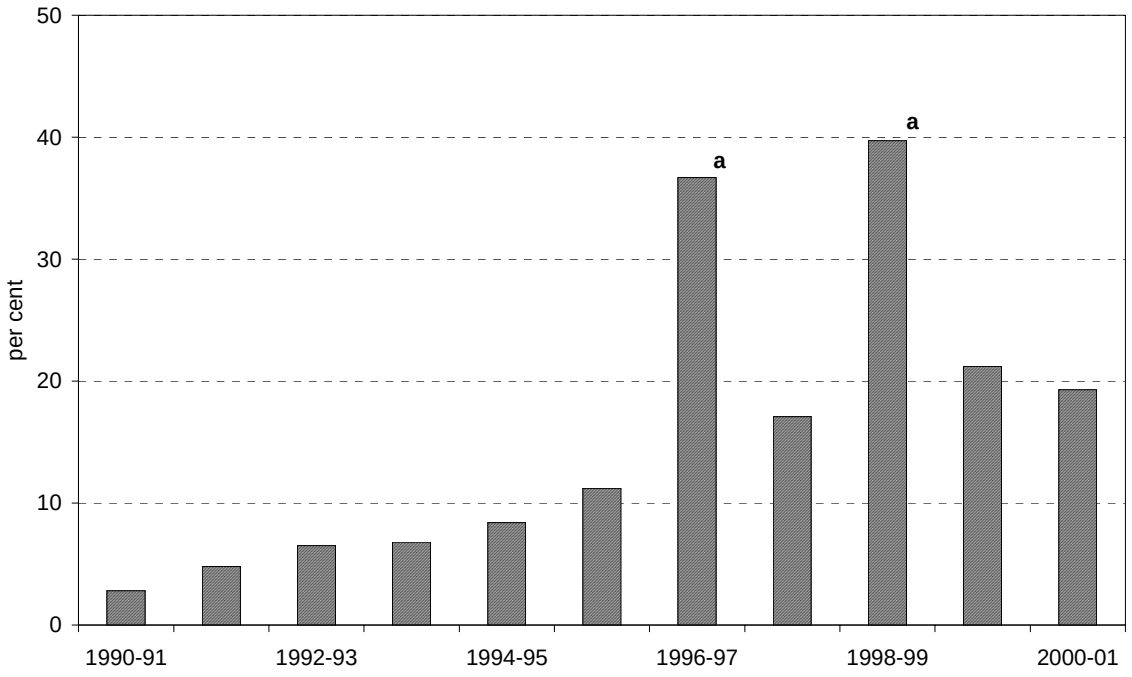


Note Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Prior to 1993, ratios were affected by the merger with the Overseas Telecommunications Commission. **a** Telstra paid special dividends in 1996-97 ($3.0 billion) and 1998-99 ($2.1 billion) related to financial restructuring prior to the sale of part of the business by the Commonwealth Government. If these dividend payments are excluded, the dividend payout ratio would be approximately 59 per cent in 1996-97 and approximately 62 per cent in 1998-99.

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues); Telstra, Sydney, pers. comm., 6 May 2002.

The dividend to equity ratio has steadily increased in most years over the study period (see figure 7.11). Excluding the special dividend payments in 1996-97 and 1998-99, the dividend to equity ratio has averaged around 12 per cent. This is consistent with the dividend to equity ratio of private sector utilities, which averaged around 15 per cent, and ranged from 0 to 60 per cent (PC 2001a).

Figure 7.11 **Dividend to equity ratio — Telstra**
1990-91 to 2000-01



Note Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets. Prior to 1993, ratios were affected by the merger with the Overseas Telecommunications Commission. **a** Telstra paid special dividends in 1996-97 ($3.0 billion) and 1998-99 ($2.1 billion) related to financial restructuring prior to the sale of part of the business by the Commonwealth Government. If these dividend payments are excluded, the dividend to equity ratio would be around 8 per cent in 1996-97 and 20 per cent in 1998-99.

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues); Telstra, Sydney, pers. comm., 6 May 2002.

The indicators presented here suggest that the substantial real price reductions over the last ten years have been achieved without affecting Telstra's financial performance.

Attachment A – Data tables

Table A7.1 Real telecommunications price trends — metropolitan households

1990-91 to 2000-01 (index 1990-91=100)

	Weighted average of all capital cities
1990-91	100.0
1991-92	101.9
1992-93	100.3
1993-94	98.6
1994-95	96.7
1995-96	91.8
1996-97	90.3
1997-98	89.9
1998-99	84.0
1999-00	79.8
2000-01	79.3

Note The real price index was obtained by rebasing the CPI (telecommunications) index to a base year of 1990-91 and then deflating the rebased index by the rebased CPI (All groups) price index. The price index for 2000-2001 includes the Goods and Services Tax.

Data sources: PC estimates based on ABS (*Consumer Price Index, Australia*, Cat. no. 6401.0).

Table A7.2 **Provision of in-place services before the agreed commitment date — Telstra**

September 1991 to June 1998 (per cent)

	Metropolitan business	*Metropolitan household*	*Country*	*National*
September 1991	85	86	83	85
December 1991	86	87	83	85
March 1992	87	87	83	86
June 1992	89	90	86	89
September 1992	90	91	87	90
December 1992	91	92	85	89
March 1993	89	92	81	88
June 1993	88	92	82	88
September 1993	80	90	81	87
December 1993	79	88	81	86
March 1994	82	87	83	85
June 1994	82	84	84	84
September 1994	82	82	83	83
December 1994	81	79	82	80
March 1995	80	79	83	80
June 1995	80	80	85	82
September 1995	76	81	87	83
December 1995	80	82	87	84
March 1996	81	84	88	86
June 1996	78	84	87	85
September 1996	76	84	88	85
December 1996	79	87	88	87
March 1997	80	89	88	88
June 1997	81	90	87	88
September 1997	81	90	90	89
December 1997	81	93	90	90
March 1998	82	95	92	92
June 1998	88	95	93	93

Data sources: ACA (1998); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

Table A7.3 **Provision of new services on or before the agreed commitment date — Telstra**

September 1991 to June 1998 (per cent)

	Metropolitan business	*Metropolitan household*	*Country*	*National*
September 1991	87	88	71	81
December 1991	88	89	75	83
March 1992	88	88	73	82
June 1992	87	90	76	83
September 1992	89	92	75	82
December 1992	89	92	73	83
March 1993	84	94	66	78
June 1993	83	91	65	79
September 1993	72	86	67	79
December 1993	80	78	69	80
March 1994	81	85	70	79
June 1994	81	82	70	77
September 1994	81	81	73	78
December 1994	79	79	74	78
March 1995	80	78	73	78
June 1995	78	84	76	79
September 1995	72	84	80	80
December 1995	76	87	81	82
March 1996	77	88	79	83
June 1996	76	90	81	84
September 1996	73	89	80	83
December 1996	73	90	82	84
March 1997	75	89	81	82
June 1997	74	89	79	81
September 1997	74	87	75	79
December 1997	73	86	66	74
March 1998	72	88	64	74
June 1998	76	88	73	78

Data sources: ACA (1998); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

Table A7.4 **Faults cleared within one working day of notification — Telstra**

September 1991 to June 1998 (per cent)

	Metropolitan business	*Metropolitan household*	*Country*	*National*
September 1991	82	80	76	79
December 1991	85	82	77	80
March 1992	85	77	72	76
June 1992	87	83	78	81
September 1992	79	81	78	79
December 1992	89	81	76	79
March 1993	86	75	71	73
June 1993	89	77	75	76
September 1993	92	73	79	80
December 1993	91	76	77	82
March 1994	88	66	70	75
June 1994	82	63	67	72
September 1994	78	61	68	72
December 1994	84	65	71	76
March 1995	81	58	65	71
June 1995	81	57	70	71
September 1995	82	56	73	72
December 1995	80	53	71	69
March 1996	79	51	67	66
June 1996	79	57	71	69
September 1996	82	64	75	74
December 1996	83	62	74	73
March 1997	82	58	69	69
June 1997	81	56	69	68
September 1997	83	54	68	67
December 1997	80	53	61	64
March 1998	79	54	59	63
June 1998	81	62	62	67

Data sources: ACA (1998); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

Table A7.5 **Faults cleared within the customer service guarantee timeframes — Telstra**

December 1997 to June 2001 (per cent)

	Urban	*Rural*	*Remote*
December 1997	72	84	70
March 1998	71	81	64
June 1998	79	82	60
September 1998	80	81	64
December 1998	80	84	72
March 1999	69	79	63
June 1999	77	83	60
September 1999	82	88	66
December 1999	83	86	74
March 2000	78	84	74
June 2000	84	86	75
September 2000	90	94	86
December 2000	82	92	82
March 2001	88	93	83
June 2001	92	95	87

Note Urban areas are those with a population greater than 10 000 people. Rural areas are those other than urban and remote areas. Remote areas are those with a population less than 200 people. The customer service guarantee timeframes in 2002 were one full working day for urban, two full working days for rural and three full working days for remote areas.

Data sources: ACA (2001b and previous issues).

Table A7.6 **Telstra's local call connection**

September 1991 to June 2000 (per cent network loss)

	Metropolitan	*Country*	*National*
September 1991	0.90	0.70	0.90
December 1991	0.90	0.70	0.90
March 1992	0.80	0.60	0.80
June 1992	0.70	0.90	0.70
September 1992	0.70	0.90	0.80
December 1992	0.90	1.40	1.10
March 1993	0.70	1.20	0.80
June 1993	0.50	0.90	0.60
September 1993	0.40	0.90	0.50
December 1993	0.30	0.70	0.40
March 1994	0.30	0.60	0.40
June 1994	0.20	0.50	0.30
September 1994	0.20	0.40	0.20
December 1994	0.14	0.32	0.18
March 1995	0.10	0.22	0.13
June 1995	0.09	0.17	0.11
September 1995	0.08	0.14	0.10
December 1995	0.08	0.12	0.09
March 1996	0.07	0.13	0.09
June 1996	0.08	0.12	0.09
September 1996	0.08	0.10	0.09
December 1996	0.08	0.08	0.08
March 1997	0.07	0.10	0.08
June 1997	0.07	0.09	0.07
September 1997	0.07	0.10	0.08
December 1997	0.10	0.08	0.09
March 1998	0.18	0.06	0.14
June 1998	0.11	0.05	0.09
September 1998	0.14	0.05	0.11
December 1998	0.10	0.05	0.09
March 1999	0.13	0.04	0.10
June 1999	0.14	0.05	0.11
September 1999	0.16	0.06	0.12
December 1999	0.22	0.04	0.16
March 2000	0.14	0.06	0.12
June 2000	0.14	0.04	0.11

Data sources: ACA (1998; 2000a and previous issues); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

Table A7.7 **Telstra's long-distance STD weekday call connection**

September 1991 to June 2000 (per cent network loss)

	Metropolitan	*Country*	*National*
September 1991	2.20	1.60	1.80
December 1991	2.20	1.40	1.80
March 1992	1.70	1.20	1.50
June 1992	1.80	2.10	1.90
September 1992	1.60	2.30	1.90
December 1992	1.90	2.30	2.10
March 1993	1.30	1.90	1.60
June 1993	1.10	1.60	1.30
September 1993	1.00	1.50	1.20
December 1993	1.20	1.30	1.20
March 1994	1.20	1.10	1.20
June 1994	0.90	1.00	1.00
September 1994	0.90	0.80	0.90
December 1994	0.89	0.76	0.83
March 1995	0.63	0.51	0.57
June 1995	0.57	0.39	0.49
September 1995	0.32	0.21	0.28
December 1995	0.47	0.21	0.35
March 1996	0.27	0.19	0.24
June 1996	0.25	0.15	0.21
September 1996	0.20	0.15	0.17
December 1996	0.20	0.20	0.20
March 1997	0.14	0.15	0.14
June 1997	0.15	0.11	0.13
September 1997	0.11	0.15	0.13
December 1997	0.29	0.22	0.25
March 1998	0.40	0.13	0.25
June 1998	0.09	0.11	0.10
September 1998	0.13	0.09	0.11
December 1998	0.07	0.08	0.08
March 1999	0.25	0.16	0.20
June 1999	0.07	0.12	0.10
September 1999	0.08	0.10	0.09
December 1999	0.14	0.16	0.15
March 2000	0.26	0.21	0.23
June 2000	0.29	0.18	0.23

Data sources: ACA (1998; 2000a and previous issues); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

Table A7.8 **Percentage of public payphones operating at any one time**

June 1989 to June 2000 (per cent)

	Percentage of payphones
June 1989	88
June 1990	92
June 1991	89
June 1992	91
November 1992	89
June 1993	91
December 1993	93
March 1994	93
June 1994	94
September 1994	94
December 1994	96
March 1995	96
June 1995	96
September 1995	96
December 1995	95
March 1996	96
June 1996	96
September 1996	96
December 1996	96
March 1997	96
June 1997	97
September 1997	97
December 1997	94
March 1998	91
June 1998	90
September 1998	91
December 1998	89
March 1999	85
June 1999	82
September 1999	90
December 1999	90
March 2000	92
June 2000	93

Note A payphone is said to be operable if transmission and reception are adequate and a successful call can be made using each of the available modes (coin, phonecard).

Data sources: ACA (1998; 2000a and previous issues); Australian Communications Authority, Canberra, pers. comm., 29 October 2001.

Table A7.9 **Return on assets, dividend payout ratio, dividend to equity ratio — Telstra**

1990-91 to 2000-01 (per cent)

	Return on assets[a]	*Dividend payout ratio*[b]	*Dividend to equity ratio*[c]
1990-91	13.5	26.0	2.8
1991-92	8.2	152.5	4.8
1992-93	12.7	74.5	6.5
1993-94	14.8	43.3	6.8
1994-95	12.9	53.8	8.4
1995-96	16.4	59.4	11.2
1996-97	10.3	257.7	36.7
1997-98	19.5	55.3	17.1
1998-99	21.8	121.8	39.7
1999-00	20.6	63.1	21.2
2000-01	20.8	60.2	19.3

Note Telstra paid 'special' dividends in 1996-97 ($3.0 billion) and 1998-99 ($2.1 billion) related to financial restructuring prior to the sale of part of the business by the Commonwealth Government. If these dividend payments are excluded, the dividend payout ratio would be 58.8 per cent in 1996-97 and 61.6 per cent in 1998-99. The dividend to equity ratio would be 8.4 per cent in 1996-97 and 20.1 per cent in 1998-99. Prior to 1993, figures were affected by the merger with the Overseas Telecommunications Commission. **a** Return on assets is the ratio of earnings before interest and tax (EBIT) to average total assets. EBIT is calculated by subtracting total expenses from total revenue (including abnormals) and adding back gross interest expense. Average total assets are the average of the value of assets at the beginning and end of the reporting period. **b** Dividend payout is the ratio of dividends paid or provided for, to operating profit after tax (including abnormals). Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. **c** Dividend to equity is the ratio of dividends paid or provided for, to average total equity. Dividends paid or provided for include normal and special dividends and special levies on profits and revenues. Equity is calculated by subtracting total liabilities from total assets.

Data sources: PC (2002 forthcoming); SCNPMGTE (1998 and previous issues); Telstra, Sydney, pers. comm., 6 May 2002.

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