

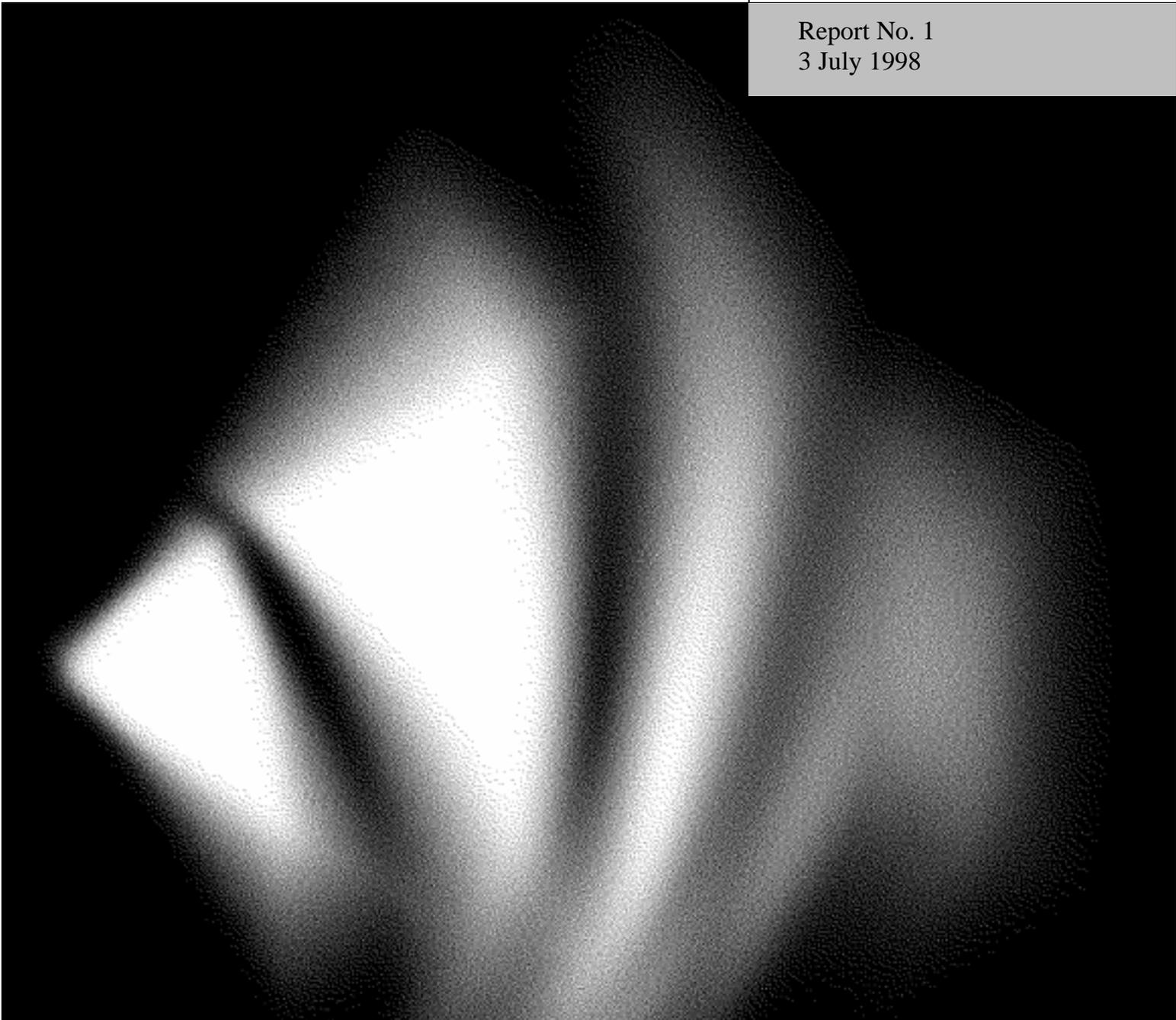


The Australian Black Coal Industry

Inquiry Report

Volume 1: Report

Report No. 1
3 July 1998



© Commonwealth of Australia 1998

ISBN 0 646 33559 6

This work is subject to copyright. Apart from any use as permitted under the *Copyright Act 1968*, the work may be reproduced in whole or in part for study or training purposes, subject to the inclusion of an acknowledgement of the source. Reproduction for commercial use or sale requires prior written permission from AusInfo. Requests and inquiries concerning reproduction and rights should be addressed to the Manager, Legislative Services, AusInfo, GPO Box 84, Canberra, ACT, 2601.

Enquiries:

Media and Publications Officer
Productivity Commission
Locked Bag 2
Collins Street East Post Office
Melbourne VIC 8003

Tel: (03) 9653 2244

Fax: (03) 9653 2303

An appropriate citation for this paper is:

Productivity Commission, 1998, *The Australian Black Coal Industry*, Inquiry Report, AusInfo, Canberra.

Information about the Productivity Commission and its current work program can be found on the World Wide Web at <http://www.pc.gov.au>

Head Office

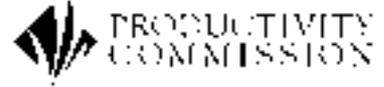
Telstra Tower Level 28
35 Collins Street
Melbourne VIC 3000

LB2 Collins Street East
Melbourne VIC 8003

Telephone 03 9653 2100
Facsimile 03 9653 2199

Canberra Office

Telephone 02 6240 3200



3 July 1998

The Honourable Peter Costello MP
Treasurer
Parliament House
CANBERRA ACT 2600

Dear Treasurer

In accordance with Section 11 of the *Productivity Commission Act 1998*, I have pleasure in submitting to you the report on the Australian Black Coal Industry.

Yours sincerely

John Cosgrove
Presiding Commissioner

TABLE OF CONTENTS

This report comprises two volumes. Volume 1 contains the Overview and the body of the report. Volume 2 comprises supporting appendices.

| | |
|--|---------------------|
| Abbreviations | Page XIII |
| Terms of Reference | XVIII |
| OVERVIEW | XXI |
| 1 INTRODUCTION | 1 |
| 1.1 The Australian black coal industry | 1 |
| 1.2 Contemporary issues in the black coal industry | 5 |
| 1.3 The inquiry's terms of reference and the Commission's approach | 7 |
| 1.4 Conduct of the inquiry | 8 |
| 2 THE CHANGING MARKET FOR BLACK COAL | 11 |
| 2.1 Introduction | 12 |
| 2.2 Supply and demand outlook for the black coal industry | 13 |
| 2.3 Factors increasing competition in the black coal market | 16 |
| 2.4 The dynamic nature of the international black coal market | 27 |
| 2.5 Price discrimination and collective price negotiation | 31 |
| 2.6 Barriers to international trade in coal | 35 |
| 3 INDUSTRY PERFORMANCE | 37 |
| 3.1 Introduction | 37 |
| 3.2 Industry-wide performance | 38 |
| 3.3 Productivity of Australian coal mines | 44 |
| 3.4 The Commission's benchmarking study | 53 |
| 4 WORK ARRANGEMENTS: THE CONTEXT | 63 |
| 4.1 Introduction | 63 |
| 4.2 Labour market features | 64 |
| 4.3 Industrial relations systems | 68 |

| | | |
|----------|---|------------|
| 4.4 | Development of work arrangements in black coal mining | 79 |
| 5 | WORK ARRANGEMENTS IN AUSTRALIAN BLACK COAL MINES | 87 |
| 5.1 | Introduction | 87 |
| 5.2 | Size and composition of the workforce | 89 |
| 5.3 | Hours of work and roster arrangements | 105 |
| 5.4 | Remuneration and on-costs | 114 |
| 5.5 | Functions, tasks and skills | 122 |
| 5.6 | General procedures | 133 |
| 5.7 | Conclusion | 138 |
| 6 | WORK ARRANGEMENTS: ENABLING CHANGE | 141 |
| 6.1 | Introduction | 141 |
| 6.2 | Managers and workplace change | 144 |
| 6.3 | Unions and workplace change | 155 |
| 6.4 | Employees and workplace change | 163 |
| 6.5 | Adjusting to change | 167 |
| 7 | COAL RAIL TRANSPORT | 175 |
| 7.1 | Introduction | 175 |
| 7.2 | Efficiency and prices of coal rail freight services | 177 |
| 7.3 | Structure of rail authorities | 186 |
| 7.4 | Removing implicit royalties and monopoly rent | 192 |
| 7.5 | Introducing competition into rail freight | 196 |
| 7.6 | Price setting for rail access | 205 |
| 8 | THE COAL WATERFRONT | 217 |
| 8.1 | Introduction | 217 |
| 8.2 | Australian coal ports | 218 |
| 8.3 | Coal waterfront cost comparisons | 222 |
| 8.4 | Pricing issues | 228 |
| 8.5 | Other issues | 235 |
| 9 | GOVERNMENT REGULATION AND SAFETY | 243 |

| | | |
|-------------------------------------|--|------------|
| 9.1 | Introduction | 244 |
| 9.2 | The Australian black coal industry's safety record | 244 |
| 9.3 | The regulation of safety in the coal industry | 248 |
| 9.4 | How coal mining OHS legislation compares with other OHS legislation | 250 |
| 9.5 | Problems with the current approach | 255 |
| 9.6 | Alternative regulatory approaches | 260 |
| 9.7 | The Joint Coal Board | 272 |
| 9.8 | Local governments | 276 |
| 10 | ROYALTY ARRANGEMENTS | 279 |
| 10.1 | Current royalty arrangements in NSW and Queensland | 279 |
| 10.2 | Criteria for assessing royalty systems | 282 |
| 10.3 | Alternative royalty collection methods | 283 |
| 10.4 | Evaluation of alternative royalty systems | 284 |
| 10.5 | Royalties collected through rail freights | 290 |
| 10.6 | Participants' views on royalty arrangements | 292 |
| 11 | MODELLING THE EFFECTS OF IMPROVED PERFORMANCE | 295 |
| 11.1 | Introduction | 297 |
| 11.2 | Scenario 1 (the base case): steady productivity growth | 298 |
| 11.3 | Scenario 2: no further productivity growth | 301 |
| 11.4 | Scenario 3: accelerated productivity improvements | 304 |
| 11.5 | Scenario 4: accelerated productivity improvements leading to lower coal prices | 308 |
| 11.6 | Scenario 5: accelerated productivity improvements in coal coupled with best practice productivity in rail transport of coal and accelerated removal of excess rail charges | 311 |
| 11.7 | State and Territory results | 314 |
| 11.8 | Summary | 314 |
| REFERENCES | | |
| LIST OF BOXES — VOLUME 1 | | |
| 2.1 | The Taiwan Power Company: an example of the increasing use of tenders and spot purchases | 20 |

| | | |
|------|---|-----|
| 2.2 | Deregulation of the Japanese power industry | 21 |
| 2.3 | The United States: a ‘swing producer’ in international coal trade | 28 |
| 4.1 | Federal industrial relations arrangements: a snapshot | 72 |
| 4.2 | The twenty allowable matters in Federal awards | 73 |
| 4.3 | The ‘no disadvantage’ test in the Federal jurisdiction | 75 |
| 4.4 | Coal Industry Tribunal of Western Australia (CITWA) | 76 |
| 5.1 | Examples of informal restrictions on changes to shift and roster arrangements in black coal mines | 109 |
| 6.1 | The role of unions in Federal agreement-making | 162 |
| 6.2 | Restructuring at Drayton Coal | 174 |
| 7.1 | Independent Pricing and Regulatory Tribunal (IPART) | 199 |
| 7.2 | Queensland Competition Authority (QCA) | 203 |
| 8.1 | The coal waterfront labour force | 226 |
| 8.2 | Westshore Terminals’ approach to the coal chain | 240 |
| 8.3 | Cumberland mine’s <i>line</i> balance approach | 242 |
| 9.1 | The NSW Coal Mines Regulation Act 1982 | 249 |
| 9.2 | Examples of prescriptive requirements in NSW coal mining legislation: explosives | 252 |
| 9.3 | Examples of prescriptive requirements in Queensland coal mining legislation: showering facilities | 254 |
| 9.4 | Compliance costs at BHP’s Elouera mine | 258 |
| 9.5 | NSW Review of Mine Safety | 265 |
| 9.6 | Review of the Queensland Coal Mining Act, 1925 | 268 |
| 9.7 | Incentives for companies to invest in safety | 270 |
| 10.1 | Phasing in of new royalty arrangements in Queensland | 281 |
| 10.2 | Purchase of private coal titles by the NSW Government | 282 |
| 10.3 | The neutrality of rent-based royalties | 285 |
| 10.4 | The effect of specific and ad valorem royalties on mining output | 289 |

LIST OF TABLES — VOLUME 1

| | | |
|-----|--|-----|
| 3.1 | Profitability measures — NSW Coal and Australian coal and Australian minerals industries | 43 |
| 5.1 | The impact of the retrenchment list on mine labour productivity and unit labour costs | 95 |
| 5.2 | Summary of the impact of LOFO on mine labour productivity and unit labour costs | 100 |
| 5.3 | An overview of leave provisions: Australian black coal, | |

| | | |
|------|--|-----|
| | metalliferous and US black coal mines | 112 |
| 5.4 | Proportion of individuals with annual income of \$52 000 or more, selected occupations, black coal mining compared with metal ore mining, Australia 1996 | 115 |
| 5.5 | Major labour costs per employee, black coal mining compared with metalliferous mining, Australia, 1993–94 | 117 |
| 5.6 | Comparison of penalty rates in Australian black coal, metalliferous and US black coal mines | 119 |
| 5.7 | An overview of training in the United States and United Kingdom | 132 |
| 6.1 | Coal mining employment and unemployment rates for selected labour force regions, NSW and Queensland, November 1997 | 167 |
| 6.2 | Employment by occupation, mining and all industries, August 1997 | 170 |
| 6.3 | Employment in coal mining regions, 1986 to 1996 | 172 |
| 7.1 | Average distance from the mine to the port | 181 |
| 7.2 | Weighted average coal rail charges and average distance carried, 1996 | 182 |
| 8.1 | Australian coal ports and terminals, capacity and throughput, 1997 | 219 |
| 8.2 | Coal port pricing categories | 224 |
| 9.1 | Lost time in Queensland coal mines, 1996–97 | 245 |
| 9.2 | Comparative safety performance at BHP operations | 248 |
| 10.1 | Black coal royalties in NSW and Queensland, 1996–97 | 280 |
| 11.1 | Scenario 1 (base case): economy-wide projections | 300 |
| 11.2 | Economy-wide impact of Scenarios 1 to 5 | 304 |
| 11.3 | Output and employment by State and Territory in the base case, Scenario 2 and Scenario 3 | 315 |

LIST OF FIGURES — VOLUME 1

| | | |
|-----|--|----|
| 1.1 | Black coal production for export and domestic markets and by mine type | 2 |
| 1.2 | Black coal industry output and employment | 3 |
| 1.3 | Mine to port costs of producing coal, 1996 | 4 |
| 1.4 | Real export prices for Australian coal | 6 |
| 2.1 | Real export coal prices | 13 |
| 2.2 | Australian black coal exports | 14 |
| 2.3 | Benchmark prices compared with spot prices | 17 |
| 2.4 | Supplying countries' share of Asian thermal coal market | 21 |
| 2.5 | Share of Asian coking coal market | 23 |
| 2.6 | PCI and coke rates in Japanese furnaces | 24 |

| | | |
|-------|--|-----|
| 2.7 | European and Japanese coal prices | 29 |
| 2.8 | European thermal coal price and US thermal coal exports | 29 |
| 3.1 | Profitability measures for coal mining, oil and gas extraction and metal ore mining | 41 |
| 3.2 | Net capital expenditure by the black coal industry for NSW and Queensland | 42 |
| 3.3 | Variation in total productivity within truck and shovel mine, categories | 58 |
| 4.1 | Black coal industry employment by State and mine type | 65 |
| 4.2 | Real full-time average weekly total earnings for black coal, metal ore mining and all industries | 66 |
| 4.3 | Industrial disputes, days lost per '000 employees per year, 1970–1997 | 67 |
| 7.1 | Weighted average freight rates for NSW and Queensland, 1996 | 182 |
| 8.1 | Coal port capacity and throughput, 1997 | 220 |
| 8.2 | Waterfront charges, by category of charge and port, 1994 | 225 |
| 9.1 | Average fatal injury frequency rates, selected Australian industries | 245 |
| 9.2 | Lost time injury frequency rates for coal and metalliferous mining, 1987–88 to 1996–97 | 247 |
| 9.3 | Fatal injury frequency rate, underground and open cut coal mining | 247 |
| 11.1 | Base case: thermal coal indicators, 1997–98 to 2009–10 | 299 |
| 11.2 | Base case: coking coal indicators, 1997–98 to 2009–10 | 299 |
| 11.3 | Scenario 2: impact on coal mining, 1997–98 to 2009–10 | 302 |
| 11.4 | Scenario 3: impact on the black coal industry, 1997–98 to 2009–10 | 305 |
| 11.5 | Scenario 4a: impact on the black coal industry, 1997–98 to 2009–10 | 310 |
| 11.6 | Scenario 4b: impact on the black coal industry, 1997–98 to 2009–10 | 311 |
| 11.7 | Scenario 5a: impact on the black coal industry, 1997–98 to 2009–10 | 312 |
| 11.8 | Scenario 5b: impact on the black coal industry, 1997–98 to 2009–10 | 313 |
| 11.9 | Economy-wide effects of Scenarios 2 to 5a | 316 |
| 11.10 | Coking coal production, exports and employment in 2009–10, Scenarios 1 to 5 | |

| | |
|---|-----|
| 11.11 Thermal coal production, exports and employment in 2009–10, Scenarios 1 to 5 | 317 |
|---|-----|

VOLUME 2 — APPENDICES

| | | |
|---|---|----|
| A | Conduct of the inquiry | A1 |
| B | Coal and coal mining | B1 |
| C | The Australian black coal industry | C1 |
| D | The international coal market | D1 |
| E | History of industrial relations in the Australian black coal industry | E1 |
| F | Black coal awards | F1 |
| G | Black coal agreements | G1 |
| H | Metalliferous awards and agreements | H1 |
| I | US black coal agreements | I1 |
| J | Statutory positions | J1 |
| K | The work models | K1 |
| L | Economy-wide effects of productivity change | L1 |
| M | Issues in modelling productivity change | M1 |

REFERENCES — VOLUME 2

List of boxes — Volume 2

List of tables — Volume 2

List of figures — Volume 2

BENCHMARKING CONSULTANCY — VOLUME 2

ABBREVIATIONS

| | |
|------------|--|
| \$A | Australian dollar |
| \$US | United States dollar |
| ABARE | Australian Bureau of Agricultural and Resource Economics |
| ABS | Australian Bureau of Statistics |
| ACCC | Australian Competition and Consumer Commission |
| ACIRL | Australian Coal Industry Research Laboratories |
| ACIRRT | Australian Centre for Industrial Relations Research and Training |
| ACSA | Australian Collieries Staff Association |
| ACSA Award | <i>Coal Mining Industry (Supervision and Administration) Interim Consent Award, 1990, New South Wales and Tasmania</i> |
| ACT | Australian Capital Territory |
| AGA | Australian Gas Association |
| AIRC | Australian Industrial Relations Commission |
| AMMA | Australian Mines and Metals Association |
| AMWU | Automotive, Food, Metals, Engineering, Printing and Kindred Industries Union |
| AUSAID | Australian Agency for International Development |
| AWAs | Australian Workplace Agreements |
| AWTE | Average Weekly Total Earnings |
| AWU | Australian Workers Union |
| BHP | BHP Coal Pty Ltd |
| BIE | Bureau of Industry Economics |
| BLS | United States Bureau of Labour Statistics |
| BN | Burlington Northern |
| CA | Certified Agreement |

| | |
|--------|--|
| CEO | Chief Executive Officer |
| CEPU | Communications, Electrical, Electronic, Energy, Information, Postal, Plumbing and Allied Services Union of Australia |
| CFMEU | Construction, Forestry, Mining and Energy Union |
| cif | Cost Insurance and Freight |
| CIT | Coal Industry Tribunal |
| CITWA | Coal Industry Tribunal of Western Australia |
| CMI | Coal Mines Insurance Pty Ltd |
| CMQB | NSW Coal Mining Qualifications Board |
| CMR | Coal Mines Regulation |
| cntk | Cents Per Net Tonne Kilometre |
| CoPS | Centre of Policy Studies |
| CPI | Consumer Price Index |
| CSOs | Community Service Obligations |
| CTC | Competitive Tendering and Contracting Out |
| DBCT | Dalrymple Bay Coal Terminal |
| DEETYA | Department of Employment, Education, Training and Youth Affairs |
| DPIE | Department of Primary Industries and Energy |
| DWR&SB | Department of Workplace Relations and Small Business |
| EAF | Electric Arc Furnace |
| EFAs | Enterprise Flexibility Agreements |
| EIA | Energy Information Agency (US) |
| fob | Free-on-board |
| GBE | Government Business Enterprise |
| GDP | Gross Domestic Product |
| GNE | Gross National Expenditure |
| GOCs | Government Owned Corporations |
| GT | Gas Turbine |

| | |
|-------------------|--|
| Gw | Gigawatt |
| Gwh | Gigawatt hour |
| Hospitality Award | <i>Hospitality Industry – Accommodation, Hotels, Resorts and Gaming Award 1995</i> |
| HVCC | Hunter Valley Coal Chain |
| IAC | Industries Assistance Commission |
| IC | Industry Commission |
| ICR | International Coal Report |
| IEA | International Energy Agency |
| ILO | International Labour Organisation |
| IPART | Independent Pricing and Regulatory Tribunal |
| IPP | Independent Power Producers |
| IR | Industrial Relations |
| IR Act | <i>Industrial Relations Act 1988 (Cth)</i> |
| JAG | Joint Advisory Group |
| JCB | Joint Coal Board |
| JFY | Japanese fiscal year |
| JSM | Japanese steel mill |
| kt | Kilotonne |
| kw | Kilowatt |
| LAP | Labour adjustment package |
| LAXT | Los Angeles Export Terminal |
| LMPCP | Labour Management Positive Change Process (US) |
| LOFO | last on, first off (retrenchment) |
| MIM | Mount Isa Mines |
| Mt | Million tonnes |
| MUA | Maritime Union of Australia |
| mw | Megawatt |
| mwh | Megawatt Hour |

| | |
|-----------|--|
| NAIRU | Non-Accelerating-Inflation Rate of Unemployment |
| NCC | National Competition Council |
| NEM | National Electricity Market |
| NILS | National Institute of Labour Studies |
| NLRA | <i>National Labour Relations Act (US)</i> |
| NLRB | National Labour Relations Board (US) |
| NMITAB | National Mining Industry Training Advisory Body |
| NSW | New South Wales |
| NSWMC | New South Wales Minerals Council |
| NT | Northern Territory |
| NTF | National Training Framework |
| OECD | Organisation for Economic Cooperation and Development |
| OHS | Occupational Health and Safety |
| OPEC | Organisation of Petroleum Exporting Countries |
| P&E Award | <i>Coal Mining Industry (Production and Engineering) Interim Consent Award, September 1990</i> |
| PCI | Pulverised Coal Injection |
| PCQ | Ports Corporation of Queensland |
| PJ | Peta Joule |
| PWCS | Port Waratah Coal Services |
| QBOE | Queensland Board of Examiners |
| QCA | Queensland Competition Authority |
| QCB | Queensland Coal Board |
| QLD | Queensland |
| QMC | Queensland Minerals Council |
| QMITAB | Queensland Mining Industry Training Advisory Body |
| QR | Queensland Rail |
| RAC | Rail Access Corporation |
| RAP | Regional Assistance Program |

| | |
|--------|---|
| RRR | Resource Rent Royalty |
| RSA | Rail Services Authority |
| SA | South Australia |
| SCI | Statement of Corporate Intent |
| SCPL | Shell Coal Pty Ltd |
| SRA | State Rail Authority |
| sub. | submission |
| Tas | Tasmania |
| TFP | Total Factor Productivity |
| TPA | Trade Practices Act |
| trans. | transcript |
| UMSS | United Mining Support Services |
| UMWA | United Mine Workers of America |
| UNFCCC | United Nations Framework Convention on Climate Change |
| US | United States |
| Vic | Victoria |
| WA | Western Australia |
| WBP | World's Best Practice |
| WR Act | <i>Workplace Relations Act 1996</i> |

TERMS OF REFERENCE

I, Peter Costello, Treasurer, under Part 2 of the Industry Commission Act 1989, hereby:

1. refer international competitiveness of the Australian black coal industry to the Industry Commission for inquiry and report with 12 months of receiving this reference;
2. specify that in making its recommendations the Commission identify ways of improving the international competitiveness of the Australian black coal industry which are consistent with improving the overall performance of the Australian economy.
3. request that the Commission report on;
 - (a) sound, objectively determined benchmarks of productivity performances for Australian black coal mines, best practice in comparable international black coal mines and best practice in analogous Australian metalliferous mines, identifying the reasons for differences in productivity performance between the specified groups. Components investigated should include management, labour, machine performance and mine geology;
 - (b) cost components from the mine to the port for exported Australian black coal, including wages and other onsite mine costs, royalties and infrastructure charges and comparison of the costs with those of overseas black coal mines and Australian metalliferous mines, with an explanation of the differences;
 - (c) safety arrangements and performance of Australian black coal mines, and how they compare with international counterparts and Australian metalliferous mines, recognising previous Commission work on occupational health and safety;
 - (d) work arrangements in the Australian black coal mines, compared with international counterparts and Australian metalliferous mines; and
 - (e) methods by which Australia's major competitors have implemented micro-economic reform in their black coal industries, the success of those measures, and their applicability to the Australian black coal industry;
4. specify that the Commission report, where appropriate, on implementation strategies for its recommendations;
5. specify that the Commission avoid duplication of any recent substantive studies undertaken or underway elsewhere; and
6. specify that the Commission have regard to the established economic, social, regional development and environmental objectives of governments.

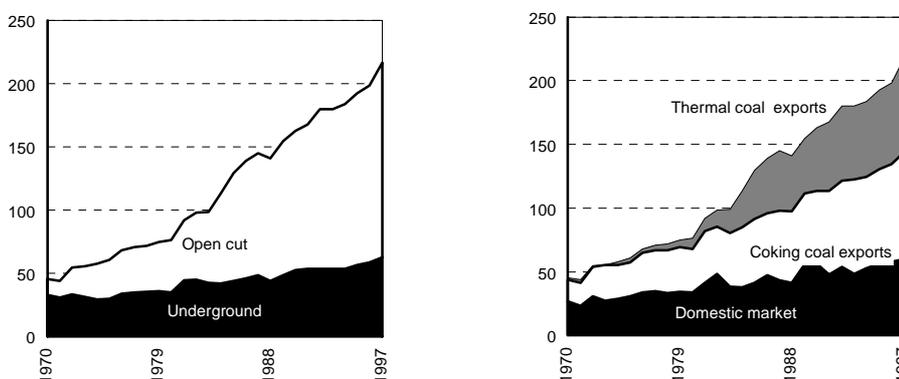
PETER COSTELLO



Black coal in Australia

- Black coal is classified broadly according to its end use as either *thermal coal* or *coking coal*. Thermal coal is used mainly for the production of electricity, and coking coal is converted to coke for use in steel making.
 - Australia’s black coal production is now divided fairly evenly between coking and thermal coal.
 - Coking coal commands a price premium over thermal coal. For the first three quarters of 1997–98, the average fob price for hard coking coal exports was around \$A72 per tonne compared with about \$A48 per tonne for thermal coal.
- Coal is produced from two distinct types of mines, surface (open cut) and underground.
 - There are about 120 black coal mines in Australia, half of which are underground mines.
 - About 70 per cent of coal production is from open cut mines.
- Black coal is mined predominantly in Queensland and New South Wales, but also in South Australia, Western Australia and Tasmania.
 - Queensland and New South Wales produce approximately equivalent amounts of black coal.
 - NSW accounts for about 80 per cent of underground production, and Queensland for about 60 per cent of open cut production.
- Queensland accounted for nearly 70 per cent of Australia’s coking coal exports in 1997. New South Wales accounted for about 63 per cent of Australia’s thermal coal exports.

Black coal production and exports (Mt)



OVERVIEW

This report is about the performance of Australia's black coal industry and factors which affect its capacity to remain strong and competitive in the face of changing domestic and export markets. Work arrangements in black coal mining, transport infrastructure and government regulation of the industry are the key issues.

The Australian black coal industry

Black coal is Australia's largest export industry.

Black coal is Australia's largest export industry. In 1997, it accounted for 10 per cent (\$8.8 billion) of Australia's merchandise exports and more than 1 per cent of GDP.

Australia is the world's largest coal exporter.

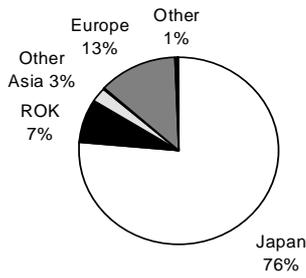
Australian black coal production has more than quadrupled since 1970 when more than half of Australia's production was used domestically. In 1997, more than 90 per cent of coking coal and about 60 per cent of thermal coal production was exported, major markets being Japan, Korea, Taiwan and Europe. Australia is now the world's largest coal exporter, accounting for nearly 30 per cent of world coal trade.

The industry has many natural advantages.

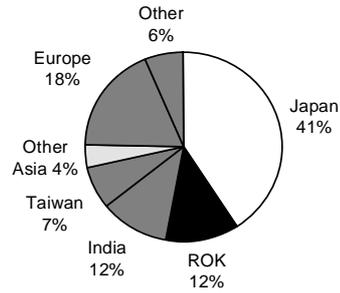
Australia is a successful black coal exporter because:

- it has abundant supplies of good quality coal;
- coal deposits are readily accessible;
- coal deposits are relatively close to shipping ports;
- it has established rail and port facilities;
- it is close to major Asian coal markets; and
- it has a reputation as a reliable supplier.

Australian coking coal exports

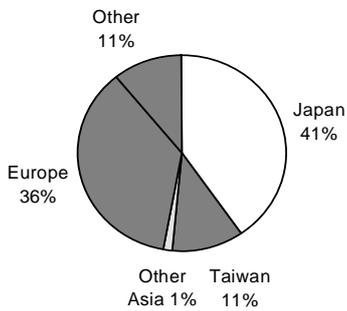


1980

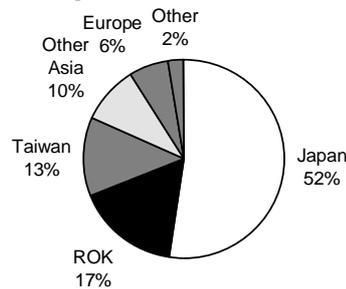


1997

Australian thermal coal exports

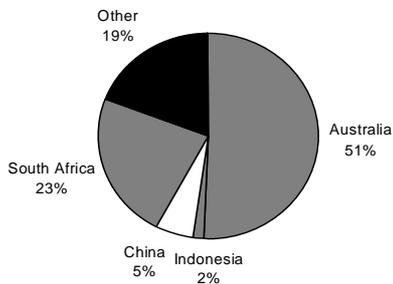


1980

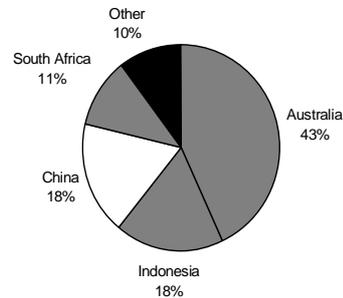


1997

Share of Asian thermal coal market

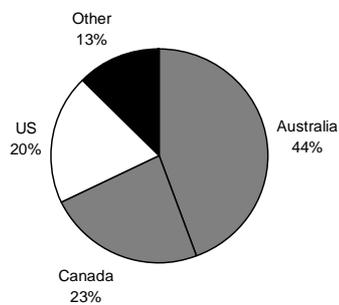


1985

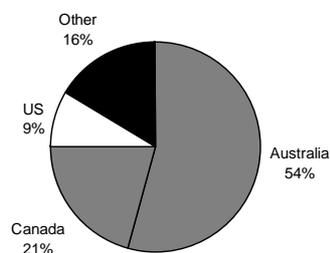


1996

Share of Asian coking coal market



1985

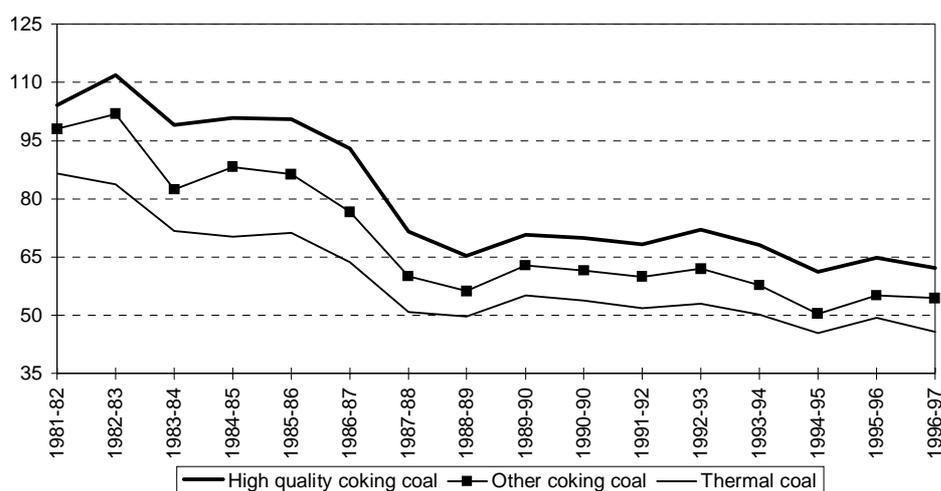


1996

The market for coal has become more competitive.

However, since the mid-1980s Australian black coal producers have experienced increasing price pressure from competition in both export and domestic markets.

Real export prices for Australian coal (\$A1996–97/t)



Export market price pressures

Export markets are under pressure from new low cost suppliers, ...

Since 1990, both Indonesia and China have increased coal exports rapidly and now supply more than one third of thermal coal imported by Asian countries. Both of these suppliers are low-cost producers and are close to Australia's traditional coal export markets. In addition, the United States has recently enhanced its capability as a coal exporter to Asia.

... technological change in user industries, and ...

Technological change in steel production has reduced the amount of coking coal needed to produce a given quantity of steel and has increased the scope for substitutability between different types of coal as inputs to the steel making process. These changes have reduced the premium which Australian producers can command for high quality coking coal.

... changing marketing arrangements.

The emergence of new suppliers to the world coal market and increasing competition in the electricity and steel markets have had an important influence on the basis on which coal is traded. Buyers are

purchasing a greater share of their requirements by tender or on the spot market where price competition is more intense. Less coal is being sold under long-term contracts where prices may include a premium for reliability of supply.

Domestic market price pressures

Competition in the national electricity market is affecting black coal prices, ...

Since 1996, when the national electricity market was introduced, competition between electricity producers has exerted downward pressure on domestic black coal prices. These pressures will intensify as physical and contractual constraints on interstate trade in electricity are removed progressively.

... as is competition from alternative fuel sources.

Competition from alternative fuel sources such as gas and brown coal will become more effective as the full potential benefits of competition in the electricity market are realised.

Barriers to international trade in coal

There are barriers to trade in black coal.

Although other countries' barriers to trade in coal are low compared with those applying to agricultural products and many manufactured goods, significant reduction and distortion of coal trade occurs through tariffs, quotas, and subsidies, and through preferential tariff arrangements that favour some coal exporting countries over others.

Some of these trade barriers are being dismantled progressively, but this should not detract from the importance of Australia vigorously pursuing further liberalisation of international trade in coal.

Industry performance

Output, exports, employment

The black coal industry has a record of strong growth in production ...

Australian coal production increased by nearly 70 per cent between 1970 and 1980, more than doubled in the next ten years, and has averaged growth of 4 per cent per annum since 1990.

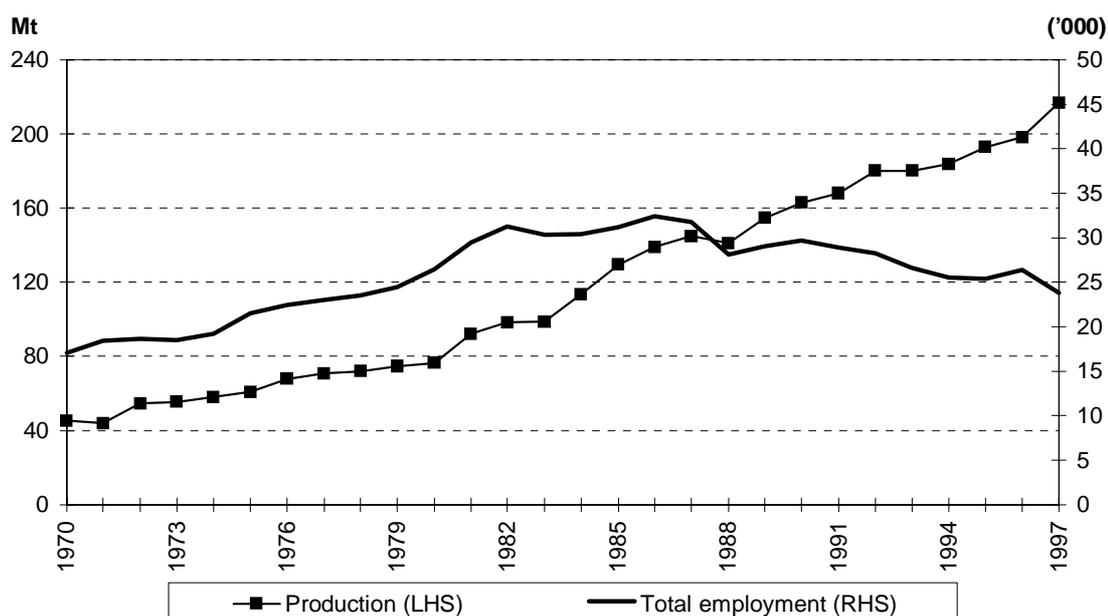
... and exports, ...

Export volumes more than doubled between 1970 and 1980, increased a further 150 per cent in the following decade and have averaged nearly 5.5 per cent annual growth since 1990.

... but employment has declined.

Despite high output growth, employment levels declined from a peak of around 33 000 in 1986 to 24 000 in 1997.

Black coal industry output and employment



Profitability

There is significant variability between mines in the

Profitability varies between individual mines.

quality of the coal resource, in the quality of management, and in work arrangements.

As a consequence, there is significant variation in profit performance between individual coal mines and companies, the most profitable mines generally being newer ones which have negotiated flexible work arrangements with their employees.

On average, recent profitability has been poor.

On average, the recent profitability of black coal mining has been poor and well below the average for other mining activities.

Productivity performance

Productivity performance must improve.

A key question for this inquiry is the actual and potential productivity performance of Australian black coal mines. Given the increasingly competitive environment, and poor profitability, it is clear that the industry's performance will need to improve in order for it to take advantage of the potential growth opportunities in export markets.

Productivity varies between mines.

While there is evidence that some Australian coal producers are highly productive, many producers made submissions citing poor performance of their own mines and of the industry in general.

Poor management contributes to low productivity.

Some producers conceded that low productivity was due in part to poor mine management.

Previous studies which have benchmarked the performance of Australian black coal mines also show that there is much variability of performance among mines.

A comprehensive study commissioned for this inquiry compared a sample of Australian black coal mines with better practice United States coal mines and Australian metalliferous mines.

Performance falls well short of Australian metalliferous and US black coal mines, ...

The study results indicate that, on average, productivity of major operations in the sampled Australian truck and shovel and longwall mines lagged around 20 to 30 per cent behind better practice US coal mines and Australian metalliferous mines. However,

... but Australian draglines perform very well.

Queensland draglines were close to 20 per cent more productive than the selected better practice US coal mines while NSW dragline operations were roughly on a par with the US mines.

It was found that the productivity of the best-performing Australian truck and shovel and longwall operations in the sample was not far behind that of the best practice US mine.

There is scope to do better.

This variability of performance indicates that there is scope for many Australian black coal mines to improve their performance considerably.

Submissions to this inquiry, and the benchmarking studies, attribute the poor productivity performance of Australian black coal mines to restrictive work arrangements, which result in the inefficient utilisation of equipment and high labour costs.

Work arrangements

Inefficient work arrangements have a long history.

The work arrangements which exist in Australian black coal mines today, and about which mine owners and managers complain, have their roots in the early history of coal mining in Australia.

In the past, a captive domestic market ...

They evolved first at a time when coal was sold to a captive domestic market for use in essential industries such as electricity generation, steel production, in homes and in rail and sea transport. The industry achieved a special status and a culture developed of maintaining supply at all costs.

... placed no discipline on cost increases.

Pressure for higher wages and changed working conditions, backed by the threat of strikes and disruption to supply, was usually successful. Consequent cost increases, whether caused directly by wage increases, or indirectly through inefficient work arrangements, were simply passed on to consumers.

Continuity of supply was especially important.

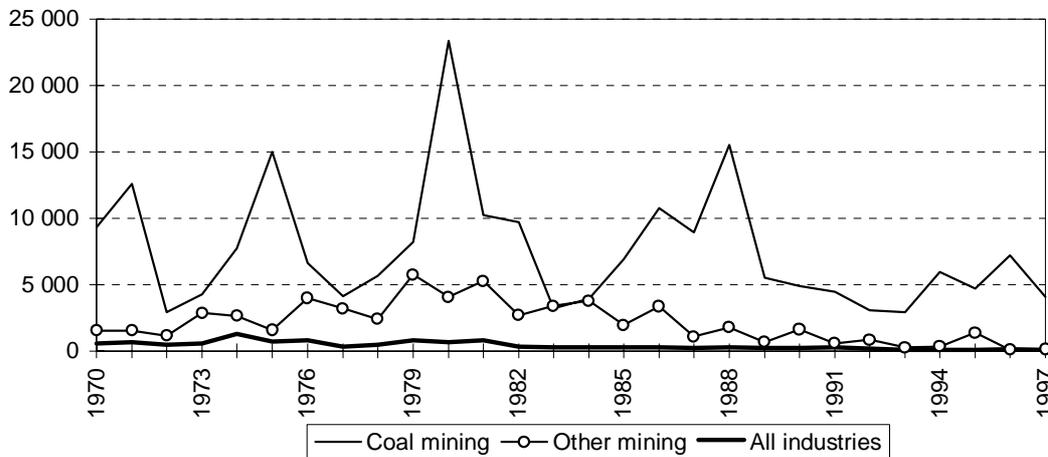
As export markets for coal developed, the culture of maintaining supply at all costs continued. Japanese buyers attached importance to continuity of supply and, with limited alternative sources available, entered

into long-term contracts at prices favourable to Australian coal producers. Export markets initially were very profitable.

Strong unions emerged. These circumstances were conducive to the emergence of strong industry unions and a highly unionised workforce.

Workers in the black coal industry tend to be in full-time employment, older, predominantly male and from an English-speaking background.

Industrial disputes, days lost per '000 employees



When compared with the total employed labour force, the Australian black coal workforce has:

- high earnings;
- a very high level of unionisation;
- a very high level of industrial disputes;
- high levels of days lost to sick leave and workers' compensation leave;
- low levels of voluntary labour turnover; and
- low levels of tertiary qualifications.

The industry attained a special status through legislation and

The traditional notion that the black coal industry had unique characteristics which warranted special treatment was reinforced by State and Federal

regulations.

industry-specific legislation and regulations.

Legislation mainly directed towards safety in both New South Wales and Queensland influences:

- the site management structure for each open cut and underground mine;
- the number of staff required at each level on site by setting out the functions to be undertaken by each position; and
- the nature of management at each mine by setting out the qualifications, training and experience required for each position, as well as the functions to be performed.

A passive management style developed, with unions taking the initiative.

In this environment, mine managers' efforts were focussed more on complying with the regulations and maintaining supply than on pursuing production efficiency. In concert with weak competition in the product market until the mid-1980s, the legislation gave rise to a passive mine management style, providing scope for union representatives to take the initiative in industrial relations and human resource management.

Recommendation 1

Governments should facilitate improvement in management by increasing the choices available to owners and managers in managing mines. They should not prescribe:

- **the management hierarchy at the mine site;**
- **the bundle of skills held by mine managers (including management experience); and**
- **the functions of mine managers.**

(Chapter 6)

Recommendation 2

The Coal Mining Qualifications Board (NSW) and the role in the coal industry of the Board of Examiners (Qld) should be abolished.

(Chapter 5)

Recommendation 3

The role of employees in carrying out safety inspections should not be restricted by regulation to union nominees.

(Chapter 6)

At the Federal level, and in Western Australia, tribunals whose charters included ensuring continuity of coal supply were established to deal with industrial disputes. This tended to insulate the industry from workplace reform occurring elsewhere in the economy. In 1995 the Coal Industry Tribunal was abolished and the industry was brought into mainstream industrial relations under the AIRC. The Coal Industry Tribunal of Western Australia is currently under review.

Past management and industrial practices are not sustainable.

Competitive pressure now being faced by the coal industry has led to the growing realisation that past management and industrial practices are no longer sustainable. It has focussed attention also on changing work arrangements which unnecessarily restrict productivity as the major means of improving the industry's competitiveness.

Restrictive work arrangements

There are still many productivity-restricting work arrangements which ...

Some mines have negotiated new workplace agreements which do not contain any of the productivity-restricting work arrangements of the past. Such developments are encouraging. But a multitude of productivity-restricting work arrangements are still found in other Australian black coal mines.

... reduce mine managers' ability to achieve efficiency, ...

An effect of these arrangements is to reduce the flexibility of mine managers to employ the quantity and quality of labour best suited to the circumstances of a particular mine and to make optimum use of employees' skills. In this context, arrangements relating to seniority, demarcation, allocation of tasks, and the use of contractors are particularly restrictive.

... lead to over-

An indirect effect of these arrangements is to

capitalisation, ... encourage over-capitalisation of mines in order to compensate for work practices which underutilise equipment — for example, demarcation between production and engineering employees and restrictions on staggering ‘crib breaks’.

... and raise labour costs. Overall, these arrangements increase unit labour costs, which can threaten the viability of mines.

Achieving change

Management is primarily responsible for achieving change. The compelling force changing restrictive work arrangements is the more competitive market for black coal. Primary responsibility for achieving change and driving continuous improvement lies with management.

Change is occurring, ... Indeed, much of what has been achieved to date can be linked directly to the recognition by managers, workers and unions that, in the absence of change, some mines would become uncompetitive and have to close.

At some mines under threat of closure, companies have negotiated new arrangements with their workforce; others have given their mines over partially, or in total, to contractors as a means of circumventing restrictive work arrangements.

For example, at Cyprus Coal’s Baal Bone mine in New South Wales employees recently agreed to sweeping changes which included an end to demarcation rules and a two year moratorium on pay increases. In Queensland, Mount Isa Mines contracted out to Thiess the open cut operations of its Collinsville and Newlands mines.

Productivity-restricting work arrangements

Work arrangements which restrict productivity in Australian black coal mines include:

- the lack of merit-based recruitment mechanisms — through the

| | |
|--|--|
| <p>requirement to use ‘retrenchment lists’ of previous industry employees and selection from the list based on seniority in NSW;</p> <ul style="list-style-type: none"> • retrenchment on the basis of seniority; • restrictions on the use of casual, part-time employment and on the use of contractors; • the allocation of overtime on the basis of seniority and restrictions on the amount of overtime worked; • informal restrictions on changing shift and roster arrangements; • the use of seniority in allocating personnel to shifts; • practices which contribute to relatively high levels of idle time, such as ‘early knock off’ and restrictions on staggering ‘crib breaks’; • seniority-based allocation of personnel to annual leave; • seniority-based promotion; • strict enforcement of demarcations between production work and engineering work, and between the work of production and engineering employees and supervisory staff; • rigid job demarcations through State coal industry legislation which specifies ‘statutory positions’ and their associated functions and qualifications; • the possible inefficient allocation and inappropriate type of supervisory training from a workplace perspective as a result of its determination in coal-specific legislation; • basing pay on skill accumulation rather than the application of skills; • the allocation of training (and therefore tasks) based on seniority; • the limited focus of communication and consultative arrangements; and • the negative approach to dispute resolution at some mine sites. | |
|--|--|

Innovative work arrangements now exist at some open cut greenfield sites and are spreading to new underground mines and brownfield sites.

... but the process is difficult.

The process has not been easy. It has been expensive, and has required strong management to negotiate with employees who are represented by strong unions.

At some mines, progress in improving work arrangements has been minimal, with many restrictive award provisions being transferred directly into new

***State legislation
remains a problem.***

agreements — for example, at the Muswellbrook mine.

Some legislative and institutional impediments to change have been removed. Although some mines have achieved important changes, State legislation which stifles management initiative and encourages a compliance mentality remains a key barrier to improved mine performance.

***Changes in the Federal
sphere are in the right
direction, ...***

The Workplace Relations Act appears to have provided a facilitative environment by moving the Federal industrial relations system in a direction which:

- focuses on agreements at the workplace as the centrepiece for bargaining;
- sees the role of awards as a ‘safety net’ with a limited coverage of matters;
- restricts the extent to which the AIRC can intervene to settle disputes, as well as limiting the matters subject to arbitration; and
- places limits on industrial action such as that undertaken outside a ‘protected’ bargaining period.

But there are still many impediments to achieving timely change embedded in the legislation and awards.

***... but awards still
contain some provisions
which impede change.***

For example, a ‘custom and practice’ award provision, together with the requirement to maintain the status quo during industrial disputes, provides considerable scope for unions to delay the introduction of continuous change strategies on the grounds that proposed changes constitute variations to agreed award provisions.

Furthermore, since ‘custom and practice’ varies between mine sites, and since not all customs and practices are documented, there is considerable uncertainty as to the extent of coverage of work arrangements in awards.

A positive initiative has been the recent exclusion of some seniority-based provisions from one of the main coal industry awards as part of the award

simplification process.

However, the AIRC's decision to include 'custom and practice' as an allowable matter in black coal industry awards maintains a key impediment to change in the industry.

Effects of change

Changes to inefficient work arrangements are likely to produce substantial economy-wide gains.

The Commission's assessment is that the productivity enhancing effects of changes to work arrangements are likely to produce substantial economy-wide gains. This view is confirmed by modelling undertaken by the Centre of Policy Studies at Monash University.

The modelling suggests that real GDP could be around 0.4 per cent higher than otherwise by 2009–10, and real private consumption 0.9 per cent higher, as a result of feasible, accelerated productivity change in the black coal industry. In today's dollars, this would represent additional annual income of around \$3 billion in 2009–10.

There is likely to be a continuation of the trend of job loss in aggregate in the black coal industry over the next decade. The size of the job loss (and consequent adjustment) would be reduced by changing work arrangements which currently restrict productivity growth.

Recommendation 4

The following should not be included as part of the allowable award matters in the black coal industry:

- **'custom and practice';**
- **retrenchment lists and seniority-based recruitment;**
- **provisions which require retrenchment based on seniority alone;**
- **restrictions on the use of part-time, casual or temporary employment or on the use of contractors;**
- **bonuses;**

- **specific demarcation provisions;**
- **prescriptive training provisions; and**
- **provisions relating to the process of negotiating change.**

(Chapters 4 and 5)

Efficient transport infrastructure is essential.

Transport infrastructure

The performance of the coal chain, which includes rail transport, coal terminals and shipping ports, has an important influence on the international competitiveness of the Australian black coal industry. Rail freight (excluding royalties) averages around 15 per cent, and waterfront charges about 6 per cent of the fob cost of export coal.

The coal industry, railways and coal ports in Australia have a strong mutual interdependence in that coal is the single largest commodity transported by rail, export coal is transported almost exclusively by rail, and the ports and terminals used by the industry are dedicated mainly to coal.

Modelling the effects of improved performance

The Centre of Policy Studies (CoPS) at Monash University was commissioned to model the potential industry and economy-wide effects of productivity change in the black coal industry.

Overall, the CoPS results underline the importance of productivity improvements for this export-oriented industry. Confirming expectations, the results also indicate that the economy and the community at large can benefit substantially from a more efficient coal industry. Productivity improvements expand the productive capacity of the economy.

Modelling suggests that real GDP could be around 0.4 per cent higher than otherwise by 2009–10, and real private consumption 0.9 per cent higher, as a result of feasible, accelerated productivity change in the industry. In today's dollars, this would represent additional annual income of the order of \$3 billion in 2009–10.

Under reasonable assumptions about conditions in international coal markets and the response of coal export prices to cost reductions, improvements in both labour and capital productivity would benefit the coal industry and its employees.

By encouraging higher investment, higher productivity growth has the potential to slow job losses in the industry which have been occurring for many years and which are likely to continue in the absence of improved productivity. On the other hand, the modelling indicates that a failure to maintain the industry's present competitiveness would lead to lower output and investment growth, and accelerate job losses. Thus higher productivity growth could reduce the need for relocation of coal industry workers.

Not surprisingly, the two major black coal producing States, NSW and Queensland, benefit from expansion of the sector, while other States, particularly those which are export-oriented, are estimated to experience somewhat slower growth than otherwise.

It should be borne in mind that the modelling results are illustrative only, designed to focus on the impact of productivity change on the coal industry and the economy at large. In practice, productivity changes in the coal industry will occur in the context of myriad unforeseen changes in the industry itself and in the domestic and international economies.

Rail transport

High freight rates have eroded some of the industry's natural advantage.

Australia has an advantage in the international supply of black coal because Australian mines are much closer to ports than their international competitors. However, some of this advantage has been eroded by very high freight rates caused mainly by:

- State governments using rail charges as a means of taxing the coal industry; and
- the productivity performance of State rail authorities being around 20 per cent lower than that of better operations overseas.

State reforms have improved the efficiency of rail pricing, but the pace of change is slow.

The practice of using freight charges to make monopoly profits or collect implicit royalties is being discontinued gradually, with both the New South Wales and Queensland Governments intending to eliminate excess charges by 2000. This has already reduced rail freight charges and encouraged improved performance by rail authorities, but the slow pace of change has delayed the potential benefits of more complete pricing reform.

Effective third party access to rail infrastructure has been delayed.

The introduction of third party access to rail infrastructure, if pursued vigorously by State governments, and if supported by fair and transparent access regimes, offers significant opportunities to improve the productivity of coal rail freight services.

Although State governments have commitments to provide third party access to rail infrastructure, they have been slow to develop access regimes acceptable to the National Competition Council. This has delayed the achievement of the benefits of competition in coal rail freight.

Recommendation 5

The NSW and Queensland Governments should facilitate the early establishment of comprehensive rail access regimes that can be certified by the National Competition Council as effective.

(Chapter 7)

Pricing principles and

A further concern is that the pricing of rail freight by

practices are not transparent.

government enterprises in NSW and Queensland is not transparent. The Commission considers that a set of principles and practices should be developed in each State which will generate efficient prices and provide the private rail freight and coal industries with confidence in the fairness of pricing.

Recommendation 6

In New South Wales and Queensland, pricing principles and asset valuations used to determine prices for access to rail infrastructure should be made public. So too should any related recommendations prepared by the NSW Independent Pricing and Review Tribunal and the Queensland Competition Authority.

Freight customers should have a right of appeal to these bodies regarding the application of the principles on a case-by-case basis.

The role of the regulation and arbitration units of IPART and QCA should be clearly defined and delineated.

Parties should be able to use an independent arbitrator of their choice for dispute resolution.

(Chapter 7)

The coal waterfront

Australian coal ports and terminals perform well.

In general, Australian coal ports and terminals perform well by international standards in terms of physical throughput and pricing. However, there is scope for improvement.

A recent capacity constraint at the Port of Newcastle is being addressed through better utilisation of existing facilities, and progress is being made on expanding the capacity of the port.

The level and structure of waterfront charges is an issue.

Inquiry participants raised issues concerning the level and structure of some government-imposed components of total waterfront charges. An issue is whether governments earn an excessive rate of return

on infrastructure used for exporting coal.

At present the target rates of return for Queensland's port corporations are not published, and there is no external discipline on the pricing practices of either the Queensland or New South Wales port corporations.

Greater transparency is needed.

In the Commission's view, there should be greater transparency of target rates of return, methods of valuing assets, and pricing practices of port corporations. Making the port corporations in Queensland and New South Wales subject to prices oversight would impose discipline on them not to generate excessive returns on their assets.

Recommendation 7

The Queensland Government should publish the target rates of return for its port corporations' assets.

The New South Wales and Queensland Governments should bring their port corporations within the prices oversight jurisdiction of the Independent Pricing and Regulatory Tribunal and the Queensland Competition Authority, respectively.

(Chapter 8)

Government regulation and safety

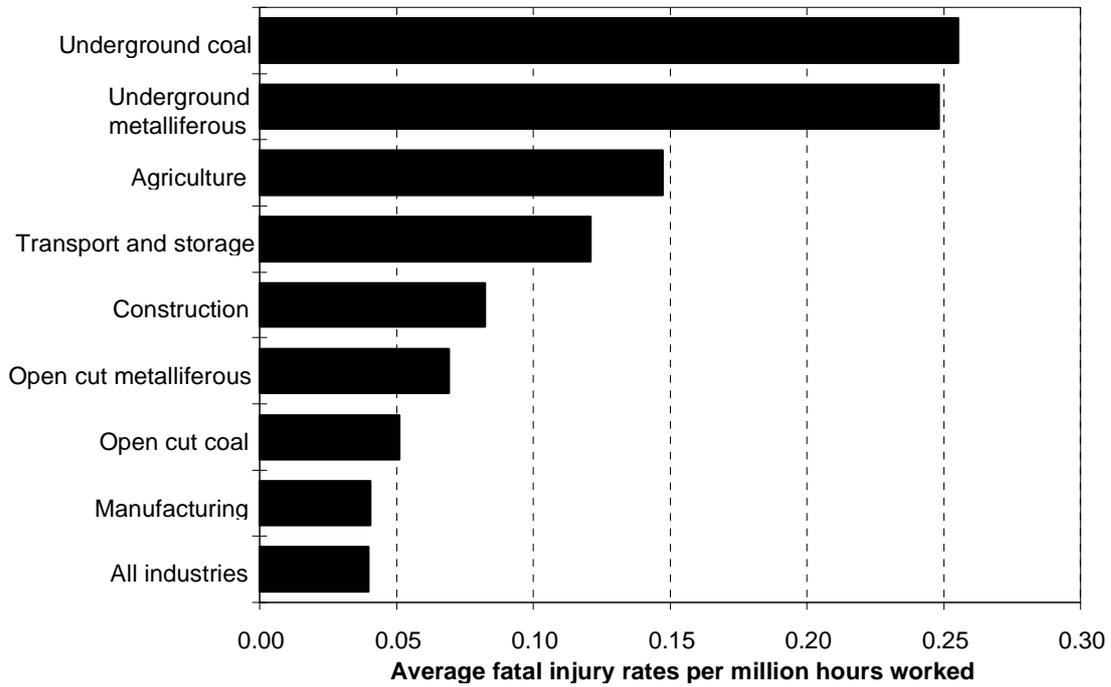
Occupational health and safety

Underground coal mining is hazardous.

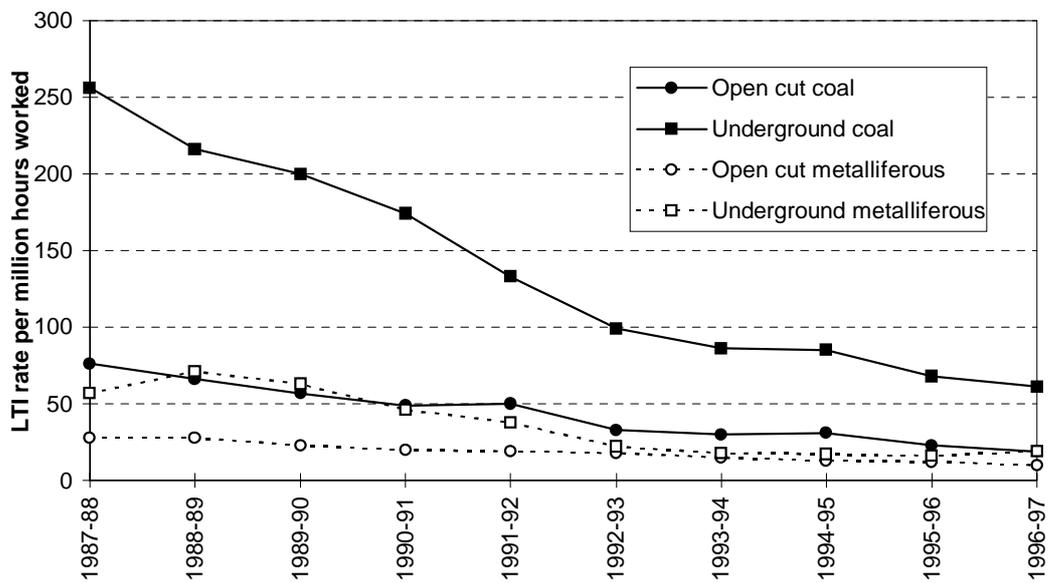
Underground coal mining is a hazardous industry. The industry's fatality rate is about six times the Australian industry average. However, the low injury record of some mines indicates that accidents are preventable if hazards are managed effectively.

The rate of fatal injury in the open cut coal mining sector is slightly higher than that for all Australian industries.

Average fatal injury frequency rates (1991 – 1997)



Lost time injury frequency rates



| | |
|---|--|
| | <p>Within the mining industry, coal mining has a similar fatality rate to metalliferous mining, but a higher lost time injury rate. On all indicators, the underground sector of the black coal industry has a worse safety record than the open cut sector.</p> |
| <p><i>Injury rates have declined but the fatality rate remains high.</i></p> | <p>The industry's progress in improving safety is mixed. Between 1987–88 and 1996–97 the lost time injury rate has been reduced significantly, but the fatality rate remains high.</p> |
| <p><i>OHS legislation is different for coal mining.</i></p> | <p>The occupational health and safety (OHS) legislation applying to the black coal industry is very different from the general OHS legislation that applies to almost all other Australian industries. Together with other mining industries, black coal mining is one of the few industries subject to industry-specific legislation.</p> |
| <p><i>Regulations prescribe how hazards are controlled and how mines are managed.</i></p> | <p>The legislative approach to OHS in most other industries makes workplace parties responsible for safety under a 'duty of care' approach. In contrast, coal mine safety regulations still prescribe how particular hazards are to be controlled and how mines are to be managed to ensure safety.</p> |
| | <p>Submissions to this inquiry argued that the current approach to OHS in the coal industry is not conducive to good safety outcomes, encourages an apathetic approach to safety, and imposes high compliance costs on firms without commensurate improvements in safety.</p> |
| <p><i>Many safety regulations are inappropriate or redundant.</i></p> | <p>Participants pointed to regulations which are redundant and not appropriate to particular mines, the prescriptive nature of most regulations, and regulations developed for the underground sector and inappropriately imposed on open cut operations.</p> |
| | <p>To improve safety outcomes in the coal industry, an alternative to the current regulatory approach is required. Workplace parties need to bear more responsibility for safety.</p> |
| <p><i>The Commission</i></p> | <p>The Commission accordingly favours an approach to</p> |

favours an alternative approach to safety.

regulating OHS in the black coal mining industry under which workplace parties are legally responsible for mine safety through their duty of care. The duty of care would require companies to develop safety management plans in consultation with their employees and would be enforced vigorously.

Recommendation 8

Workplace parties (principally employers) should be legally responsible for mine safety through their duty of care.

Underground coal mines should be regulated separately from the open cut coal sector, which should be covered by OHS legislation governing metalliferous mining or the general legislation governing OHS in other industries.

(Chapter 9)

Under the regulatory approach proposed by the Commission:

- companies would be required to develop and periodically review mine safety management plans in consultation with their employees. These plans would identify all safety risks at a mine and contain procedures for the management of these risks;
- mines would be guided in developing safety management plans by codes of practice, guidance notes and advice from safety consultants and coal inspectorates;
- existing regulatory requirements would be reviewed and rationalised to remove obsolete regulations and detailed provisions prescribing the management of minor hazards;
- regulations prescribing the management of serious hazards would be redrafted along performance or management system lines, and existing regulatory prescription would be

- reategorised as codes of practice;
- regulations prescribing management positions would be abolished and the need for regulations prescribing other safety positions would be reassessed;
- there would be vigorous enforcement, with an emphasis on deterrence, so that workplace parties had the incentive to comprehensively assess and control the hazards of their work;
- inspectorates would conduct random audits of mines to ensure that mine safety management plans addressed mining hazards and had been implemented;
- coal inspectorates would issue an enforcement policy and publish details in their annual reports about actions taken against companies in respect of significant derelictions of their duty of care; and
- maximum penalties applying to the coal industry would be brought into line with those applying to other industries.

The Joint Coal Board

The Joint Coal Board (JCB) was established under Federal and New South Wales legislation in 1946. Its main function was to regulate the industry and ensure the maintenance of coal supplies in New South Wales.

The JCB has four core businesses.

The JCB's four core businesses now are:

- to manage an occupational health service that delivers health assessments, injury management, work environment monitoring (including dust monitoring) and health education to the NSW coal industry;
- to maintain a fully funded workers' compensation insurance scheme for people working in the NSW coal mining industry (known as Coal Mines

Insurance);

- to provide an information service on production, employment and accidents; and
- to conduct international training courses, funded by the United Nations, on the utilisation of coal in an environmentally sustainable manner.

The JCB should be abolished.

The Commission sees no need for continuation of the JCB. Its existence tends to reinforce the perception that the coal industry is 'special'. In the interests of creating a more efficient industry, this perception must change. Abolition of the JCB, with its functions transferred to the NSW Department of Mineral Resources, WorkCover and other public and private providers as appropriate, would help to bring the regulation of the coal industry into line with that of other industries.

The legislated monopoly which Coal Mines Insurance currently enjoys should be abolished, enabling coal mining companies to insure with whom they choose. Coal Mines Insurance could compete for business against other insurance providers.

Recommendation 9

The Joint Coal Board should be abolished and its functions taken over by the NSW Department of Mineral Resources, WorkCover and other public and private providers as appropriate.

If it were decided to retain the workers' compensation role of the JCB, Coal Mines Insurance should be corporatised and required to compete for business against other insurance options.

(Chapter 9)

Royalty arrangements

Coal royalties are

Miners pay State governments for the use of black coal

| | |
|--|---|
| <i>currently levied on mine output.</i> | resources through royalties. In NSW, royalties are levied as a dollar amount per tonne of production (specific rate royalty), and in Queensland as a percentage of the value of production (ad valorem royalty). |
| <i>Ad valorem royalties are superior to specific rate royalties.</i> | These royalty systems have the advantage of being easy to administer. Ad valorem royalties have the additional benefit of varying with price and therefore partly responding to changes in the value of the resource. Specific rate royalties take no account of differences in the various types of coal or of changes in coal prices over time. |
| <i>In principle, a resource rent royalty would be more efficient ...</i> | In principle, a resource rent royalty would be superior on efficiency grounds as a company's royalty liability would depend on the value of its resource, and would vary with changes in mining costs and coal prices. Such a royalty would not distort mining production decisions. |
| <i>... but would be complex and costly to administer in the black coal industry.</i> | In practice, however, the potential complexity and cost of administering and complying with a resource rent royalty for black coal has caused State governments to rely on output-based royalty schemes. Nevertheless, there are strong arguments for making royalties more responsive to market conditions. In NSW, the replacement of specific rate royalties with ad valorem royalties would allow royalty levels to move with world coal prices, better reflect the value of coal resources, and encourage the economic exploitation of low grade coals. |

Recommendation 10**The NSW Government should adopt an ad valorem royalty system.***(Chapter 10)***Implementation of recommendations**

The Commission's recommendations arising out of this inquiry relate largely to matters within the jurisdiction

of State governments and their instrumentalities. However, the potential economy-wide gains which could flow from improved productivity performance are sizeable.

Accordingly, the Commonwealth Government has reason to take an interest in implementation of the recommendations, which range across a number of policy portfolios.

There would be advantage in joint Commonwealth and State government discussion of the recommendations. This could occur either in the Council of Australian Governments or in a meeting of Ministers with portfolio responsibilities for matters covered by the Commission's recommendations.

1 INTRODUCTION

This chapter provides a brief description of the Australian black coal industry and introduces some contemporary factors influencing its performance. It then outlines the main issues raised by the inquiry and how the Commission has approached its task.

1.1 The Australian black coal industry

The Australian black coal industry has undergone substantial change over the past few decades. Rapid development of large open cut mines in Queensland transformed the industry from one which essentially supplied local power stations to one geared to exporting. This transformation, together with a period of strong increases in coal prices, generated high levels of profitability for mining companies and high levels of income for miners. However, less favourable market conditions in recent times have posed new challenges for the industry.

Australia's coal output is now divided fairly evenly between coking and thermal coal. The former is used in the production of steel while thermal coal is used in electricity generation and as an industrial energy source.

The black coal industry accounts for more than one per cent of GDP, almost twice the size of the Australian iron and steel industry. In December 1997, around 23 800 people were employed in the black coal industry.

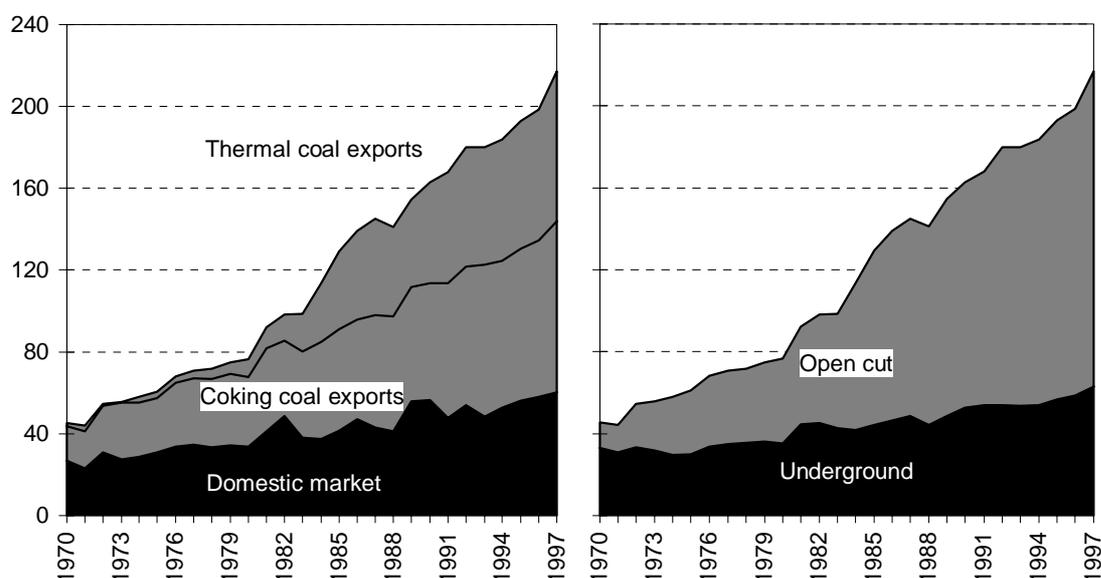
Black coal is Australia's largest export industry. In 1997, black coal exports amounted to \$8.8 billion, equivalent to 10 per cent of the value of Australia's total merchandise exports. While Australia ranks only sixth among coal producing nations, it is the world's largest coal exporter. Australia accounts for around 30 per cent of world trade in coal. Australia's principal coal customer is Japan, which takes nearly half of total exports, followed by the Republic of Korea, Taiwan and India.

Australian black coal production has more than quadrupled since 1970. At that time, more than half the production was used domestically, and the limited exports were of coking coal. In the wake of large increases in oil prices in the 1970s, world demand for thermal coal increased substantially, and Australian thermal coal exports expanded from just over one million tonnes (Mt) in 1970 to almost 74 Mt in 1997. This was equivalent to an annual growth rate of almost

15 per cent in thermal coal exports. Coking coal exports also have grown since 1970, but at a much slower pace (see Figure 1.1).

By 1997, exports accounted for 72 per cent of Australian black coal production, a major change from the early 1970s, when the industry was mostly a supplier to the domestic electricity and steel markets. Of the coal sold presently to the domestic market, almost 80 per cent is thermal coal used in electricity production.

Figure 1.1: **Black coal production for export and domestic markets and by mine type (Mt)**



Sources: JCB and QCB (various).

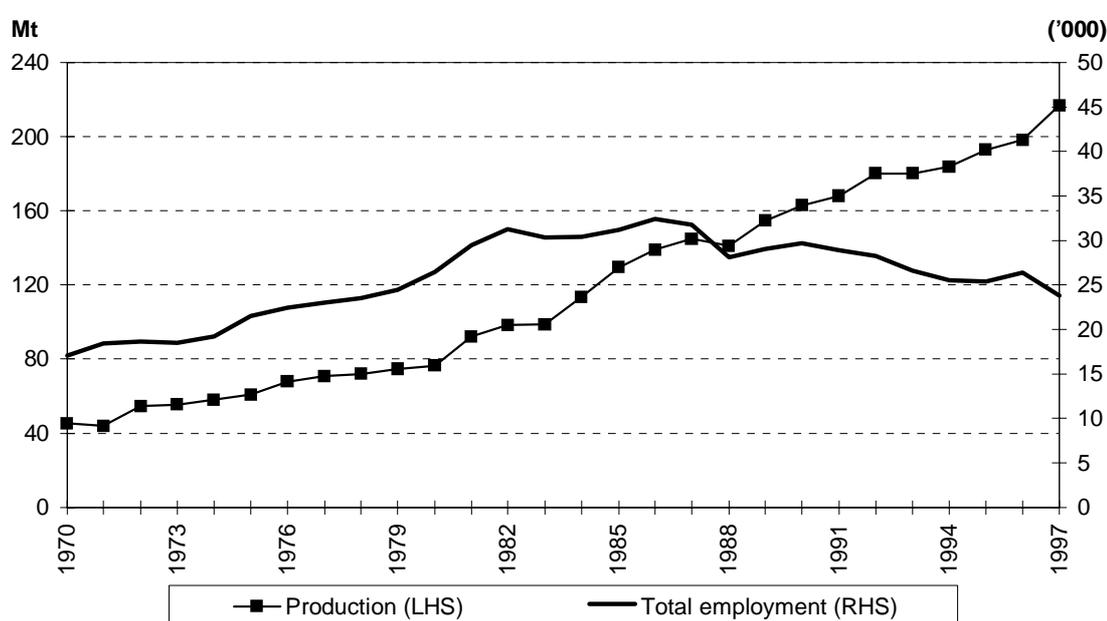
More than 95 per cent of Australia's black coal comes from NSW and Queensland, in roughly equal proportions. In the 1970s, production was concentrated in NSW. However, Queensland has enjoyed a greater rate of growth since then. Coking and thermal coals are produced in both States. Queensland is the dominant coking coal exporter, accounting for about 70 per cent of Australian coking coal exports, and NSW is the dominant thermal coal exporter, accounting for close to 70 per cent of Australian thermal coal exports.

The growth in output since the 1970s has been mainly in open cut mining, which now accounts for over 70 per cent of Australia's production (see Figure 1.1). This form of mining is quite similar to quarrying, and the mining of many other Australian minerals such as iron ore.

While the output of the Australian coal industry has increased by more than 380 per cent since 1970, mine employment has grown by only 39 per cent from 17 100 to 23 800 persons. Figure 1.2 presents data on industry output and mine employment. Industry employment peaked at 32 700 in December 1986 and has fallen gradually since then. Among other influences, this reflects:

- the growth of capital-intensive open cut mining;
- the introduction of more capital-intensive underground mining techniques (longwall mining); and
- improvements in labour productivity.

Figure 1.2: **Black coal industry output and employment^a**

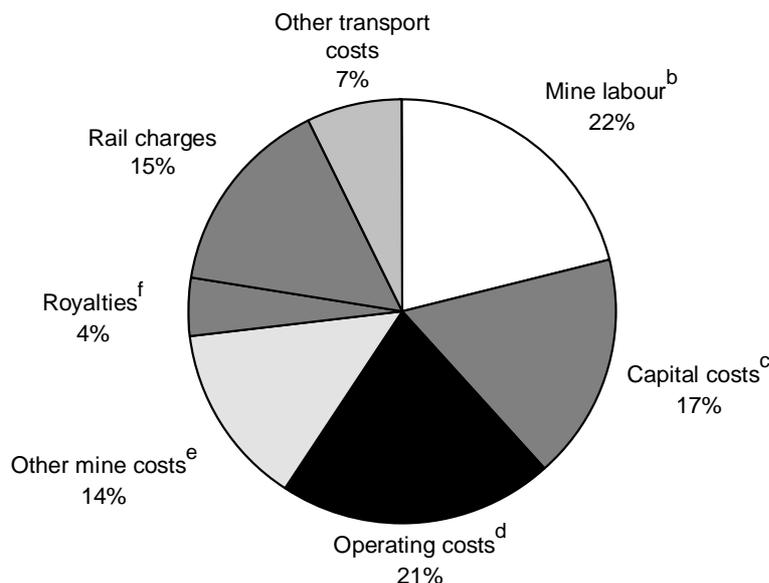


^a Employment at June.

Sources: JCB and QCB (various).

Although the Australian coal industry has moved to more capital-intensive types of mining, labour remains a major cost, together with mine capital costs, mine operating costs and transport costs (see Figure 1.3).

The Australian black coal industry is also a major contributor to State government revenue. The Commission estimates that the industry contributed \$636 million in royalties to the NSW and Queensland Governments in 1996–97, equivalent to 2.8 per cent of own revenue in these States.

Figure 1.3: Mine to port costs of producing coal, 1996^a

a This is a classification of costs (including profit) in the free on board price of coal. It includes all costs of mining and transporting coal, other than ocean freight.

b Labour costs include direct and indirect costs such as payroll tax and workers' compensation payments. They do not include labour in preparation plants, stockpile and loading facilities and administration.

c Capital costs are associated with the raising of finance for the project and the purchase of plant and equipment in the mine. They include the capital cost of the coal preparation plant and associated infrastructure.

d Operating costs include mining equipment, repairs and spare parts, explosives, fuel, haulage, road maintenance, pumping, drainage, power and water charges.

e Other mine costs include replacement and refurbishment costs to maintain existing production; materials, labor and operating costs for the running of the preparation plant, stockpile and loading facilities at the mine; and any administration costs, including at the mine and head office.

f Royalties include royalties, super royalties and the research/long service leave levies.

Source: Barlow Jonker 1997.

Australia's largest black coal miner is BHP, which accounts for around 25 per cent of industry output. The next largest is Rio Tinto, with about 14 per cent of production. Other companies involved include Oakbridge, Shell and MIM. For the greater part, the owners of Australian coal mines are drawn from diversified mining companies, energy companies and electricity generators.

The level of foreign investment in Australia's black coal industry is significant. The Commonwealth Department of Primary Industries and Energy estimates that in 1997, about 50 per cent of black coal production capacity was owned by Australian interests, 22 per cent by Japanese interests, 12 per cent by European interests and 11 per cent by US interests (sub. 43, p. 3).

More detailed information on the Australian black coal industry is provided in Appendix C.

1.2 Contemporary issues in the black coal industry

Historically, black coal has been a vital input into the development of the Australian economy. It has been tied closely to other industries such as the electricity generation industry, Australia's rail network, the steel and other mineral refining industries, as well as providing an important source of domestic heating in the past. Reflecting this, the black coal industry has been subject to a greater degree of government intervention than any other Australian industry for many years.

Government intervention in the black coal industry has included:

- the Commonwealth and NSW Governments' establishment, in 1946, of the Joint Coal Board (JCB) which had extensive powers over the industry, including the right to prevent mines closing and to limit mine production;
- the Queensland Government's establishment, around the same time, of the Queensland Coal Board, with similar powers to the JCB;
- the Commonwealth Government's establishment, in 1946, of the Coal Industry Tribunal, and the WA Government's establishment of the Coal Industry Tribunal of Western Australia — special, separate tribunals to conciliate and arbitrate on coal disputes;
- the NSW and Queensland Governments' establishment of separate occupational health and safety legislation for the coal industry;
- NSW and Queensland legislation restricting most coal haulage to rail;
- Commonwealth legislation providing for long service leave for coal industry workers based on their length of industry service, irrespective of their length of service with their current employer; and
- Commonwealth export controls.

While some of this regulation has been removed over the last five years, black coal is still subject to a significant amount of industry-specific legislation.

The Australian black coal industry was insulated from strong competition until the mid-1980s (see Chapter 2). A number of factors contributed to this. First, much of the industry's output was destined for the domestic electricity industry, which was insulated from competition and therefore able to pass on cost increases to customers.

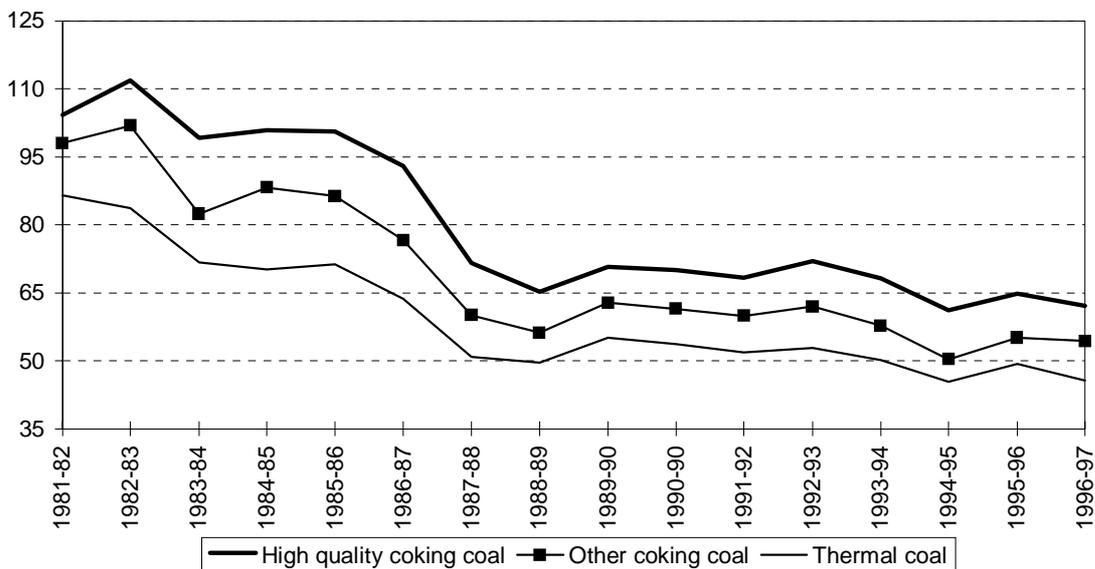
Second, Australia was one of the few suppliers of high quality coking coal to the Asian market and alternative steel making technologies were not yet common.

Third, in the late 1970s, when international demand for thermal coal increased, coal was competing in an energy market against oil, and OPEC-inflated oil prices provided a comfortable margin within which coal producers could set prices.

However, since the mid-1980s, competition in the international and domestic coal markets has been increasing. This has led to lower coal prices and placed pressure on Australian producers to improve productivity (see Figure 1.4 and Chapter 2). This changing market environment raises four questions:

- What is the effect on coal mine productivity of current work arrangements, transport infrastructure and government regulations?
- What are the implications of this changing competitive environment for work arrangements, transport infrastructure and government regulations?
- Are there any unjustifiable impediments to the industry lifting productivity and adjusting to a more competitive environment?
- If productivity in the coal industry increased, how would this affect employment, output and exports in the coal industry and the rest of the Australian economy?

Figure 1.4: Real export prices for Australian coal (\$A1996–97/t)



Sources: ABARE (1997a,b,c and d).

1.3 The inquiry's terms of reference and the Commission's approach

It is against this backdrop of government involvement in the industry and a changing market environment that the Commonwealth Government called this inquiry. The Government asked the Commission to report on the industry's performance, and to benchmark the performance of Australian black coal mines against Australian metalliferous mines and overseas black coal mines. The Government also asked the Commission to recommend ways of improving the industry's international competitiveness. Specific matters on which the Commission was asked to report include work and safety arrangements, royalties and infrastructure. The full terms of reference are reproduced on page XVIII.

The Commission adopted a four step approach to its task. It began by investigating the changing market in which the Australian black coal industry operates. This analysis revealed the competitive pressures facing Australian producers.

The Commission then sought to measure the industry's performance. The aim was to determine the scope for productivity improvement, and to identify the causes of any shortfalls in productivity performance. The analysis was informed by the results of a survey of the performance of over 40 Australian and US black coal and metalliferous mining operations.

After assessing the industry's performance, the Commission considered whether there was a need for action by governments to ensure that the industry could reach its productivity potential. A key issue here was whether changes in the competitiveness of the market would provide sufficient incentives for the industry to improve productivity, without the need for any action by governments. Alternatively, government institutions and arrangements developed under different market circumstances may have hampered coal producers' ability to respond to more competitive conditions.

The Commission approached the question of what governments could do to enhance the coal industry's future from an economy-wide perspective. That is, it considered reforms that would be consistent with improving the overall performance of the Australian economy. This reflects the Commission's charter, and the terms of reference for the inquiry.

Finally, the Commission engaged the Centre of Policy Studies at Monash University to estimate, in quantitative terms, the impact of improvements in coal industry productivity on the overall economy.

The structure of the report reflects this four step approach:

- Chapter 2 examines the changing market for black coal;
- Chapter 3 assesses the performance of Australian black coal mines;
- the following chapters consider the scope for government reform
 - Chapters 4, 5 and 6 describe and evaluate work arrangements;
 - Chapters 7 and 8 consider transport infrastructure;
 - Chapter 9 assesses other government regulations and safety;
 - Chapter 10 discusses royalty arrangements; and
- Chapter 11 presents the economic modelling results which provide estimates of the effects on the coal industry and the broader Australian economy of improvements in the coal industry's productivity.

There are a number of issues affecting the Australian coal industry that the Commission did not attempt to cover in this report. These included:

- government policies affecting exploration and mine development; and
- the impact of environmental policies on the coal industry, and the coal industry's effect on the environment (for example, mine site rehabilitation).

These issues are vital to the industry and the welfare of the community. However, it was necessary to contain the scope of the inquiry, and for this reason these issues were not covered. In determining the inquiry's scope, the Commission was guided by the matters raised in the terms of reference.

1.4 Conduct of the inquiry

In preparing this report, the Commission drew on evidence from a range of sources, and sought input from people interested in and knowledgeable about the industry. The Commission received 52 submissions prior to the draft report and 16 submissions in response to the draft report. The Commission held an initial round of public hearings and a second round of hearings in response to the draft report. In total, 16 individuals and organisations gave evidence at the hearings. The trade union movement did not participate in the inquiry.

The Commission visited open cut and underground mines in NSW, Queensland and Western Australia to gain an appreciation of the conditions under which coal is mined, and why certain issues, such as safety and capital utilisation, are particularly important for this industry. The Commission also visited some mines and ports in the United States and Canada to assist its understanding of

the strengths and weaknesses of Australia compared with other coal-producing nations.

The Commission engaged consultants to assist it to understand the economy-wide effects of productivity change in the black coal industry, and to benchmark the performance of black coal mines. In January 1998, the Commission held a public workshop to discuss the preliminary results of these studies and to gain feedback on the approaches being taken by the consultants. More than 50 people attended the workshop. The Commission held a second workshop on benchmarking in June 1998 when more results from the mine survey had been received.

The modelling and benchmarking consultancies were refereed independently, and summaries of the referees' comments are reproduced in this report. The full referee reports are available on request.

In January 1997, the Government had asked the Commission to undertake a study on working practices in the black coal industry. That study was incorporated into this inquiry, following receipt of the inquiry's terms of reference.

This inquiry was sent to the Industry Commission under the *Industry Commission Act 1989*. During the course of the inquiry, the Productivity Commission was established and the Industry Commission abolished. Under the transitional provisions in the legislation, the inquiry was completed as if it had begun under the *Productivity Commission Act 1998*.

Further information about the Commission's conduct of the inquiry and public participation is provided in Appendix A.

2 THE CHANGING MARKET FOR BLACK COAL

The Australian black coal industry was insulated from strong competition until the mid-1980s. Factors contributing to this included regulation of the domestic electricity market, the limited number of suppliers of coking coal to the Asian market, and the high price of oil. However, developments such as the collapse of oil prices in the mid-1980s have ushered in a new era of competition in the international coal market.

World demand for coal is projected to grow by about 2 per cent a year between now and 2010, but prices are expected to fall in real terms by about 2 per cent a year. In the domestic market, demand for thermal coal is expected to grow, but at a slower rate than electricity output, as the share of electricity generated from gas increases.

In both the thermal and coking coal markets, price reductions are being driven by structural changes in the market which are increasing competition. In the thermal coal market, the changes include the emergence of new low-cost suppliers, the deregulation of electricity markets, and the increasing use of tenders and spot purchases of coal. In the coking coal market, producers are facing competition from new coal-switching and coal-replacing technologies.

As well as becoming more competitive, the coal market is becoming more dynamic. The market is undergoing considerable change, creating new opportunities for producers flexible enough to respond and threats for others. These developments indicate that Australian producers must cut costs and lift productivity in order to remain competitive and build market share.

Evidence that buyers can pay different prices for coal from different countries may reflect diversification strategies or the benefits of regional trade that may arise within a narrow price range. It does not indicate that the market is uncompetitive.

While barriers to international trade in coal are generally low, significant benefits would flow to Australian coal producers from further trade liberalisation.

2.1 Introduction

The Australian coal industry was insulated from strong competition until the mid-1980s. A number of factors contributed to this. First, until the mid-1970s, most of the industry's output was destined for the domestic market, principally the electricity industry. At that time, government regulation protected the electricity industry from competition, and governments were more concerned with ensuring continuity of electricity supply than with the price competitiveness of that supply. This made it easy for coal producers to pass on cost increases to generators, and for generators to pass these costs on to businesses and households in the form of inflated electricity prices. ACIL Economics and Policy (1997b) said:

This more readily manageable market of the past allowed electricity producers to enter into long term contracts with coal suppliers and to pass on to consumers (subject to contractual arrangements) any increases in power generation costs, including coal supply costs. This resulted in a system of average cost pricing for coal and for coal mines to be 'tied' to generators for extended periods. (p19)

Pacific Power commented that there were few alternatives to coal as an electricity fuel source, as no economic or accessible gas or oil resources had been discovered in NSW, and there were limited hydro resources (other than the Snowy Mountain Scheme). While gas was available (via the AGL pipeline) as a residential and industrial energy source, it had a limited market share because its price was not competitive against coal-fired electricity (sub. 39, p. 6).

Second, in the 1960s and 1970s, Australia was one of the few suppliers of coking coal in the Asian market. Japan had invested in Australian black coal mines on the basis of long-term supply contracts which ensured high profitability for those mines. This was done to secure raw materials for Japan's protected steel industry. Other suppliers were mines on the east coast of the United States, which had a transport cost disadvantage in supplying Asian markets — and later Canada, which started to develop coking coal mines in the mid-1970s. Alternative technologies which reduced the use of coking coal in steel production were not yet widespread.

Third, in the early 1980s, when Australia expanded thermal coal exports, coal was competing in an energy market against oil, and oil prices were at historically high levels. Between 1980 and 1986, oil prices were 2–3 times higher than thermal coal prices (measured in energy equivalent units), supporting strong demand for thermal coal and providing a comfortable margin within which coal producers could set prices. However, in 1986 oil prices fell substantially. This collapse in oil prices led to a sharp reduction in coal prices,

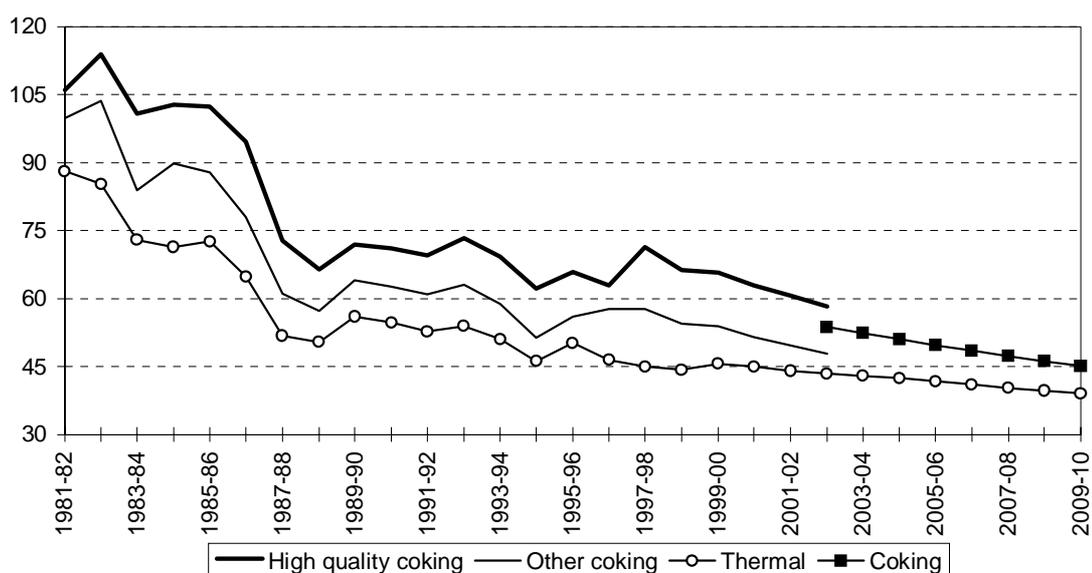
ushering in a new era of competition in the international coal market (see Figure 2.1).

2.2 Supply and demand outlook for the black coal industry

World demand for coal is projected to grow by about 2 per cent a year between 1997–98 and 2009–10.¹ Despite this growth, real world coal prices (in Australian dollars) are projected to fall by more than 2 per cent a year over the same period (see Figure 2.1).

If Australia is able to maintain its share of world coal trade, the volume of coal exports is projected to grow by about 2 per cent annually, so that by 2009–10 it would be 26 per cent higher than the 1997–98 level (see Figure 2.2). Coal export projections are discussed further in Appendix L (Attachment L1).

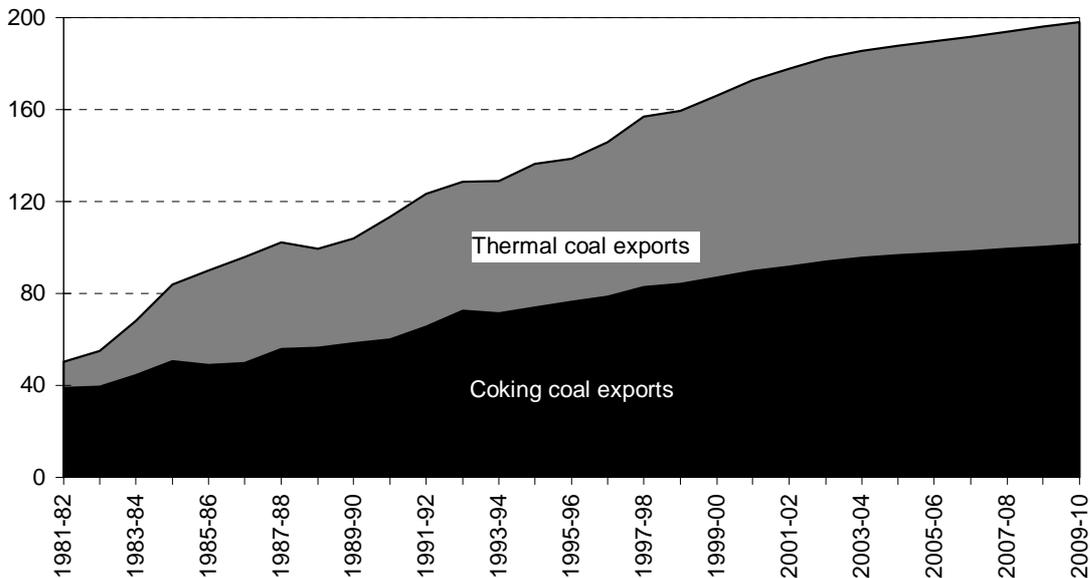
Figure 2.1: Real export coal prices^a (\$A1996–97/t)



^a Actual weighted average of export prices to 1996–97, projections from 1997–98 onwards. Coking coal price projection is not separated into high quality and other categories after 2003–04.

Source: Commission estimates based on ABARE (see Appendix L, Attachment L1).

¹ These estimates are based primarily on ABARE forecasts for world coal demand and supply (see Appendix L, Attachment L1).

Figure 2.2: Australian black coal exports^a (Mt)

a Actual exports to 1996–97, projections from 1997–98 onwards.

Source: Commission estimates based on ABARE (see Appendix L, Attachment L1).

2.2.1 Factors underlying the outlook for thermal coal trade

Australian thermal coal exports are projected to grow somewhat faster than coking coal exports over the period 1997–98 to 2009–10. This reflects:

- growth in Asian economies over the period which will increase demand for electricity and electricity fuel sources; and
- an increase in the share of electricity generated from coal in Asian countries.

ABARE has revised down its medium-term forecasts (1997 to 2002) of annual growth in Asian thermal coal imports from 6.2 per cent to 5.3 per cent following the Asian financial crisis. Despite recent instability, ABARE (1998a) concluded:

The recent devaluation of currencies in some countries of Asia and associated wider economic impacts have lowered expectations about the rate of growth in thermal coal demand in the Asian region. However, low energy resource endowments in many countries in the region, the established technologies and economics of coal fired power generation, the relatively low and stable fuel costs, and assumed relatively high rate of economic growth over the medium-term mean that this region still has the greatest prospects for growth in world thermal coal imports. (p. 129)

In relation to the share of electricity generated from coal, BHP commented:

Coal-fired electricity represented 24 per cent of electricity consumption amongst Asian APEC members in 1980. By 1992, this had risen to 40 per cent, and is projected to rise to 54 per cent by 2010. (sub. 43, p. 14–15)

ABARE expects real thermal coal prices to fall because of strong growth in supply, and productivity improvements which will reduce suppliers' costs. Illustrating how technology is reducing costs, BHP commented that mines are now using 240 tonne trucks and draglines with 100 cubic metre buckets — double the size commercially available twenty years ago (sub. 30, p. 5).

The NSW Minerals Council reported that in the 1998 annual price negotiations, contract export prices (denominated in US dollars) for the Japanese steaming coal market fell by 8.4 per cent (sub. DR60). The depreciation of the Australian dollar is likely to have cushioned Australian producers from the full effects of this price cut.

2.2.2 Factors underlying the outlook for coking coal trade

Australian exports of coking coal are projected to grow by close to 2 per cent a year between 1997–98 and 2009–10. As coking coal is an input into steel production, demand forecasts for coking coal generally reflect projections of steel output.

However, an additional influence on coking coal demand is the intensity of use of coking coal in steel production. In recent years, the use of coking coal per unit of steel production has been falling as a result of technological developments. These include:

- electric arc furnaces — which produce steel without the use of coke at all; and
- pulverised coal injection (PCI) techniques — where the quantity of coking coal in the blast furnace is reduced and replaced with PCI coals, which are weak coking coals or thermal coals.

As a result, demand for coking coal is growing at a slower rate than steel production. These technological developments are discussed further in Section 2.3.2.

2.2.3 Domestic market for black coal

Almost 30 per cent of Australian black coal production is used in the domestic market, of which 78 per cent is used to generate electricity. Domestic electricity production is projected to grow at an average annual rate of more than

3 per cent a year between 1997–98 and 2009–10, slightly faster than growth in the economy as a whole (see Appendix L, Attachment L2).

However, sales of thermal coal to the domestic electricity industry are expected to grow at the slower rate of 1 per cent a year, reflecting an increase in the share of electricity generated from gas.² The share of electricity generated from black coal is expected to fall from 59 to 52 per cent between 1995–96 and 2009–10, whereas the share generated from natural gas is expected to grow from 9 to 21 per cent. This reflects:

- the deregulation of the gas market, which is expected to increase gas availability and reduce gas prices;
- the suitability of gas for meeting intermediate and peak electricity demand;
- the lower capital cost of installing small-scale, gas-fired electricity generation plants compared with coal-fired plants; and
- environmental considerations, as producing electricity from gas involves lower greenhouse gas emissions.

Brown coal also will increase competitive pressures on black coal. While ABARE (1997g) does not expect black coal to lose market share to brown coal in electricity generation, this was disputed by Pacific Power and Powercoal. Pacific Power (sub. DR55, p. 1) said that “evidence from the National Electricity Market suggests that NSW black coal is already being displaced by Victorian brown coal”. Powercoal (trans., p. 23–24) observed that Victorian power stations fired by brown coal had lower fuel costs, had implemented labour cost reductions following privatisation, and were taking market share from NSW generators.

Domestic sales of coking coal are projected to fall by more than 1 per cent a year between 1997–98 and 2009–10, reflecting the increasing use of electric arc furnaces and PCI coal in domestic steel production.

2.3 Factors increasing competition in the black coal market

A number of factors suggest that competition is increasing in the thermal, coking and domestic coal markets. These are discussed below.

² These estimates are based primarily on forecasts by ABARE (1997i) (see Appendix L, Attachment L2).

2.3.1 Competition in the international market for thermal coal

Factors increasing competition in the international thermal coal market include:

- changes in the way in which coal is sold;
- the emergence of low-cost suppliers; and
- increasing substitutability between types and sources of coal.

Changes in the way in which coal is sold

Australia's largest coal customer is Japan, which accounts for more than half of Australian thermal coal exports. Traditionally, Japanese power utilities developed long-term relationships with coal producers, buying coal under long-term contracts, with annual price and volume negotiations. The Japanese power utilities operated in a co-ordinated manner in negotiating prices with coal suppliers. These negotiations resulted in various annual 'benchmark' prices for the various grades of coal (see Appendix D).

In 1996 and 1997, Japanese power utilities started buying a greater share of their coal on the spot market and via tenders, reducing the importance of benchmark prices. This enabled them to achieve considerable savings as spot prices have been consistently lower than 'benchmark' prices (see Figure 2.3).

Figure 2.3: **Benchmark prices compared with spot prices^a**

⊞

— Spot price index (BJI) — Japanese benchmark price

^a The spot price index is compiled by Barlow Jonker. The Commission has selected the benchmark price for coal that is equivalent in quality to that used for the spot price index.

Source: Australian Coal Report (1997).

In 1998, the Japanese power utilities discontinued collective negotiations of benchmark prices in favour of tendering and individual negotiations with suppliers. Chubu, the first utility to agree with suppliers on price, revealed the highest price it paid for coal, but the average price it paid is not known (Australian Coal Report 1998a). Since this settlement, four other power utilities have conducted individual negotiations with suppliers to determine the terms of long-term contracts. In addition to these individually negotiated long-term contracts, the Australian Coal Report (1998b) has estimated that the Japanese power utilities will purchase almost 20 per cent of their coal through tenders and spot purchases in 1998.

Of the major non-Japanese electricity producers in the region, Taipower in Taiwan is buying all its coal on the spot market or under tendered, long-term contracts (see Box 2.1), while Kepco in the Republic of Korea, is buying around 20 per cent of its coal requirements on the spot market, but has indicated a willingness to increase this to 35 per cent (ICR 1998d). Taiwan and the Republic of Korea purchase 30 per cent of Australian thermal coal exports.

The increasing willingness of Japanese customers to enter into more short-term and competitive coal supply arrangements reflects:

- recent reforms to the Japanese electricity industry; and
- the greater depth and diversity of coal supplies in the Asian market.

Since 1995, the Japanese Government has been introducing structural reforms to the Japanese electricity industry to enhance competition. The Government has announced that its aim is to reduce Japanese electricity prices to internationally competitive levels by 2000 (see Box 2.2). This is placing pressure on Japanese utilities to seek lower cost fuel sources, and to give greater consideration to the cost competitiveness of fuel sources, not just their reliability. This has prompted utilities to increase the share of lower priced, spot coal purchases in their overall portfolio of coal purchases.

At the same time, the emergence of new coal suppliers in the Asian region, such as Indonesia and China, and the enhancement of export capability in traditional suppliers such as the United States and South Africa, have reduced the risks associated with buying coal on the spot or tender market. Exxon summarised the situation:

Japanese customers, which comprise the largest market for Australian exporters, want the following from their suppliers:

- 1) Suppliability (as it relates to the long term stability of supply)
- 2) Quality, coal fit for the intended uses
- 3) Reliability of Supply (as it relates to short term dependability of supplier)
- 4) Competitiveness (is the supply economic relative to world market price)

Historically, the Japanese placed emphasis on the first three factors over the fourth. To secure them, they were willing to pay a premium over the price the market would have suggested otherwise.

The environment has now drifted to where the Japanese are sufficiently comfortable with suppliability and more concerned with price competitiveness. This has occurred as a result of maturation of the Utility purchasers within the market, and the cost pressures commensurate with utility deregulation in Japan over the last couple of years. This change in focus has contributed to the breakdown of the traditional 'benchmark' pricing practice with the Japanese, placing downward pressure on prices to bring them more in line with the world market price. Consequently, the market is moving in the direction of increasing spot sales vis a vis long term contracts. In addition, because of the reduced concern over the security of supply, the length of long term contracts has also shortened in recent years. (sub. 3, pp. 1–2)

These developments — namely, the desire by Japanese utilities to minimise costs, the rise of alternative coal suppliers, and the change in the way in which coal is sold — are increasing competitive pressures on coal suppliers. Camberwell Coal explained:

The Japanese power utilities, threatened by the development of IPPs (Independent Power Utilities) in Japan, have realised that they are paying too much for their coal compared to other power utilities in Asia. ...

The introduction of the tender system for deciding the award of long term contracts and the use of 3 monthly spot tenders to purchase up to 30 per cent of coal requirements has put Australian thermal coal under intense competition from low cost producers such as Indonesia, China and South Africa. (sub.13, p. 2)

Emergence of low-cost suppliers

In 1985, Indonesia and China were minor suppliers into the Asian region. However, since 1990 both countries have increased exports rapidly and now supply over a third of thermal coal imported by Asian countries. This has contributed to a reduction in Australia's share of the Asian thermal coal market (see Figure 2.4).

Indonesian thermal coal exports have increased from 1 million tonnes (Mt) to 36 Mt over the last 10 years, and are forecast to grow to 50–60 Mt by 2005 (Camberwell Coal, sub. 13, p. 2). This compares with Australia's projected thermal coal exports of 64 Mt in 2005.

Box 2.1: The Taiwan Power Company: an example of the increasing use of tenders and spot purchases

The Taiwan Power Company (Taipower) is the state-owned electricity utility. It is one of the largest single buyers of thermal coal in the Asian coal market. In 1996, Taipower purchased over 25 Mt of thermal coal, equivalent to about 40 per cent of Australia's thermal coal exports or almost 20 per cent of total Asian thermal coal imports (IEA 1997). Taipower purchases its coal through various forms of tender. It uses long-term contracts to supply 70–90 per cent of its requirements and a three month spot tender system to supply the rest.

Taipower has been awarding contracts, of five to seven years duration, on the basis of the lowest price bid for the first year of the contract. Subsequent years are priced at the Japanese benchmark price. Through this system, Taipower is able to secure coal at discounts of up to \$US15/tonne in the first year. This discount can be equivalent to a reduction of \$US3/tonne from the Japanese benchmark price over the life of the contract. At the 1996–97 benchmark price, this would amount to a discount of around 10 per cent. More recently, Taipower also has introduced one year open tenders, usually for around 500 000 tonnes a year, to take advantage of falling prices.

Taipower also puts to tender up to 1 Mt of coal every three months. These tenders are open to all suppliers and are considered spot sales. A tender consists of a three month delivery schedule of shipments (usually eight or more vessels of 65 000 tonnes). Suppliers bid for as many of the shipments as they desire. A shipment is awarded to the lowest bidder.

For all open tenders, Taipower determines a detailed specification for the coal required and the criteria for evaluating tenders. The minimum quality specifications are tight but are not mine-specific, facilitating comparisons between coal from different countries and encouraging the maximum competition between sellers. A typical tender specification includes:

| | |
|--|------------|
| Gross calorific value (kcal/kg, as received) | 5 900 min. |
| Total moisture (as received) | 15% max. |
| Ash content (air dried) | 18% max. |
| Sulphur content (air dried) | 1.25% max. |
| Volatile matter (air dried) | 24% min. |
| Delivery within 10 days from shipment date. | |

Sources: Camberwell Coal (sub. 13, p. 2), Taiwan Power Company, Invitation for Bid No. 87-ON-L1102 and Taiwan Power Company, Invitation for Bid No. TPC8103.

Box 2.2: Deregulation of the Japanese power industry

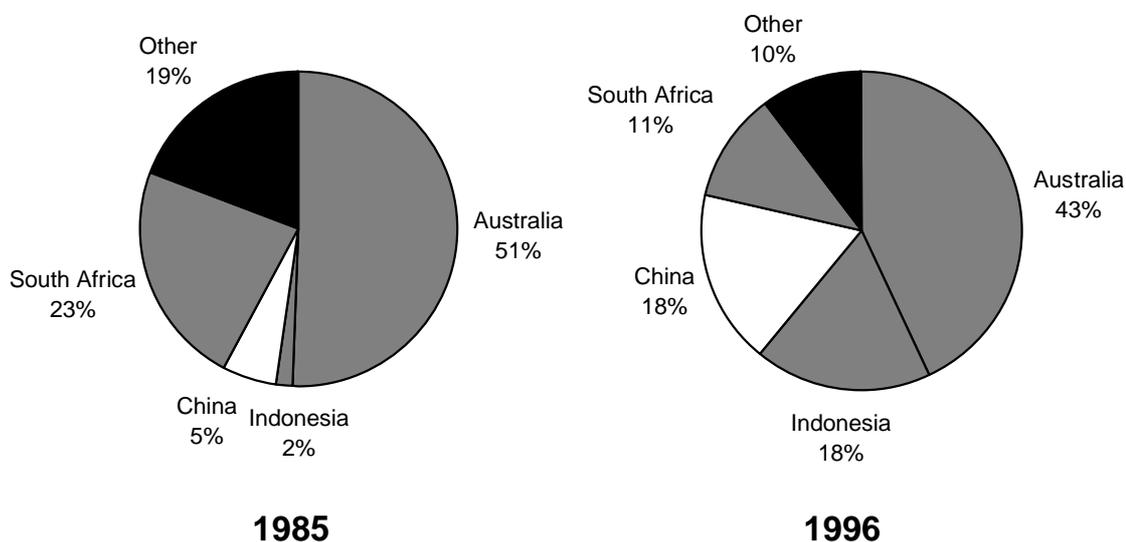
In 1995, the Japanese Government partially deregulated the electricity sector facilitating greater competition. The major change was to allow independent power producers (IPPs) to enter the wholesale power market. However, full competition was limited to new generating capacity and the amount open to bidding by the IPPs was controlled by existing utilities. The bidding outcomes in the wholesale market suggested that the IPPs could supply electricity at prices 10 to 35 per cent below those of the large utility companies. Coal-fired generation accounted for over 46 percent of new IPP capacity.

In July 1997, the Ministry of International Trade and Industry began formulating a legal framework for the new competitive bidding system which would allow the IPPs to compete for all new generating capacity for the first time. In addition, work began on plans for the deregulation of the electricity transmission and distribution sectors.

These actions were consistent with the Japanese Government's *Action Plan for Economic Structure Reform* announced in May 1997. The goal of the Plan is to reduce Japanese electricity prices to internationally competitive levels by 2000. The Plan is being revised in light of commitments made at the Framework Convention on Climate Change in Kyoto.

Source: Information supplied by the Commonwealth Department of Primary Industries and Energy.

Figure 2.4: Supplying countries' share of Asian thermal coal market



Source: IEA (1997).

Data collected by Barlow Jonker (reproduced by Rio Tinto in sub. 22, p. 21) and Minec (1997) indicate that Indonesian mines have lower cash costs than most Australian mines. This suggests that, if world prices fall as projected, Indonesia's expansion poses a significant threat to marginal Australian producers.

In addition, Indonesia's location removes the benefit of transport costs that in the past has provided some insulation for Australian producers from competitors such as the United States and South Africa. In relation to the competitive threat posed by Indonesia, Rio Tinto commented:

The strong growth of Indonesian supply is at the expense of Australian growth. Australian coal mines must lower their costs to survive in this environment, and to do this productivity must be increased. (sub.22, pp. 17–18)

The effect of the Asian financial crisis on Indonesian coal exports is uncertain. While the large depreciation of the Rupiah would be expected to increase the competitiveness of Indonesian exports, the International Coal Report (1998f) stated that the costs of most Indonesian coal mines are denominated in US dollars, and therefore it is not clear whether Indonesian coal exports have become more competitive.

Increasing substitutability between sources of coal

Historically, a factor limiting competition between coal producers was buyers' preference for coal from a particular mine. This reflected the fact that electricity producers had configured their boilers to coal of a particular specification, and knew that coal from a particular mine met that specification. These preferences reduced substitutability between different coals, and also between mines with chemically similar coals, as coal from different mines had not been tested in the boiler to ensure equivalent performance.

More recently, greater market information has reduced this coal-boiler specificity. Buyers have identified the physical characteristics of coal that underpin good boiler performance, and are using this information to identify coals which are equivalent in use. Armed with this information, they are in a better position to assess the substitutability of coals, and are therefore more willing to vary their sources of supply. The specifications in Taipower's tender are an example of this (see Box 2.1). This heightened substitutability has increased pressure on coal suppliers to provide competitively priced coal.

2.3.2 Competition in the international market for coking coal

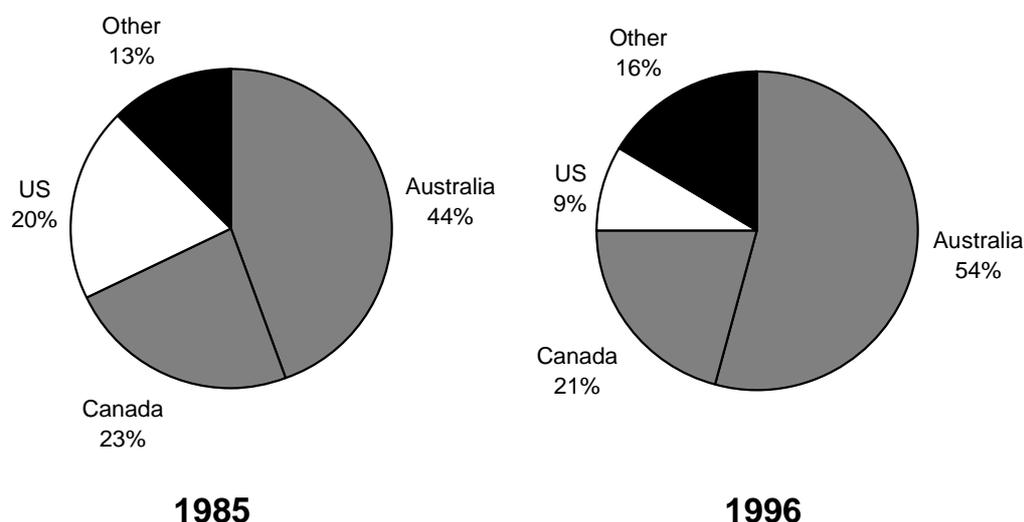
Between 1985 and 1996, Australia increased its share of the Asian coking coal market (see Figure 2.5). Indeed, BHP's Australian operations alone accounted for 20 per cent of the world's seaborne trade in coking coal. Camberwell Coal observed:

There is not the same degree of competition on price in the hard coking coal market because Australia's main competitors are US and Canadian producers with similar cost structures. (sub. 13, p. 3)

However, while competition from other producers (principally the United States and Canada) is not as strong as it is in the thermal coal market, coking coal producers face other competition in the form of:

- increasing substitutability between coals in steel production;
- new technology which eliminates the use of coking coal in steel production;
- heightened competition in the international steel market; and
- the threat that countries (such as China) with large coking coal production for their domestic market could increase their export capability (see Section 2.4).

Figure 2.5: Share of Asian coking coal market



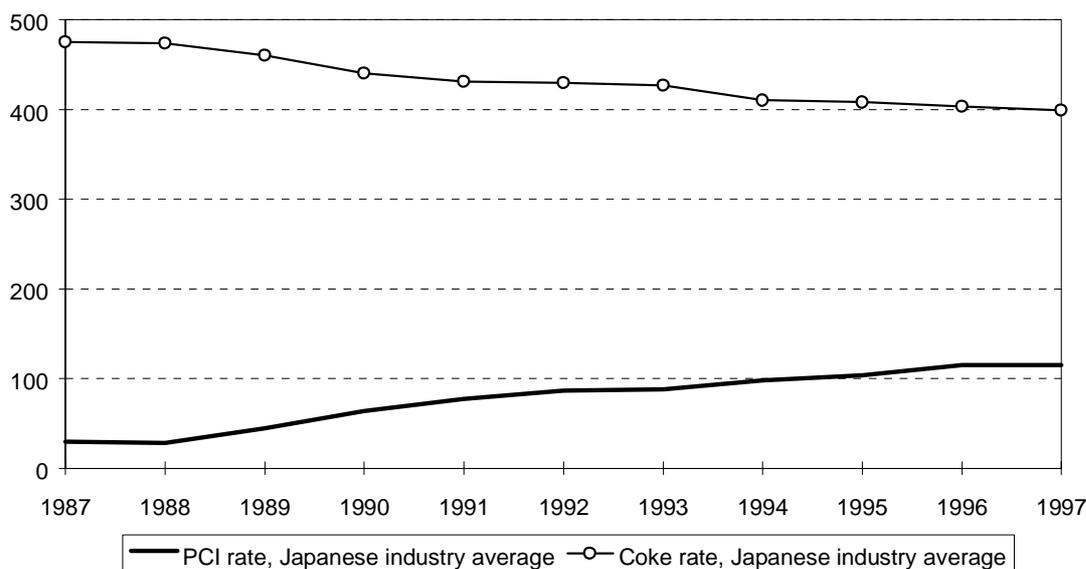
Source: IEA (1997).

Substitutability between coals in steel production

Traditionally, some steel producers used only coking coal in the blast furnace. However, some Japanese producers are now reducing costs by replacing coking coals with a blend of high quality coking coal and PCI coal, which are weak coking coals or thermal coals (see Appendix B). This mixture reduces costs because, while steel makers pay a premium for high quality coking coal, this is more than offset by the lower price they pay for PCI coal compared with coking coals. Figure 2.6 shows the increasing substitution of PCI coal for coke in Japanese steelworks over the last 10 years. ABARE (1997e) observed:

... the choice of the coking coal blend is reported to have become somewhat more responsive to the coals most readily available rather than adhering to strict technical aspects (Hutchison 1996). This suggests that, even in the short run, the coking coal mix is responsive to some extent to relative coal price changes as steel mills aim to minimise costs, taking into account the impact of the coal blend on coke quality. (p. 254)

Figure 2.6: PCI and coke rates in Japanese furnaces (kilograms per tonne of hot metal)



Source: MCIS (1997).

As a result of this development, coking coal producers are now facing competition from PCI coal producers. This competition is likely to intensify in the future as technological developments enable steel makers to achieve higher PCI rates in steel production. Barlow Jonker (1997) forecast that the use of PCI coal in Japanese blast furnaces will increase from 114 to 200 kilograms per tonne of steel by 2005.

New technology

Coking coal is facing competition also from technology that does not use coke in steel production, such as electric arc furnaces. While this technology is more expensive than traditional blast furnaces, it is considered to have good environmental characteristics. According to BHP, the share of steel produced in electric arc furnaces is expected to grow from 33 per cent in 1996 to 45 per cent by 2012 (sub. 30, p. 7). BHP commented:

In the longer term, iron making technology will be targeted at eliminating coke and sinter operations to reduce costs and to address possible greenhouse implications. It is conceivable that within 20 years, viable iron ore reduction processes will be developed which do not require coking coal. (sub30, p. 7)

Increased competition in the Japanese steel industry

Over the last decade, the Japanese steel industry has been facing increasing competitive pressure from Korean and Taiwanese steel makers. Since 1980, Japanese steel producers' share of Asian steel production has fallen from 63 per cent to 34 per cent.

As in the electricity industry, this increase in competition is leading Japanese steel producers to adopt more competitive arrangements for buying coking coal. The most obvious sign of this is the decision of the Japanese steel producers to abandon benchmark pricing.

Benchmark pricing was a system whereby Japanese steel producers agreed to negotiate collectively in setting coking coal prices with suppliers such as BHP (see Appendix D). This pricing system contained some price-quality anomalies between types of coking coal which proved untenable as the steel market became more competitive. In 1996, the Japanese decided to end benchmark pricing, and since then Japanese steel companies individually have negotiated prices, quantities and coal quality with coal suppliers. Camberwell Coal explained:

Two years ago, the JSM [Japanese steel mills] scrapped the benchmark system, and each steel mill now conducts an individual price negotiation with each of its suppliers. Camberwell supplies all six major steel mills and has a different price for each mill, whereas 2 years ago our price was the same for each mill. Tonnage supplied to some mills has increased and dropped to others. (sub.13, p. 1)

2.3.3 Domestic market for black coal

As about 30 per cent of black coal produced in Australia is used in the domestic market, mostly in the electricity industry, competition in this market also has major effects on the industry. The most significant development in this regard

has been the advent of the National Electricity Market and market trading in 1996.

Power station dispatch now depends on competitive pricing. Power stations which price above the market clearing rate are simply not dispatched — there is no market for their output. This is leading power stations to put pressure on their coal suppliers, as the lowest price that power stations can bid economically is their short-run marginal cost, which is dictated by their fuel costs.

While the full effects of electricity market reform will not be felt by coal companies until physical and contractual constraints to interstate trading and competitive fuel sourcing are removed (around 2000 to 2005), a number of participants said that changes are already affecting coal companies. Rio Tinto observed:

Following the establishment of a competitive electricity market, electricity prices are set through a competitive bidding process and have reduced significantly. This is having an impact in New South Wales where generators are responding by seeking to change the terms upon which they purchase coal to provide lower prices, more flexibility, fewer long term contracts and more short term purchases. For the coal producers, this is directing more pressure on prices. A similar impact is expected in Queensland. (sub.22, p. 24)

Pacific Power (sub. DR55) said that there was some evidence that NSW electricity generators had already taken steps to renegotiate existing long-term coal supply contracts primarily to obtain lower costs. Powercoal commented that the new competitive environment will require coal mines to operate much more flexibly:

... the real emerging issue ... is flexibility. ... What generators are wanting is the coal companies to manage part of their risk. And in fact, what they're wanting coal companies to do is manage both volume risk and price risk, in that very volatile electricity market.

That is new territory for many coal mines because most mines are set up to produce X number of million tonne per year, and the marketing people sell at whatever price they can get for that type of tonnage. But with generators, they're saying they want much more flexibility than what they've looked at in the past. And in this case you could see flexibility of, say, plus or minus 30 or 40 per cent of the volume they require. ... So I can see mines of the future having to be much more flexible in the way they operate. (trans.,pp. 25–26)

Powercoal argued that this market imperative for flexible production also had implications for government regulation, including equipment approvals and approvals for longwall mining.

The introduction of the National Electricity Market is the culmination of a series of changes in the electricity industry designed to make the industry more

competitive and efficient. Pacific Power commented on how the industry's coal sourcing philosophy had evolved through three phases:

- *security of dedicated supply* — in the first phase (prior to the 1980s), there were restricted coal supply options, and therefore security of supply was the dominant consideration. In this phase, power stations directly owned mines;
- *multi-sourcing to single power station* — in the second phase (1980s), the coal industry was more developed, enabling power stations to obtain coal from a number of mines, subject to cost effective transport; and
- *competitive sourcing* — in the third phase (1990s), power stations moved towards competitive sourcing of coal via open tendering. (sub. 39, p. 7)

2.4 The dynamic nature of the international black coal market

The international black coal market is very dynamic and subject to uncertain developments. The fundamentals underlying the market are often changing, creating new opportunities for producers flexible and fast enough to respond, while posing threats to other producers. Examples illustrating the dynamic nature of the market are given below.

Changes in technology, such as the use of PCI coal in steel production, have created both opportunities and threats for coal producers. This change poses a threat to producers of some types of hard coking coal, but has expanded market opportunities for producers of premium coking coals and PCI coals. ABARE (1997c) said:

... purchases of semisoft coking and PCI coals are expected to continue to grow at the expense of some types of hard coking coal as Japanese steel mills continue to minimise the cost of raw materials used in their blast furnaces.

The expanding use of lower quality coking coals requires that a greater volume of premium quality coking coals be used, to maintain the efficiency of blast furnace steel production. Premium quality hard coking coals are expected to remain in short supply over 1997–98, potentially exerting upward pressure on prices. (p. 333)

Developments in competitor nations also influence the market. For example, the opening of a new bulk cargo export terminal in Los Angeles in October 1997 will increase the ability of US producers to supply coal into the Asian market, constraining Asian coal prices. The role of the United States as a 'swing producer' in the international coal market is outlined in Box 2.3.

Box 2.3: The United States: a ‘swing producer’ in international coal trade

The United States is considered to be a ‘swing producer’ capable of supplying both the European and Asian coal markets. By directing supplies according to where coal prices are greatest, it limits the extent to which prices in the Asian and European markets can diverge. This is illustrated in Figure 2.7 which shows how prices in both markets move together. Of course, transport costs still provide a buffer between the markets.

Parallel price movements also illustrate the broader point that suppliers in each market are competing indirectly against each other. While transport costs segment the markets to some degree, the ability of suppliers such as the United States and South Africa to supply either market links the markets, such that competitive developments in the European market affect the Asian market.

The US also has a track record of responding quickly to market developments, as evidenced by the responsiveness of its coal exports to international coal prices (see Figure 2.8). This is particularly significant in the context of US production capacity. The United States produces over four times as much coal as Australia annually, so that a small increase in production or diversion of output from the domestic market to the export market could have a large effect on supply and prices in the world market.

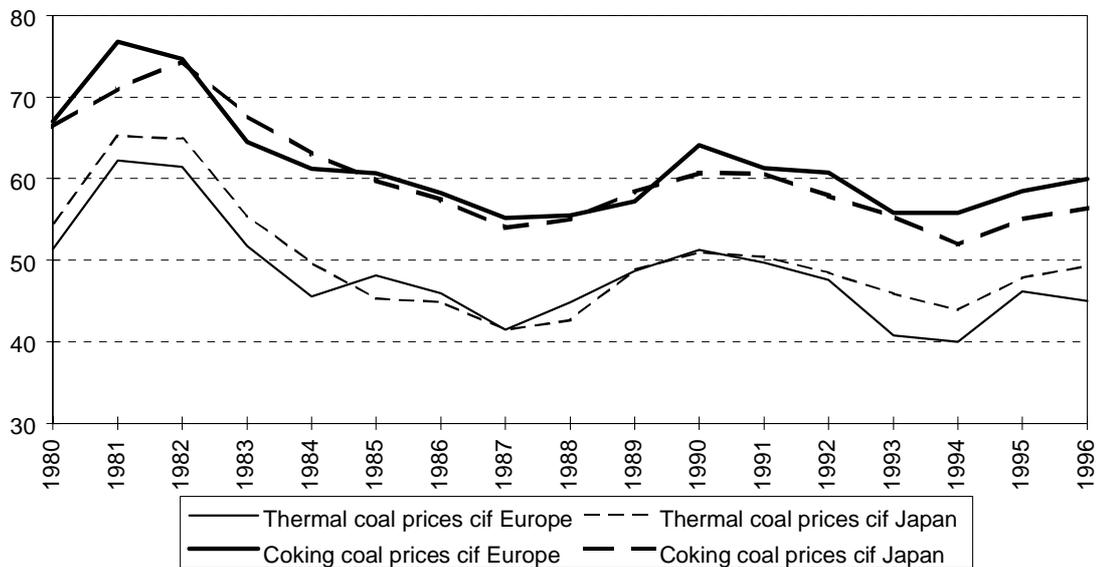
However, a limiting factor has been US port capacity. Barlow Jonker (1997) estimated that US port capacity is 160 Mt a year, of which 40 Mt is on the west coast — 1996 exports were 81 Mt. In this context, enhancement of US port capacity, through the development of the LA export terminal, will raise the export capability of the United States and seems likely to have a constraining effect on coal prices in the Asian market.

Source: Productivity Commission.

The rise of new, low-cost suppliers is another example of the dynamism of the market. For example, BHP, the world’s largest exporter of coking coal, commented on the effect of China’s coke production capacity on the coking coal market:

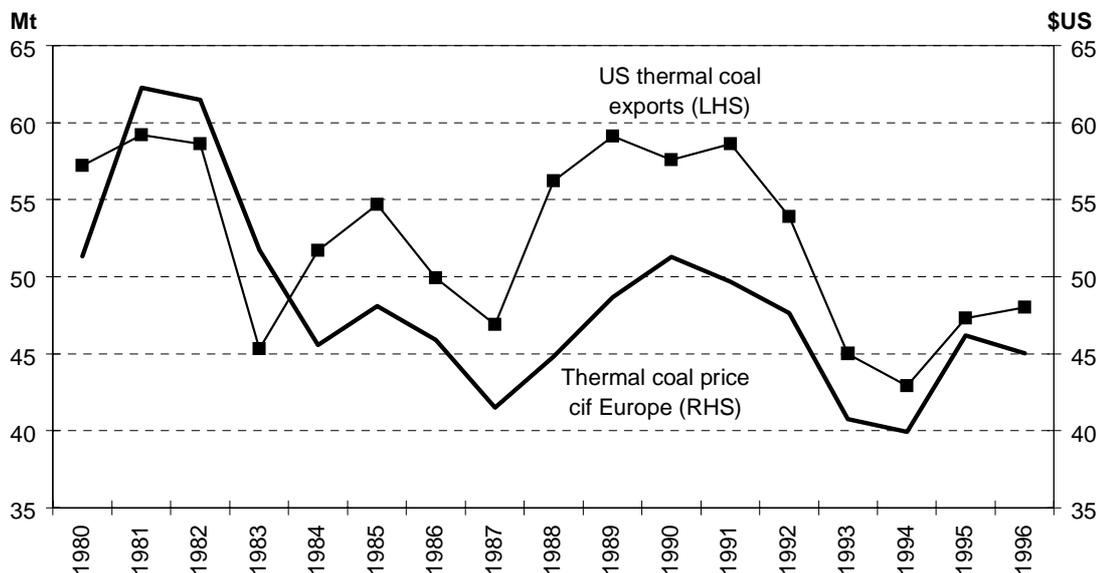
The traded coke market, representing 4–5 per cent of global production, has always been extremely volatile. Once used mainly as a means of disposing of temporary surplus or covering temporary shortfalls of metallurgical coal, it has been dominated over the last few years by low cost Chinese coke exports (1997 forecast to exceed 10 Mt) which have soaked up all import demand and kept coke prices low. The Chinese coking capacity will effectively defer decisions to build new capacity, affecting the longer term outlook for coking coal. This is particularly a threat to the major growth areas for coking coal in SE Asia and India. (sub. 30, p. 6)

Figure 2.7: European and Japanese coal prices (\$US)



Source: IEA (1997).

Figure 2.8: European thermal coal price and US thermal coal exports



Source: IEA (1997).

However, BHP also acknowledged that there was considerable uncertainty about the competitive threat posed by China:

[BHP's] experience with China suggests that although there are some extremely good ports in China, port capacity *per se* is a restraint. The railing system is also a restraint, and the third part of the equation is the potential for the Chinese economy in its own right to materially increase its steel make. And at the end of the day that could be the most important of the three, that China's demand for domestically produced steel soaks up coal that otherwise could be put through a strained infrastructure into the export market. (trans., p. 179)

BHP concluded that the Australian coal industry needs to be able to respond to demand that fluctuates both with steel production and with fluctuating export supply capacity (sub. 30, p. 6).

Changes in government policy also affect market dynamics and the fortunes of Australian producers. For example, changes in US environmental policy contributed to Australia's share of the European thermal coal market falling from 8 to 4 per cent between 1990 and 1996. McLean (1997) said:

A combination of domestic legislation in the United States, which discriminates against the use of high sulphur coals in that country and has therefore forced the remaining producers on to the export market, coupled with large new coal mine developments in South Africa, Colombia and Venezuela, has seen Australia, as the most distant supplier, lose much of the tenuous hold it once had on the European thermal coal market. (p. 270)

Recent developments in East Asian financial markets also have uncertain ramifications for Asian thermal coal demand. ABARE (1998a) reported that the currency devaluations in Indonesia had led to the immediate postponement of 13 proposed independent power projects and the review of a further nine of the 29 projects for which agreements had already been reached. Independent power projects in Malaysia, Thailand and the Philippines also are being reviewed. Despite this, ABARE (1998a) said:

However, the impact of Asian financial instability on independent power project development is expected to be modest over the medium term as governments seek to secure future energy supplies by renegotiating or compensating those projects which have encountered difficulties. There has already been some evidence of this in Thailand (Power in Asia 1997). Therefore, although some project specific delays can now be expected, independent power project development is still expected to significantly contribute to thermal coal import growth in South East Asia. (p. 130)

These events serve to highlight the range of factors affecting the international coal market and the pace at which the market changes. They underline the importance of Australian coal producers being flexible and market-responsive, varying the level, mix and destination of output in response to market developments.

2.5 Price discrimination and collective price negotiation

The preceding sections have highlighted:

- the downward trend in international coal prices;
- factors increasing competition in the thermal and coking coal markets; and
- the dynamic nature of the international coal market.

These developments indicate that Australian producers must cut costs and lift productivity in order to remain competitive and build market share.

This view of the competitiveness of the market and the appropriate business strategy for Australian coal producers was challenged, however, by Asia Pacific Strategies (sub. 1, 50, DR53 and trans., pp. 159–175). Asia Pacific Strategies argued that:

- Japanese buyers act as a cartel;
- demand for Australian coal is not responsive to price — there is an effective ceiling on Australian coal exports to Japan; and
- as a result of the above, the normal business strategy of lowering costs or enhancing quality to build market share does not work.

These concerns partly reflect the concentration of the Japan–Australia coal trade. Japan’s share of Australia’s coal exports was 46 per cent in 1997, having declined from 69 per cent in 1980, and Australia’s share of Japan’s coal imports was 54 per cent in 1997, having increased from 43 per cent in 1980. These changes, at least at face value, cast doubt on the argument that Japanese coal buyers exercise cartel power to limit Australia’s share of Japan’s coal market. Japan has declined significantly in relative terms as a market for Australian black coal, while Australia’s share of the Japanese coal market has grown.

Asia Pacific Strategy’s concerns are based also on econometric studies indicating that Japanese buyers paid different landed prices for coal supplied by different countries, which could not be explained by quality differences (ABARE 1997f, Koerner 1996 and sub. 1). There are at least four possible explanations for such price differences.

The first is that Japan may have price setting power in the international coal market, and manipulates the volume of coal purchased from different countries to minimise its overall coal supply costs. Under this scenario, Japan would take advantage of differences in the price sensitivity of supply of different countries. In determining the quantity of coal it would buy from any one country, it would take into account the effect of its additional demand on the price of all coal from that country. By being careful not to allow its demand to inflate prices, especially in countries which supply a large share of its coal imports, Japan

would minimise its overall coal supply costs, while paying different prices to different coal suppliers.

However, this explanation of price differences seems unlikely. While Japan is a large buyer in the Asian market, its share of world coal imports is around 27 per cent, and its share of world coal consumption (covering traded and domestically produced and consumed coal) is only about 3 per cent. If Japan attempted to suppress prices, over time coal producers would develop alternative markets and reduce production, and some coal producing nations (for example, Germany) would substitute imported coal for domestically produced coal. Thermal coal would become more attractive as a fuel source, and steel producing technologies which used coking coal would become more competitive. These market responses would limit the extent to which Japan's actions affected world prices, especially over the longer term.

Furthermore, Japanese buyers are no longer negotiating coal prices collectively, and the volume of coal purchased by any one company is insignificant compared with world trade (see Appendix D). These considerations cast doubt on ABARE simulations (1998b) that world coking coal trade is best represented by an oligopsony market structure.

The second reason why Japanese coal buyers may be willing to pay different prices for coal supplied by different countries may be to diversify supply. Buyers may be willing to pay a higher price to gain some coal from alternative sources, even if this inflates coal supply costs in the short term. This strategy would guard against the possibility of supply disruption or monopoly pricing by suppliers, and therefore is consistent with a cost-minimising strategy in the long run.

There is certainly evidence that Japan values diversity of coal supplies. Japanese coal buyers have invested in coal mines and transport infrastructure in Australia, Canada and the United States. BHP commented:

In the last 30 years, Australia has captured a substantial part of the growth in the coking coal market as well as displacing less competitive foreign tonnage. While Australia has the potential resources to continue this trend, it should be noted that it took only a perception of Australian unreliability in the 1980s, due to industrial activity, to foster the development of alternate supply from Canada, despite it being technically less attractive and higher cost. The fact that this year the Japanese Steel Mills (JSM) reaffirmed tonnage commitments to the Quintette and Bullmoose mines in Canada to 2002 indicates a lingering unease with a perceived over-reliance on Australian supply. (sub.30, p. 6)

However, while Japanese buyers value supply diversity, coal companies have provided evidence that in the face of increasing competition in markets for products which make use of black coal, Japanese buyers are now placing greater

emphasis on the price competitiveness of coal supply (see Section 2.3). Asia Pacific Strategies' claim that there is a ceiling on coal imports from Australia implies that Japanese buyers would pursue supply diversity at any cost. This seems unlikely given increasing competition in final markets and Australia's current share of Japanese coal imports.

The third possible reason why coal prices may vary between countries is because of non-commercial considerations such as political interference in coal purchasing practices. BHP claimed that its share of the Japanese market had been limited despite delivering coal at a lower cost than US coal. It concluded:

Undoubtedly political pressure (eg US 'trade balance' considerations) can be exerted on such joint purchase schemes far more effectively than under an individual purchase system. (sub.30, p. 8)

In this context, the breakdown of co-ordinated purchasing by the Japanese steel mills and power utilities should reduce the incidence of coal purchasing policies based on factors other than delivered price and quality.

Finally, differences in prices paid by Japanese buyers may reflect the possibility that within a certain price range, Japan and Australia find it to their mutual advantage to trade with each other, rather than to seek out alternative buyers and sellers. This may be a factor explaining Australia's large share of Japanese coal imports, and Japan's large share of Australian coal exports.

The mutual advantages of Australia and Japan trading together may be because of lower transport costs (as compared with trading with other countries), or established commercial relationships between the trading partners (see Smith 1977 for a more complete discussion). These special benefits give rise to rents in the Japan-Australia coal trade — that is, there are a range of prices which Australian coal suppliers would be willing to accept before seeking other buyers, and similarly there are a range of possible prices that Japanese buyers would be willing to pay before seeking alternative coal suppliers.

The distribution of rents between buyers and sellers can be influenced by whether buyers or sellers form a cartel to negotiate prices (Smith 1977). In this context, Japanese buyers' past practice of collectively negotiating prices led to concerns that Japan could be capturing all of the benefits of the Japan-Australia coal trade.

However, empirical work conducted by ABARE (1993) indicated that the rents from trade were being shared fairly equally between Australia and Japan. Other evidence (ABARE 1997f) that Australia receives slightly higher prices for thermal coal sales to Japan than to other Asian countries suggests that Australia is capturing a share of the rents from trade. Evidence by Koerner (1996) that Japan pays higher prices for coking coal sourced from Canada and the United

States supports the view that Japan is sharing in the rents from the Japan-Australia coal trade, as well as paying a premium for supply diversity.

The abandonment of collective negotiation by the Japanese steel mills in 1996 and the Japanese power utilities in 1998 should reduce concerns that Japanese buyers are using uncompetitive buying practices to capture a disproportionate share of the rents from the Japan-Australia coal trade. However, some have argued that Australian coal producers should negotiate collectively to increase their share of the gains from trade (Koerner 1996 and CFMEU 1997). This approach was not supported by any Australian coal producers which participated in this inquiry. BHP said:

It has been suggested that Australia should respond with a single industry face. However, there is no doubt the JSM would react adversely to any comparable selling group from Australia. Even if it was possible to organise a coal selling cartel, the negative impact on hard coking coal would outweigh any positives. Major customers would see it as an attempt to artificially control supply — something that countries like Japan, Korea and Taiwan, which are totally reliant on imports, would find unconscionable and which they would profoundly reject. (sub. 30, p. 8)

Collective negotiation would signal to Asian buyers the value of diversifying supply, which would reduce the market share that Australian producers could otherwise obtain at any given price. It would also be difficult to implement, particularly in the context of a market that is changing rapidly. For example, changes in world prices, the emergence of new buyers and suppliers in the region (such as, the Republic of Korea, Taiwan, Indonesia and China), and changes in transport costs (for example, the Los Angeles export terminal) all affect the size of the rents from the Japan-Australia coal trade and the prices at which trade with other countries becomes favourable. There is considerable risk that attempts to maximise Australia's share of the benefits of trade could lead to a reduction in the overall level of Australia's coal trade at significant cost to the Australian coal industry.

The decline in Japan's share of Australian coal exports from 69 per cent to 46 per cent between 1980 and 1997 may indicate that Australia is diversifying its customer base, or that the additional benefits to Australia of trade with Japan are declining, especially given the rise of other buyers in the region such as the Republic of Korea and Taiwan.

In summary, differences in prices paid by Japanese buyers for coal obtained from different countries could be explained by the desire to diversify supply, political influence on coal purchasing decisions, and the gains from trade between Australia and Japan. In relation to supply diversification, there is evidence that Japanese buyers are now placing greater emphasis on competitive

pricing in response to increasing competition in steel and electricity markets. The demise of collective negotiation by Japanese buyers should reduce the scope for political interference in coal purchasing decisions, or for manipulating the distribution of rents in the Japan-Australia coal trade. Together with other evidence of increasing competition in the coal market, this indicates that to build market share and improve profitability, Australian producers need to cut costs and improve productivity.

2.6 Barriers to international trade in coal

Barriers to trade in coal are low compared with those applying to agricultural products and many manufactured goods (see Appendix D). For example, Japan, the Republic of Korea and Taiwan, which together account for 45 per cent of world black coal imports, have tariffs below 2 per cent and negligible subsidies. Nevertheless, significant reduction and distortion of coal trade occur through:

- tariffs and subsidies that protect domestic coal industries; and
- preferential tariff arrangements that favour some coal exporting countries over others.

The Australian Coal Association said:

Of the internationally traded mineral commodities, coal is perhaps the most affected by the existence of tariffs, import bans and quotas and domestic production subsidies in European and Asian markets.

It is important that the federal government, through multilateral and bilateral interventions, maintain pressure on our trading partners for the winding back and eventual elimination of these market distorting measures. Unencumbered coal trade can only advantage both Australian suppliers and overseas consumers, especially those developing countries which will rely heavily on low cost energy to fulfil their significant growth aspirations. (sub.31, p. 2)

Likewise, BHP observed:

Further distortion of the global coal market by trade barriers of one kind or another is unlikely to ever be of benefit to the Australian coal industry, given its exposure and reliance on coal exports compared with domestic demand and Australia's limited trading power status. NAFTA, for example, has affected Australian coal competitiveness in South America. (sub.30, p. 8)

Members of the European Union provide high levels of protection to their domestic coal industries. For example, Germany has budgeted to provide more than \$A8 billion of subsidies to its domestic coal industry in 1998, and France and Spain provided around \$A1 billion of subsidies in 1996 and 1997, respectively.

However, member countries are reducing their subsidy levels to comply with European Union trade and subsidy rules. For example, the German Government abolished coal import quotas in 1995, and has announced that subsidies will be cut by 40 per cent between 1998 and 2005. This trade liberalisation has expanded market opportunities for Australian coal producers. Australian coal exports to Germany increased almost four-fold in the year after the removal of German import quotas.

Preferential tariff arrangements, usually linked to membership of trade blocs or bilateral trade agreements, are particularly damaging to Australian coal producers, as they can provide a significant price advantage to competitor countries which have preferential access. BHP explained the effect of the North American Free Trade Agreement (NAFTA) on exports to Chile:

In the case of Chilean coking coal imports (a market where Australia once held a dominant share) tariff free access for Canadian coal (while tariffs remain on Australian coal) has forced a substantial price cut on Australian suppliers to seek to retain that market. (sub. 30, p. 8)

Liberalisation of the international coal trade is in Australia's interest. Participants' comments highlight the market opportunities that can flow from trade liberalisation, and the costs to the Australian coal industry of other countries' protection or preferential tariff arrangements. This underlines the importance of continued pursuit by Australia of free international trade in coal.

3 INDUSTRY PERFORMANCE

The coal industry has achieved large increases in production and exports in the last 30 years, although it has lost some of its share in the strongly growing Asian thermal coal export market. Employment has not increased in line with output, as the industry has adopted more capital-intensive technologies and inefficiencies in the use of labour have been addressed more actively.

However, falling prices and poor productivity in many mines have meant that profitability in some sectors of the industry has been low and declining. Nonetheless, new investment continues to occur, suggesting that it is expected to be more profitable on average than returns on existing coal assets. Available data suggest that average returns to Queensland coal mines are considerably above those in NSW.

An extensive study of the productivity of key processes in a sample of Australian coal mines, using better practice United States coal mines and Australian metalliferous mines as benchmarks, was undertaken for the Commission. The study results provided a mixed message. They indicated that, on average, productivity of major operations in the sampled Australian truck and shovel and longwall mines lagged around 20 to 30 per cent behind better practice US coal mines and Australian metalliferous mines. However, Queensland draglines were close to 20 per cent more productive than the selected better practice US coal mines while NSW dragline operations were roughly on a par with the US mines. In addition, the productivity of the best performing Australian truck and shovel and longwall operations in the sample was not far behind that of the best practice US mine. This variability of performance suggests that significantly higher productivity is achievable in many Australian coal mines.

3.1 Introduction

The Australian thermal and coking coal industry has grown substantially since the early 1970s, based largely on its performance in rapidly expanding export markets. As coal has been substituted for oil in power generation, and overall power requirements of the Asian region have increased significantly, there has been particularly strong growth in exports of thermal coal.

Initially this growth, together with sharp rises in coal prices, generated high profits. This led State governments (through royalties and above-normal profits on rail services) and employees (through wage increases and conditions of employment) to seek some of the benefits of industry prosperity. More recently, however, with coal prices falling in real terms and new competitors emerging, industry profitability has declined significantly, especially for older underground mines.

Returns to government have declined much more slowly. As indicated in later chapters, the NSW and Queensland Governments have recognised the need to reconsider their attitude to the nature and amount of coal royalties and returns on port assets and the need to achieve better productivity in the provision of rail freight services. State governments claim that by 2000 rail freight charges will be set on a commercial basis with no monopoly rents or implicit royalties.

Average weekly earnings of managers and employees in the coal industry have continued to grow, although at a slightly diminished rate (see Chapter 4). However, some mines, particularly those opened only recently, have achieved lower labour costs through better management and improved work arrangements enabling increases in the industry's average productivity. The change in ownership of mines with poor profitability has also offered the opportunity for some revisions in terms and conditions of employment and improved management and work arrangements.

3.2 Industry-wide performance

This section briefly considers performance of the Australian black coal industry with regard to output, exports, employment and profitability. Industry productivity is examined in Section 3.3. Other aspects of performance are examined in later chapters: industrial disputes in Chapter 4 and workplace safety in Chapter 9.

3.2.1 Output, exports and employment

Over the last 30 years the Australian black coal industry has grown from a relatively small inwardly-focused industry to become the world's largest coal exporter. The impetus for this impressive expansion in both coking and thermal coal has been strong economic growth in the Asian region, initially in Japan but more recently in the Republic of Korea, Taiwan and India. At the same time, the impact of significant oil price increases in the 1970s led to the substitution of coal for oil in electricity production. The large coal price increases which

initially accompanied this demand growth provided the stimulus to investment in exploration and the development of new mines.

Australian coal production increased by nearly 70 per cent between 1970 and 1980 and then more than doubled in the next ten years (see Appendix C). Growth in the 1990s has been slower, averaging around 4 per cent per annum. Export growth rates were even more spectacular. The Australian coal industry and supporting rail and port infrastructure achieved more than a doubling of coal export volumes between 1970 and 1980 followed by an increase of nearly 150 per cent over the next decade. Export volumes have averaged more than 5 per cent annual growth since 1990.

Since 1985, Australia has increased its share of the Asian coking coal export market from 44 to 54 per cent, reflecting in part the high quality of Australian coking coal. Australia's share of the Asian thermal coal export market, however, has fallen from 51 to 43 per cent as China and Indonesia developed as alternative low-cost supply sources.

Despite high output growth, employment in the black coal industry grew relatively slowly from 27 600 in 1980 to around 32 700 in 1986, before declining gradually to 23 800 in 1997. Average annual coal industry output (saleable) per employee has increased continuously from 2800 tonnes in 1980 to 8400 tonnes in 1997, a compound annual growth rate of around 6.7 per cent.

The main factors behind the significant increase in labour productivity underlying these figures are:

- the increased share of production coming from the more capital-intensive open cut sector;
- the decreased use of the more labour-intensive bord and pillar technology in favour of longwall techniques in underground mines; and
- a general substitution of capital for labour and some improvements in work and management practices.

Because most of these influences relate to new technology or industry structure, labour productivity is not a reliable indicator of productivity performance in the Australian coal industry.

Similarly, differences in labour productivity between countries are generally not useful as indicators of relative productivity performance. Production techniques vary significantly between countries. Low wage producers like South Africa use more labour-intensive techniques and hence will tend to achieve much lower labour productivity than high wage countries like Australia. The mix of output produced from open cut and underground mines also will affect aggregate labour productivity significantly.

3.2.2 Profitability

Many participants have described the current era as one of ‘profitless prosperity’ — that is, although coal tonnages and exports have been increasing, average profits have been shrinking. Callide Coalfields argued:

The Australian coal industry is increasingly subject to the rigours of unrestrained global competition. This has put downward pressure on prices, and, due to the high cost of operating coal mines in Australia, has decreased the profit margin for investors to a level that seriously undermines the industry’s status as a worthwhile investment option. (sub.6, p. 7)

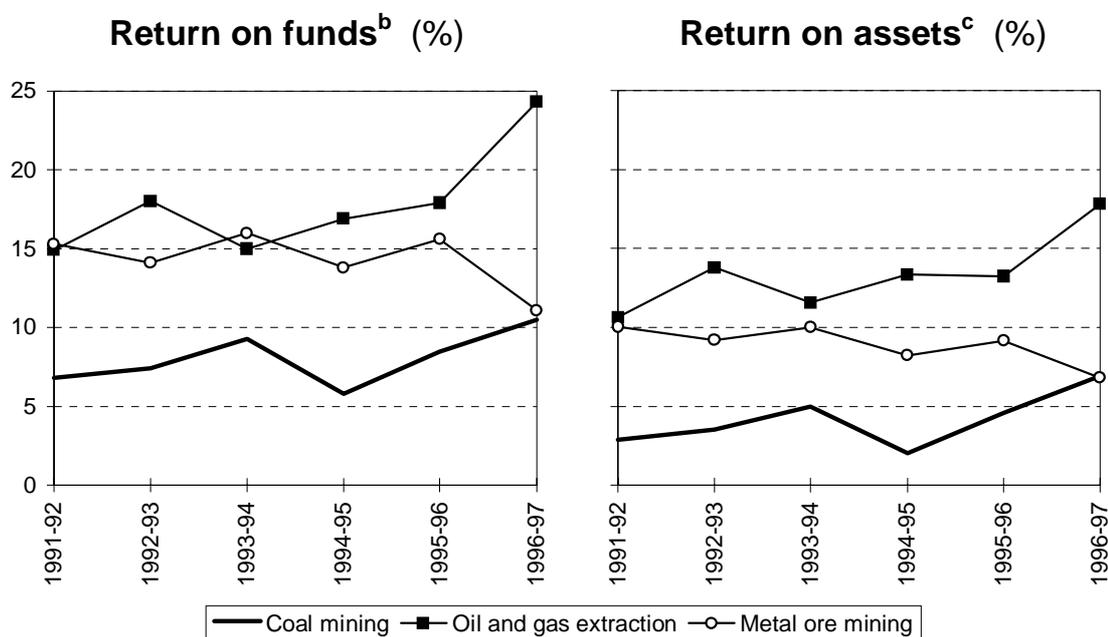
In recent years, average profitability in Australian black coal mining has been low.¹ The rate of return on funds and the rate of return on assets provide broad measures of the profitability of an industry. Between 1991–92 and 1996–97, returns in the coal industry have been consistently lower than in other mining industries. The return on funds has averaged half that in metal ore mining while return on assets has averaged just over half of that in metal ore mining. The return on funds has averaged half that in oil and gas extraction while return on assets has averaged a third (see Figure 3.1). Over the same period, return on assets in the manufacturing sector was well over double that in coal mining (ABS Cat. No. 8140.0).

This poor average profitability will mask significant variation between individual mines, companies and States. Greater variability can be expected between individual producers in coal mining than in many other sectors of the economy because:

- profitability can be influenced significantly by a mine’s location and geology. For example, open cut mines generally have lower production costs than underground mines;
- prices achieved for coal output will vary according to the type and quality of coal; and
- there has been considerable variation in the introduction of more productive work arrangements.

¹ Reported profitability ratios include brown coal which could not be excluded on confidentiality grounds. However, the ABS has indicated that the reported profitability ratios are not influenced significantly by the inclusion of brown coal.

Figure 3.1: Profitability measures for coal mining, oil and gas extraction and metal ore mining^a



a 1996-97 data are preliminary.

b Earnings before interest and tax as a percentage of total shareholders' funds and non-current liabilities.

c Total operating profit before tax as a percentage of the total book value of assets.

Source: ABS (Cat No. 8414.0 and unpublished data).

It is likely that average profitability in Queensland coal mines is higher than in NSW for the following reasons:

- Queensland accounts for over 70 per cent of Australia's coking coal exports and, in particular, dominates exports of premium hard coking coals. These are more valuable than the thermal and semi-soft coking coals that account for the majority of NSW coal production and export;
- Queensland has a much higher proportion of coal being mined by the generally lower-cost open cut methods. In 1997, nearly 90 per cent of Queensland's black coal production came from open cut mines, whereas just over half of NSW's output was from open cut mines; and
- there is some indication that Queensland mines achieve higher average productivity. Queensland truck and shovel and dragline operations covered by the Tasman Asia Pacific benchmarking study reported in Section 3.4 attained nearly 20 per cent higher productivity than those in NSW.

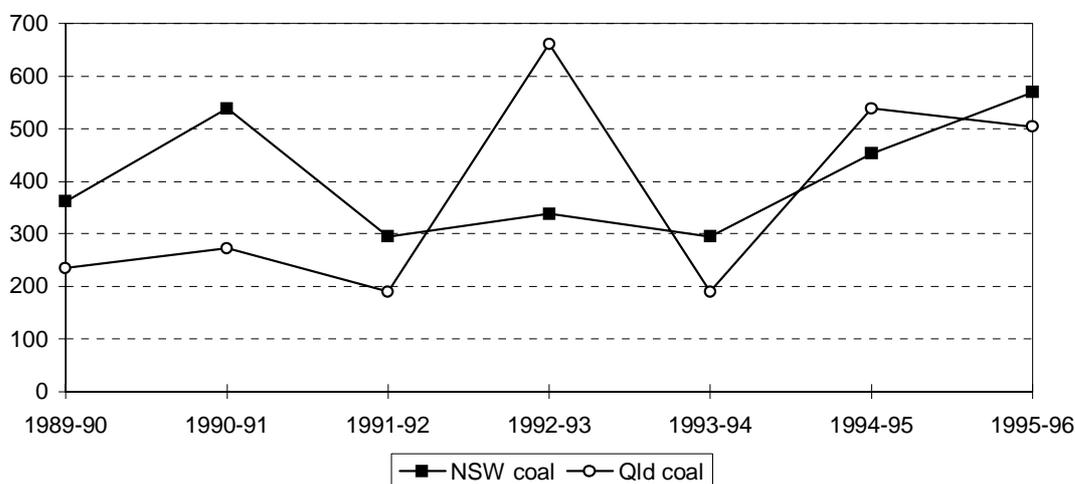
While no direct profitability data are available for Queensland, results of a survey for the NSW Minerals Council (1997a) provide support for this view.

Average return on funds in the NSW coal industry over the last six years was 6.2 per cent (see Table 3.1). These figures are conceptually comparable to the ABS return on funds figures for the whole Australian coal industry, which averaged 8.1 per cent. As production is split evenly between NSW and Queensland, it is likely that returns in Queensland on average have been around 4 per cent higher than in NSW over this period.

The Minerals Council survey also provides evidence that the low profitability has not been restricted to the 1990s. Return on shareholders' funds in the NSW coal industry over the last 14 years was just 1.5 per cent when the loss-making years of the mid-1980s are included (see Table 3.1). This was little more than a sixth of the average rate of return earned by all mining.

The above profitability measures reveal a long period of generally low returns for Australian black coal mining, particularly in NSW. An industry with such a poor long-term profitability performance might be expected to be showing declining output and little new investment. This has not happened. Indeed, investment in new mines has continued, averaging well over \$350 million in both NSW and Queensland between 1989–90 and 1995–96 (see Figure 3.2). Production has grown constantly in both States and continued solid expansion in output is forecast.

Figure 3.2: **Net capital expenditure by the black coal industry for NSW and Queensland (\$m)**



Source: ABS (Cat. No. 8414.0 and unpublished data).

Table 3.1: Profitability measures — NSW coal and Australian coal and Australian minerals industries (%)

| Year | Return on funds | | Return on shareholders' funds | | |
|----------------------------|--------------------------|-----------------------|---|-----------------------|-----------------------|
| | Coal Mining ^a | NSW Coal ^a | Australian Mining Industry ^b | NSW Coal ^b | NSW Coal ^c |
| 1983–84 | na | na | 4.4 | -6.2 | -4.8 |
| 1984–85 | na | na | 5.7 | -3.3 | -0.7 |
| 1985–86 | na | na | 5.1 | -5.6 | 7.5 |
| 1986–87 | na | 6.0 | 6.4 | -7.1 | -0.7 |
| 1987–88 | na | -0.6 | 15.6 | -11.2 | -8.5 |
| 1988–89 | na | 7.4 | 18.3 | 5.8 | 3.8 |
| 1989–90 | na | 11.9 | 23.4 | 17.0 | 9.5 |
| 1990–91 | na | 9.3 | 11.8 | 5.6 | 6.1 |
| 1991–92 | 6.8 | 5.0 | 8.1 | 2.8 | 4.7 |
| 1992–93 | 7.4 | 7.1 | 10.2 | 6.9 | 9.2 |
| 1993–94 | 9.3 | 9.7 | 10.3 | 9.9 | 9.7 |
| 1994–95 | 8.5 | 2.6 | 5.3 | 0.1 | 4.7 |
| 1995–96 | 8.5 | 9.7 | 9.2 | 6.2 | 8.8 |
| 1996–97 | 10.5 | 2.8 | 2.9 | 0.3 | 2.0 |
| Average 1991–92 to 1996–97 | 8.1 | 6.2 | 7.7 | 4.4 | 6.5 |
| Average 1983–84 to 1996–97 | - | - | 9.8 | 1.5 | 3.7 |

na Not available.

a Including abnormals, excluding extraordinary items.

b Including abnormals and extraordinary items.

c To 1988–89 excludes extraordinary items; from 1988–89 excludes abnormal and extraordinary items.

Sources: ABS (Cat. No. 8414.0 and unpublished data) and NSW Minerals Council (1997a and previous years).

There are a number of reasons for this apparent contradiction. First, once mine-specific infrastructure development has been undertaken, it is a sunk cost with no value in any other use. Hence, even if profitability is low, a mine may continue and even expand as long as it provides some return above avoidable costs. The industry committed to large investments in the early 1980s on the back of high coal and energy prices and forecasts of continuing rapid expansion in export demand for Australian coal. The unforeseen fall in coal prices in the

mid-1980s rendered many of these investments much less profitable than expected. Since then some of the investments undertaken by the industry have been profitable at new lower prices, but the legacy of past less profitable investments continues to drag down average profitability. The continued decline in prices and increase in costs have led to poor profitability even for some of the industry's more recent productivity success stories. For example, Camberwell Coal observed:

The industry continues to go through peaks and troughs, lots of money is spent when things look rosy, then we all fall in a heap, just like we are about to do now. I think the investment will dry up. It is certainly, in our own company, having just spent last week with our shareholders in Japan, their patience is at an end and we are not making an adequate return and it has been clearly spelled out to me that we have got to turn that around. (trans., pp. 46–47)

A second and related point is that poor profitability mines may be sold at a considerable capital loss — and indeed have been. Although such mines would show low returns on historical investment costs, they may be providing reasonable returns on purchase price to the new owners. For example, the Clarence coal mine in NSW which was closed in February 1998 due to poor productivity is being purchased by Centennial Coal. Despite its poor recent performance, the new owners have expressed confidence that the mine will contribute to earnings in its first full year.

Third, profitability often varies significantly between mines because of large differences in work arrangements. New mines and those reopened after sale are more likely to achieve these more productive arrangements. Rio Tinto observed such a process:

The steaming coal industry, particularly in Australia, is entering a period of substantial rationalisation. Exxon and ARCO have announced their intention to exit Australian coal. Smaller operators have to date shown interest in purchasing these operations, and have been more successful than larger owners in introducing reforms which have ensured survival of the mines. (sub22, p. 22)

Shell, in discussing the use of integrated work teams, also indicated the productivity advantages available to some newer mines:

Now there are examples again of that, but they are greenfield operations... They have the advantage of a far more flexible workforce and the associated efficiencies that flow from that. (trans., p. 218)

3.3 Productivity of Australian coal mines

A key question for this inquiry is the actual and potential productivity performance of Australian black coal mines. The recent and prospective market

conditions outlined in Chapter 2 indicate that the Australian industry is selling into an expanding Asian market, particularly for thermal coal. However, increasing low-cost supply from countries such as Indonesia, South Africa, and China means that the market will be particularly competitive. This outlook, together with the industry's recent poor profitability, indicates that major improvements in performance will be needed if the industry is to take full advantage of its potential growth opportunities.

The Commonwealth Department of Primary Industries and Energy observed:

Australia is currently the world's largest coal exporter, and should remain so for the foreseeable future. However, this status cannot be taken for granted, and the Australian industry must work to remain competitive in the world market. The fundamental challenge for the Australian industry is to stay competitive with low cost suppliers elsewhere in the market. (sub.43, p. 5)

This section considers the views of participants and others on the coal industry's productivity and examines two recent benchmarking studies of the productivity of a sample of Australian coal mines.

It should be noted that productivity is only one part of cost competitiveness. Other factors include input prices, exchange rates, mine location and geology. For example, high productivity does not guarantee international competitiveness if input prices are significantly higher than those of overseas competitors. Input prices also may have an impact on mine productivity. (For example, high overtime rates may reduce capital productivity by making 7 day a week operations uneconomic.)

3.3.1 Participants' views

The inquiry received numerous submissions from coal producers citing the poor productivity performance of their mines and of the industry in general. Together with the results of earlier studies, these submissions suggest widespread poor productivity performance in Australian coal mining, the roots of which go back many years. However, it should be noted that not all mines are likely to be performing badly — the benchmarking studies cited below show significant variations in productivity between individual Australian black coal mines.

A number of industry participants argued that the Australian coal industry had significantly lower productivity than in other countries and several also cited the much higher productivity achieved by Australian metalliferous mines. They generally attributed this outcome to inefficient work arrangements at black coal mines. Some also conceded that poor management had contributed to low productivity directly, as well as indirectly through facilitating the development and continuance of poor work arrangements (see Chapter 6).

Exxon claimed that Australian coal mines were well short of productivity levels achieved by overseas coal mines and Australian metalliferous mines. It cited experience at its Lemington mine:

Prior to divestment in 1994, Exxon owned and operated the Rawhide and Caballo surface mines in the Powder River Coal Basin in the state of Wyoming. The Caballo Mine employed a truck/shovel fleet consisting of a P & H 4100 shovel and 240 ton trucks. During initial performance testing, the shovel demonstrated 30 second swing times and achieved a productivity of 3000 BCM/hr. This productivity level was consistently achieved during subsequent ongoing operations at Caballo.

Exxon's Lemington Mine also employs a 4100 shovel/240 ton truck fleet. The Lemington shovel demonstrated the same swing and productivity capabilities during its initial performance test; however, it has only achieved productivities of 2000 BCM/hr on an ongoing operating basis since its commissioning in 1996. Although a portion of the 50% productivity shortfall can be attributed to differences in external influences such as geology; the factors outlined above constitute the principal reasons for the performance differences. (sub3, p. 4)

The non-geological factors cited by Exxon as mainly responsible for this result reflected an industrial relations environment which severely restricted its ability to manage mines in the most productive manner. Exxon also observed that the high overtime rates of pay and limitations on shift length made seven day rosters excessively costly, causing lower capital productivity:

The resulting under-utilisation of high cost capital severely disadvantages the Australian black coal industry vs its international competitors who operate on a 7-day basis. For example, from Exxon's own world-wide benchmarking efforts 4100 class electric powered shovels can be operated 80 percent of calendar time, while the same benchmark for 5-year old 240-ton haul trucks is 77 percent. 1996 calendar operating time at ECMAL's Hunter Valley operations for these equipment types was 50 and 35 percent, respectively, reflecting the fact that the equipment is not scheduled 30 per cent of the time because weekend premiums are prohibitive. (sub. 3, p. 9)

Rio Tinto (sub. 22) indicated that its Australian coal operations generally had not performed to their potential. This was in contrast to its other mining interests in iron ore and bauxite which had improved productivity significantly since the early 1990s. It cited numerous costly work arrangements not now observed in its non-coal operations as the cause of this unsatisfactory coal result. It also observed that unsatisfactory management of employee relations during the industry's strong growth years contributed to the establishment and maintenance of these practices.

Camberwell Coal observed that Australian mine costs (reflecting productivity and input prices) were universally higher than the lowest cost overseas exporters:

We have totally lost our competitive edge, I don't think you will find one Australian mine that is in the bottom third of the export cost of production, and that is a pretty severe indictment on the coal industry in Australia, particularly in the Hunter Valley. (trans., p. 45)

Thiess Contractors (sub. 15), a firm with considerable experience as a contractor to the black coal and other mining sectors, submitted that in its experience mine productivity and management systems in the black coal industry were inferior to those in the metalliferous sector. It observed many unsatisfactory work arrangements in black coal which, together with poor management, led to this unsatisfactory performance.

Ensham's CEO also expressed criticism of coal industry management:

Part of the present management culture in the industry is to shelve or ignore the hard problems and utilise vital resources on marginal issues which have little immediate impact on the bottom line. (Footsl998, p. 4)

However, Rio Tinto observed:

Apportionment of blame, however, is an unproductive exercise. What is more important is that a variety of forces is at work — pressure on coal price, more competition — which will call for a change in management behaviour. (sub. 22, p. 48)

A number of participants indicated that productivity in their mines had improved in recent years as a result of improved work arrangements. This suggests that performance is variable between companies depending partly on the ability to remove restrictive work arrangements or, in the case of new mines, to avoid introduction of such arrangements. Camberwell Coal indicated that its productivity had been considerably above that of other Hunter Valley mines because it had negotiated a favourable agreement with the CFMEU on opening in 1991 (trans., pp. 47–48). However, it added that further progress had been difficult, with its most recent agreement not delivering promised changes:

The last agreement was negotiated back in 1995 and there were wage increases put into the agreement. In terms of that agreement that really hasn't delivered what we expected. We are now producing similarly to what we were doing back in 1995, even though we paid for some changes. (trans., p. 49)

Callide Coalfields also indicated that it had achieved some improvements in productivity but that important impediments to attaining higher productivity remained:

... we have just entered into our fourth generation of enterprise agreements and we've been successful in doing things that have made our operations far more efficient. But we're still faced with the award base. Everything seems to tend to operate from that award base which is very restrictive ... (trans., p. 222)

Mr John Maitland, the General President, Mining and Energy Division of the CFMEU, has stated that there have been significant productivity-enhancing changes in work arrangements contained in union-negotiated agreements in recent years. He argued:

We are willing to change. The productivity statistics of the last decade show that we have changed. But we don't see a corresponding willingness to change by investors and management ... (Maitland1997, p. 12)

Whether such changes have been sufficient to achieve competitive work arrangements and productivity levels is discussed below and in Chapters 5 and 6.

3.3.2 Benchmarking productivity performance

Benchmarking is a business management technique initially developed to compare and improve the performance of individual businesses. It is a process of searching for, measuring and implementing better practices, through comparisons with other organisations (or with different parts of a single organisation). Macneil et al (1993) offered the following definition of benchmarking:

... a method for continuous improvement that involves an ongoing and systematic evaluation and incorporation of external products, services and processes recognised as representing best practice. (p.14)

Benchmarking is a universal concept, having application to all sectors of the economy. The main focus of benchmarking has been at the level of the individual firm or production unit, where detailed data exist and the operations being studied are well understood by the benchmarkers.

The preferred method of benchmarking depends on the goal to be achieved. Where an organisation wants to analyse its performance only, it could undertake internal benchmarking. Where it wishes to compare its own methods with the world's best, process-based benchmarking with partners recognised as having the best processes of that kind is used.

All types of benchmarking have one general strength — they create impetus for positive change in an organisation. A second major strength of benchmarking is its quantitative nature. It involves the collection of comparable data. When undertaken thoroughly and carefully, benchmarking generates information that is more robust than the subjective views that underlie most qualitative assessments of an organisation's performance. Furthermore, as the collection of the benchmarking data is an empirical exercise, it requires the benchmarker to

scrutinise an organisation in great detail, thereby raising the possibility of performance-enhancing insights irrespective of quantitative results.

The quantitative approach adopted in benchmarking is also conducive to *before* and *after* analyses. This encourages organisations to adopt a dynamic sense of continual review and refinement of strategies for improved performance.

Finally, the pursuit of better performance standards encourages analysis of the causes of difference between organisations. This is the most significant benefit of benchmarking. In the light of comparative information, organisations can develop a better understanding of what drives both their performance and the performance of others.

A potential role for benchmarking in public policy is to provide some yardstick of performance of publicly-owned natural monopolies. Because such organisations generally face very limited competitive pressures, alternative approaches are needed to generate high levels of performance. Benchmarking can play a part here by providing an indication of productivity relative to comparable operations in Australia and overseas.

However, benchmarking has a number of limitations, some of which are particularly relevant to its use for public policy analysis. A key requirement for accurate benchmarking is a comparison of *like* with *like*. Such comparisons can be difficult to make when a number of variables bear on performance. For example, in coal mines, the geology varies, as does the type of equipment being utilised. Frequently, a *like* with *like* comparison is difficult and hence the initial benchmarking results require significant adjustment or qualification. In such situations the results should be seen as indicative rather than precise measures of performance.

To be precise and meaningful, benchmarking requires extensive and accurate information, some of which might not be normally collected by the organisations concerned. This level of detail, however, varies with the type of benchmarking undertaken. For example, internal benchmarking for some organisations involves relatively little information. Conversely, generic benchmarking of Australian black coal mines with world's best practice is information-intensive. In addition, because benchmarking for governments is often undertaken from outside the organisations being examined (particularly any overseas benchmarking partners), there will be problems of incomplete understanding of the factors driving observed performance differences.

A further limitation of benchmarking derives from its very purpose. This is to measure an organisation's present performance against recognised better practice. As such, for organisations that lead their fields, benchmarking has limited benefits. Furthermore, organisations that are not achieving world's best

practice can tend to focus on catching up to an existing benchmark when the real challenge is determining how to become the firm setting the benchmarks.

An important limitation of benchmarking as a tool for public policy analysis is that the solutions to identified deficiencies often lie in the hands of the organisations being examined rather than with government. However, mere involvement in benchmarking analysis may draw governments into making policy responses on matters which are essentially the responsibility of private sector organisations. The role of government is to provide the appropriate policy framework within which the private sector can effectively resolve these problems.

For these reasons, benchmarking of the performance of business enterprises has limited application to matters of public policy. It has a useful contribution to make in estimating gaps in performance. But beyond that, unless the factors underlying the performance gap are within the realm of public policy, the analysis of the performance gap is best carried out by the organisations concerned.

The Commission has undertaken generic benchmarking of a number of processes within coal mines in order to ascertain the existence and extent of a performance gap between certain mining processes in Australian and international mines. It has been suggested by participants that some of the factors that underlie a performance gap between certain Australian and international coal mines reflect the impact of public policy. Where that is the case, those issues are discussed in greater detail later in this report.

3.3.3 Previous benchmarking studies

This section briefly outlines the results of two comprehensive international benchmarking studies of Australian coal mine productivity carried out in recent years. Both studies focused on benchmarking the productivity of key processes involved in particular mining technologies rather than attempting to cover whole-of-mine productivity. They also estimated the productivity of all inputs involved in these processes (total factor productivity), rather than just a single input such as labour or capital.

Swan Consultants (1994)

In 1994 Swan Consultants, on behalf of the Australian Coal Association, undertook a productivity benchmarking comparison of *high-performing* Australian open cut and underground coal mines against *international best practice*. The international mines were nominated by the Australian participants as recognised world leaders in performance. Data from a total of 18 mines (ten

Australian and eight from the United States), covering three mining technologies, were used in the study. While this small number of mines somewhat limits the generality of the results, they are nonetheless useful indicators of relative performance. The study measured the productivity of the combination of inputs used in producing a single mine output.

For truck and shovel open cut operations (comparing two Australian and four US mines), productivity of the Australian mines needed to increase by nearly 70 per cent to match the US mines. Swan estimated that about one fifth of this gap reflected geological disadvantages of the Australian mines — a large number of relatively thin seams. The rest reflected low capital utilisation at one Australian mine and much lower labour productivity at both Australian mines. The latter was explained by differences in leave, roster and work arrangements together with overstaffing at the poorly performing Australian mine.

For open cut dragline operations, Swan benchmarked the productivity of five Australian mines against that of two leading US mines. As a group, the five Australian mines performed at a level similar to those in the United States. However, the three better-performing Australian mines had over 20 per cent higher productivity than the US mines while the other two Australian operations were around 15 per cent below US performance. This indicated that a productivity improvement of about 40 per cent was needed for the poorer group of Australian dragline operations to match the three high-performing mines.

About half of the gap between the two groups of Australian mines was due to site characteristics which affected dragline performance. The poorly performing Australian mines had low utilisation of available capital and lower labour productivity, reflecting poor work arrangements.

In underground longwall mines, three Australian mines were compared with two US mines. The Australian mines needed to increase productivity by about 20 per cent to reach their US counterparts. This reflected better capital utilisation in the US mines, because of longer periods of utilisation, and better labour productivity, partly due to less time lost for leave and during work breaks and shift changes.

Tasman Asia Pacific (1997)

In 1997, Rio Tinto commissioned Tasman Asia Pacific (Tasman) to undertake a benchmarking study comparing and analysing the productivity performance of Australian open cut coal mines with those of US (mostly) and some Asian mines as well as with Australian truck and shovel metalliferous mines. The study measured the total factor productivity of key processes in each of truck and shovel and dragline operations for 1996 or 1995–96. The methodology was

similar to that adopted in the Swan study, but underground mines were not examined. However, a larger number of mines (27 separate operations from 18 mines) were involved, giving the results somewhat wider applicability and enabling a breakdown of the results by State.

For truck and shovel mines, Tasman benchmarked four NSW coal mines, five Queensland coal mines, three US coal mines and five Australian metalliferous mines. Australian metalliferous mines had the highest estimated productivity. US coal mines averaged 8 per cent lower productivity than this benchmark. To achieve the Australian metalliferous productivity levels, Queensland coal mines needed to increase productivity by about one third while NSW coal mines required almost a 50 per cent rise in their productivity.

These averages masked major variations between individual Australian coal mines. For example, the best performing NSW coal mine, while still having productivity lower than the best-performing metalliferous mine was more than twice as productive as the worst-performing Australian coal mine. Further analysis indicated that low productivity in using trucks (low speed and low utilisation) was an important part of the poor performance of Australian coal mines.

Low labour productivity in Australian coal mines also contributed significantly to their poor overall productivity. NSW coal mines needed to increase labour productivity by about 66 per cent and Queensland coal mines by around 40 per cent to match the levels achieved by Australian metalliferous mines. Overstaffing and considerably more idle time in Australian coal mines were the key factors in this result.

For those costs covered by the study, the costs per tonne of material moved in Australian coal mines were above those of US coal mines by even more than suggested by productivity gaps. Higher wage costs per employee in Australian mines pushed costs per tonne of material in NSW mines to nearly 90 per cent above that of US coal mines. For Queensland, the gap to US mines was 65 per cent.

For dragline operations, two NSW mines, five Queensland mines and three US mines were benchmarked. The results showed that the Queensland mines represented the best practice of the three groups examined, being over 20 per cent more productive than the US and around 30 per cent above the NSW mines. As with truck and shovel coal mines, significantly higher prices of inputs disadvantaged Australian dragline mines compared with the US benchmark coal mines. There were large variations in individual mine productivity performance around the group average, but because of the small

sample size confidentiality considerations precluded an analysis of these differences.

Partial productivity measures indicated that better geology assisted productivity in Queensland mines, but they also benefited from better dragline performance compared with NSW and around 25 per cent higher labour productivity than in both the United States and NSW. The labour productivity performance partly reflected lower lost time during shift changes and the higher leave component in NSW mines.

3.4 The Commission's benchmarking study

The terms of reference for this inquiry requested the Commission report on benchmarks of productivity performance of Australian black coal mines compared with best practice in comparable international coal mines and in analogous Australian metalliferous mines. The Commission considered that this task required a new and more comprehensive benchmarking study to be undertaken, rather than relying solely on the existing published benchmarking studies cited above, which covered a limited number of mines or did not examine all major technologies.

Accordingly, after considering expressions of interest from eleven firms, the Commission contracted Tasman Asia Pacific (Tasman) to undertake a benchmarking study of the productivity of the Australian coal industry. The principals of Tasman have undertaken productivity benchmarking work for The Australian Coal Association, Rio Tinto and Shell. Draft versions of the study were presented to public workshops organised by the Commission in January and June 1998. The final report has benefited significantly from contributions by workshop participants.

Tasman examined key mining processes in a representative sample of Australian open cut and underground coal mines compared with better practice US coal mines and Australian metalliferous mines. Because of the depth of its coverage and the relatively large number of mine operations being surveyed, the Tasman work is the most comprehensive benchmarking study undertaken on the productivity of the Australian black coal industry. It covers all three major mining technologies and makes comparisons with better practice mines in both the US black coal industry and the Australian metalliferous sector. By covering a relatively large number of mines (which have been specifically selected using cost data to cover the whole range of performance levels), the study provides a good representation of the Australian coal mining industry. It has also been able to compare performance between mines in NSW and Queensland and, within the limits imposed by confidentiality requirements, present insights into the

causes of the wide productivity differences between Australian coal mines observed in earlier studies.

The Executive Summary of Tasman's report is presented in Volume 2 of this report. The methodology and main findings are outlined below.

3.4.1 Coverage and methodology

The inquiry terms of reference specified comparison of the productivity performance of Australian black coal mines with *best practice* US coal mines and Australian metalliferous mines. However, it is often difficult to identify consistent best practice across all the operations in an entire organisation or firm. This is particularly so in mining where the operating environment can vary significantly between mines and even between years in individual mines. Hence, Tasman has identified US coal and Australian metalliferous mines which can be termed *better practice*. That is, they are mines which are recognised as averaging consistently high productivity across their operations. However, in any given year there may still be significant variations between productivity of these better practice operations. This was shown by the significant variation in productivity observed in the sampled better practice Australian metalliferous mines and US coal mines.

Better practice coal mines in the US are recognised as among the most productive in highly developed, high wage countries. Tasman indicated that low wage countries were not appropriate benchmark partners:

Many other countries that were nominated as having efficient mines had wage rates much lower than those in Australia so were not suitable comparisons for a total productivity analysis. This was mainly because these low-wage countries had much larger relative work forces and different operating practices. These countries included Indonesia, South Africa and Chile. (Tasman Asia Pacific 1998p. 6)

The objective in selecting Australian coal mines for the survey was to develop a representative cross-section of mines for each of the three main mining technologies. Labour productivity data from Barlow Jonker (1997) were used to choose coal mines covering a cross-section of performance levels. The high response rate to the survey ensured that this objective was achieved. In total, responses were obtained from 44 mine operations out of 52 from which data were requested. These operations consisted of 27 Australian coal operations, 4 Australian metalliferous mines and 13 US coal operations. In total the survey covered a little under 40 per cent of total run-of-mine coal produced in Australia.

It is important to recognise that the above process for selection of mines will tend to create a performance gap between Australian coal mines and the US coal and Australian metalliferous benchmarks. As Tasman observed:

The rationale for selecting better practice international comparisons rather than average international comparisons is to show the scope for improvement in the Australian industry and ways of achieving that improvement. This is the primary objective of benchmarking. (Tasman Asia Pacific 1998, p.6)

That the performance target is achievable by Australian coal mines is demonstrated by the fact that the best practice Australian operations in each of the three major mining technologies approached or exceeded the performance of best practice US mines. The sampled Queensland coal draglines were on average significantly more productive than the US coal benchmarks. In addition, Australian metalliferous mines averaged very close to US coal better practice average productivity in truck and shovel operations. Because the Tasman results are for a sample of Australian coal mines in an industry with clearly highly variable performance between firms, the results should be seen as broad indicators rather than precise measures of industry wide performance. The analysis by Tasman is particularly valuable in indicating causes of poor performance and the potential for productivity improvement by Australian mines.

Because of the importance of like with like comparisons in ensuring meaningful benchmarking, the study focused on a number of key mining processes that are relatively homogeneous between mines and which have well defined common outputs. Including all activities undertaken in a mine in a particular year would cause considerable difficulties in estimating a common output measure. It also would mean comparing very different mixes of activities. For example, some mines do not have washeries and the level of development activities varies significantly between longwall mines from year to year. Focusing on key homogeneous processes allows more precise analysis of measured differences in productivity. Attempts to compare whole-of-mine productivity introduce complications such as different functions performed at various mines (for example, washeries) and varying treatment of corporate overheads by different companies. Significant and somewhat arbitrary adjustments would be needed in order to estimate like with like comparisons.

Many maintenance activities and associated labour inputs were excluded from mine inputs for open cut mines because of concerns about unreliable and inconsistent reporting of data and the significant variability in maintenance expenditure from year to year. A mine sampled in a year when it had a higher than usual maintenance program would register an unrepresentative, low productivity performance. Adequate allowance for such factors would have

been very difficult in the broad industry-wide benchmarking exercise required by the Commission. However, excluding maintenance inputs from the analysis does cause some problems. Maintenance is a significant cost in coal mining and efficient maintenance programs are important in generating consistently high productivity. Mines in which above average maintenance expenditure results in significant output gains are likely to be biased towards higher productivity in the Tasman study because the bulk of their maintenance inputs will not be included.

Mine geology will often have an important influence on observed productivity. However, as it is not a factor which reflects on management or workforce performance it is desirable to remove its impact as far as possible from performance measures. The Tasman study did this in a number of ways. It does not cover certain activities, such as development work, in which geology has a particularly important effect. Bord and pillar mines, where productivity is very dependent on geology, were not considered. In measuring output in truck and shovel mines, both waste and coal were included in order not to disadvantage mines with greater overburden. Nonetheless, there remain important impacts of geology on productivity which cannot be removed without a detailed mine by mine analysis not practical in this broad multi-firm survey. However, in some cases poor geology can have the perverse effect of stimulating high productivity in a mine because this is essential for its survival.

The study also obtained significant quantitative and qualitative information from participating mines to allow causes of measured productivity differences to be diagnosed. Hence, as well as observing productivity variations between groups of mines, it is possible to gain insights into some of the important factors underlying performance differences.

The study measured the productivity of all of the inputs (factors of production) used in the operations being benchmarked. This measure is termed total factor productivity. Focusing on the amount of output produced per unit of one type of input only (for example, labour), can produce very misleading productivity estimates if the proportion in which inputs are used varies significantly between mines. For example, comparing labour productivity between Australian coal mines and those in countries with very low wages would not be appropriate as Australian mines generally use much more capital-intensive methods and technologies which generate higher labour productivity.

3.4.2 Results

The key results of the Tasman study are now examined for each of the three main coal mining technologies used in Australia. It is worth reiterating that

these results are from a reasonably representative sample of Australian black coal mines and compare their performance with better practice US black coal mines. The inherent difficulties in benchmarking noted above — in particular, the significant variability between the geologies of individual mines — mean that the average results should be taken as indicative rather than exact measures of the average productivity of Australian coal mines. Nonetheless, the significant gaps between Australian and better practice US performance and the very large differences in productivity between Australian coal mines suggest that some important lessons can be learned from an analysis of the results.

Truck and Shovel operations

For open cut mines using truck and shovel techniques, output was defined to cover the total movement of material (including distance transported). Measuring output only as coal production would disadvantage unreasonably mines with large amounts of overburden, while ignoring distance carried to stockpiles or processing would bias the results against mines with a large transport task. Inputs were physical quantities of labour, various types of capital (trucks, shovels, drills etc.) and materials. These were weighted by their shares (averaged across the sample of mines) in total cost to give an index of total input usage.

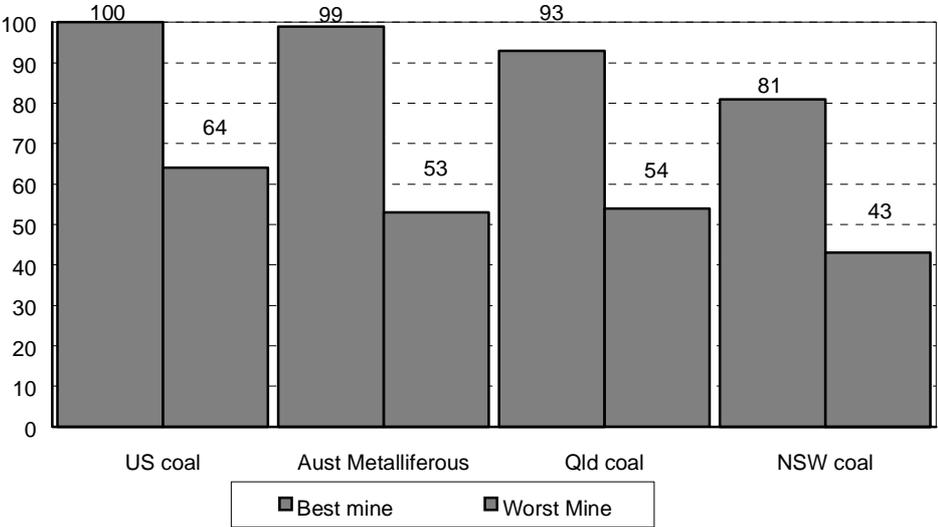
Information on truck and shovel operations was obtained from six NSW coal mines, six Queensland coal mines, four Western Australian metalliferous mines and six US coal mines.

In the study sample, Australian truck and shovel coal operations performed poorly compared with better practice US coal mines and Australian metalliferous mines. On average NSW mines needed to increase productivity by about 40 per cent to match the sampled better practice US coal mines, while Queensland mines required a more than 15 per cent increase. As average productivity in Australian metalliferous mines was only marginally below that in US coal mines, the productivity gap between Australian coal and metalliferous mines was also similar.

However, as shown in Figure 3.3, these average results masked significant variability in productivity between individual mines in all of the four groups of mines examined.

The gap was particularly large in NSW coal, where the worst-performing mine needed to increase its productivity by nearly 90 per cent to match the best-performing NSW mine. The gap between the best-performing Australian coal mines and the frontier US mine was small (less than 10 per cent) for Queensland but more substantial (about 25 per cent) for NSW.

Figure 3.3: **Variation in total productivity within truck and shovel mine categories** (index: best mine = 100)



Source: Survey undertaken by Tasman Asia Pacific (1998).

All but one of the Australian coal truck and shovel operations sampled were at mines also undertaking dragline operations. It is possible that truck and shovel operations in these mines tended to be involved in the more difficult work while the more capital-intensive draglines specialised in the easier to mine areas. Also, management may place more emphasis on achieving high productivity in the capital-intensive dragline work.

Partial productivity indicators (units of output per unit of a single input) show that the sampled Australian coal mines had poor labour productivity and use of trucks, particularly in NSW. On average, the six NSW truck and shovel mines in the sample needed to increase labour productivity by nearly 70 per cent to match labour productivity in the six US mines, while Queensland mines needed a 40 per cent boost to achieve US levels.

The survey indicated that the major cause of this poor labour productivity performance was overstaffing (high ratio of labour hours worked to machine hours) and much higher idle time (for example, time leaving and joining shifts). Chapter 5 discusses some of the work arrangements which would have led to this poor average labour productivity in the sampled Australian coal mines.

Truck productivity was also low in Australian coal mines relative to better practice US mines due partly to low capacity utilisation of trucks and also reflecting poorer productivity when operating.

The cost impacts of the productivity differences between US and Australian coal mines were further accentuated by higher input costs faced by Australian mines. For the Australian mines examined, the mine cost disadvantage was considerably greater than the cost differential because of higher cost of labour per hour worked.

Dragline operations

Tasman measured output for dragline operations as the total of prime and re-handled overburden moved. The largest inputs were the dragline equipment, labour, explosives and electricity.

Unlike truck and shovel operations, the eight sampled Australian draglines (three in NSW and five in Queensland) performed well compared with the five US benchmark mines. The US mines required a nearly 20 per cent increase in productivity to match average productivity in Queensland draglines, while NSW mines were only 5 per cent behind the US operations. The NSW operations had 25 per cent lower productivity than those in Queensland. On average, productivity of Australian draglines was more than ten per cent above that of the US benchmark mines.

While performance differences between individual Australian dragline operations were not as large as in truck and shovel, they were still significant, with a gap of around 30 per cent between the best and worst mine. This was similar to the gap observed between the best and worst US mines.

Some of the productivity advantage observed in Queensland draglines reflected geological advantages which required less inputs such as explosives. Analysis of partial productivity indicators showed that superior productivity of dragline equipment was also important in the good performance of Queensland coal mines. Compared with US draglines, the sampled Queensland mines used their dragline equipment for more hours and were also somewhat more productive when in use. While NSW draglines had similar hours of operation to those in Queensland, they needed to increase their productivity when in use by more than 20 per cent to match Queensland.

On average, labour productivity in the surveyed NSW and US operations needed to increase by nearly 20 per cent to match that achieved in the Queensland mines. Some of this more favourable result for Australian dragline operations compared with the US reflected good work arrangements (meal breaks in field, 'hot seat' changes, all year round operations) which generally matched those in the US mines. Such arrangements are necessary to obtain high productivity from expensive dragline equipment. On average, NSW coal mines had considerably greater idle time during shifts than in the United States and

Queensland but the greater use of more labour-intensive equipment (for example, bulldozers) in US mines meant that measured labour productivity was still similar in the United States and NSW.

As with truck and shovel operations, higher prices for inputs (labour and explosives) paid by the selected Australian dragline mines meant that their costs per cubic metre were well above those of US mines.

Longwall operations

Output for longwall operations was run-of-mine coal produced by the longwall. Coal produced during development activities was excluded. Major inputs were longwall equipment, labour and electricity.

On average, the seven Australian longwalls surveyed needed to increase productivity by 25 per cent to match the two US benchmark operations. As was the case with truck and shovel operations, the best Australian longwall was quite close to (just over 10 per cent below) the productivity of the best US mine, which itself is recognised as a world's best practice performer.

The major cause of the measured productivity gap was relatively low labour productivity in the Australian operations. Labour averaged 34 per cent of costs for the nine mines and labour productivity in the Australian mines needed to increase by close to 40 per cent to match that of the US longwalls. The survey was able to identify much greater idle time in Australian mines (particularly joining and leaving shifts) as an important cause of this result. In addition, geological disadvantages and possibly work practices and overmanning would have led to some of the lower labour productivity in the Australian mines. The use of significant contract labour in the best practice US mine would have allowed greater flexibility to match labour input to changes in production.

Productivity of capital equipment in the Australian black coal mines was comparable to that in the US mines except for longwall shearers (a relatively small input cost), where planned extra capacity in some Australian mines led to lower utilisation rates.

3.4.3 Conclusions

Although covering only a sample of Australian black coal mines, the productivity benchmarking studies reported above provide some important insights into the industry's average relative performance and the significant variability of performance between individual mines.

First, the benchmarking analysis indicates that, on average, Australian truck and shovel and longwall coal mines have much lower productivity than the US mines examined. This confirms results from earlier benchmarking studies.

Second, a good deal of the observed poor labour productivity and some of the capital productivity variations are the result of inefficient work arrangements (including overmanning) and high leave entitlements. The analysis of work arrangements in Chapter 5 indicates that some of the conclusions from the benchmarking analysis are likely to apply to a broad cross-section of the industry.

Third, Australian metalliferous mines were the best performers in truck and shovel operations, while Queensland dragline coal mines achieved productivity levels well above their US counterparts. These results indicate that parts of the Australian mining industry are capable of performing at very high levels of productivity.

Fourth, some differences in productivity reflect geological conditions which were on average more favourable in US mines.

Finally, even when the sampled Australian coal mines were able to achieve relatively high productivity (Queensland draglines), high prices of inputs meant that their unit production costs were only on a par with the US mines examined. Those that already had poorer productivity were disadvantaged even further by higher input prices. However, these cost comparisons will be influenced significantly by exchange rate movements.

The results of the Tasman benchmarking study are only for a sample of mines at one point in time. Anecdotal evidence suggests that the pressure of declining coal prices, together with significant changes in the industrial relations environment over the last decade, has created an environment in which improved management and labour force performance are both necessary and feasible. Comparison of the results of the smaller Swan Consultants (1994) study (which aimed to select high performing Australian mines) with those of the current Tasman Asia Pacific (1998) work are suggestive of an improvement in relative productivity of Australian open cut coal mines in recent years. While the sampled Australian truck and shovel mines in the Swan Consultants study needed to increase productivity by 70 per cent to match productivity in the US mines, the comparable figure in the Tasman Asia Pacific survey was 30 per cent. Australian draglines surveyed by Swan Consultants averaged around the same productivity as their US counterparts while in the Tasman Asia Pacific (1998) study they were around 7 per cent ahead. However, there was a small increase in the productivity gap observed for longwalls.

The results of the Tasman Asia Pacific (1998) benchmarking study suggest that, on average, productivity of Australian coal mine truck and shovel and longwall operations and NSW dragline operations can be improved substantially. The productivity performance of truck and shovel operations at Australian metalliferous mines and in the better of the sampled Queensland coal mines, together with the high productivity of Queensland coal mines' dragline operations and of one of the Australian longwalls, shows that Australian mines can be highly productive. The analysis of work arrangements in Chapter 5 indicates significant scope for changes that would assist in improving average industry productivity towards better practice levels.

4 WORK ARRANGEMENTS: THE CONTEXT

Historically, the major features of the Australian black coal labour market include a relatively high rate of union membership, relatively high wages and high levels of strike activity and industrial disputation. Industrial tribunals have played a major role in the determination of employment conditions.

One of the factors influencing the competitiveness of any firm is the institutional setting within which its labour market operates. As product markets have become more competitive, Australia's industrial relations institutions have been encouraged to move towards an enterprise bargaining framework.

By and large, with regard to labour market regulation, Australian black coal mines operate under the Federal jurisdiction while metalliferous mines fall under both Federal and State jurisdictions. While the Federal and Queensland jurisdictions have increased their institutional flexibility recently, the institutional arrangements of the Western Australian industrial relations legislation system enable a greater degree of workplace flexibility.

The 'custom and practice' provision in awards has resulted in the formalisation of all types of informal work arrangements in the Australian black coal industry. This provision inhibits unnecessarily the ability of workplaces to respond to changing circumstances. In addition, since not all customs and practices are documented at each mine site, uncertainty is created. This uncertainty increases the costs associated with change. Accordingly, this provision should not be included as an allowable award matter under the Federal award simplification process.

4.1 Introduction

The central focus of this chapter is an examination of the historical and institutional context within which work arrangements in Australian black coal mines operate. (Information on the history of industrial relations in black coal is provided in Appendix E.)

Work arrangements are the set of practices and rules which influence the way that jobs and tasks are performed within the workplace. They may be introduced

intentionally (via awards or agreements) or may develop over time as a result of custom and practice. As such, work arrangements consist of both formal and informal practices and rules. They also involve management practices and rules.

While many factors influence the competitiveness of mines — for example, the quality of coal, geological conditions, reliability of supply, timeliness in delivery and transport costs — the impact of work arrangements on the competitive performance of firms is of central concern for this inquiry. From this perspective, one means of improving competitiveness is by improving the impact of work arrangements on productivity. Arrangements which enable more outputs to be produced with the same quantity of inputs, or the same outputs with fewer inputs, can improve competitiveness while maintaining (or improving) remuneration levels in the black coal industry. Unless productivity improvements are captured completely by remuneration increases, the consequence of higher productivity is lower unit costs of production. Unit production costs can decline also as a result of reductions in the direct costs of employing labour (such as wages, allowances, bonuses, payroll taxes, workers compensation, superannuation payments and other on-costs).

It has long been recognised in OECD countries that a necessary precondition for improved competitiveness, productivity and efficiency is labour market flexibility — where flexibility is the ability to adapt continuously to new circumstances (OECD 1986). Such flexibility is essential for the survival of any business in a highly competitive environment. This process of adaptation can be either internal or external to the workplace.

Following an overview of the major features of the black coal labour market, this chapter reviews the different industrial relations frameworks within which the Australian black coal and metalliferous mining and the US black coal mining industries operate. The different legislative arrangements on industrial relations have clear implications for the milieu within which formal work arrangements operate and change over time. The relative flexibility of the black coal labour market from the institutional (or external) perspective is examined in this chapter. The chapter also provides an overview of the development of formal work arrangements in Australian black coal mines. The following chapter examines the flexibility of work arrangements from a workplace (or internal) perspective.

4.2 Labour market features

This section provides an overview of the main features of the black coal labour market. It discusses employment trends, trade unions and unionisation rates,

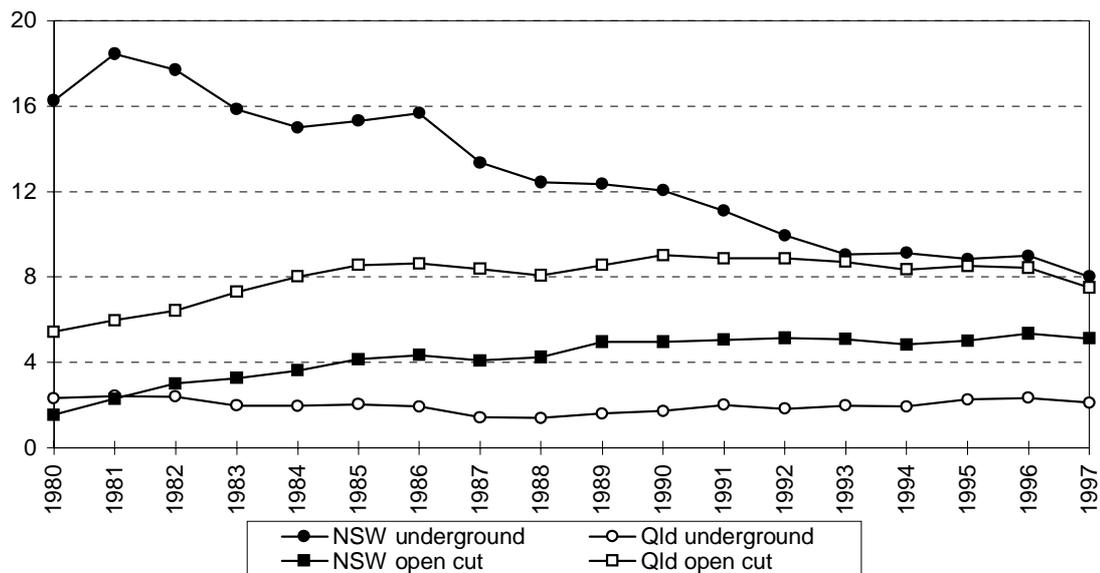
wages, lost working time, labour turnover and other characteristics of the black coal workforce. This section draws on detailed data located in Appendix C.

Employment

Employment in the black coal industry has declined by 27 per cent from its peak in December 1986 to 23 800 in December 1997. This employment loss has been concentrated in NSW, where reductions in underground mine employment exceeded rises in open cut mine employment. Aggregate employment in Queensland mines remained relatively stable over the same period in both underground and open cut mines, although employment fell in 1997 (see Figure 4.1).

Employment in the black coal industry represented 0.3 per cent of total Australian employment in 1997.

Figure 4.1: **Black coal industry employment by State and mine type^a**
(‘000)



a Employment in or about a coal mine or coal preparation plant. It includes administrative, technical and clerical staff. It also includes employees from both the mine operators and outside contractors. Employment as at December of each year.

Sources: JCB and QCB (various).

Trade unions and unionisation rates

The Australian black coal industry has a history of high levels of unionisation. Between 1986 and 1997, the unionisation rate in the black coal industry remained at over 92 per cent. In comparison, the rate of unionisation among the

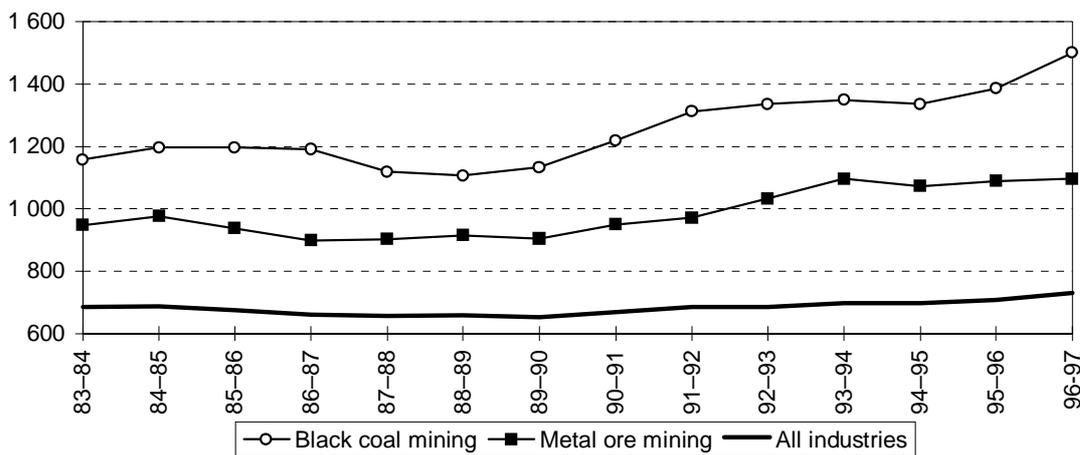
total Australian employed labour force fell from 46 to 30 per cent over the same period (ABS unpublished data).

The Construction, Forestry, Mining and Energy Union (CFMEU) and the Australian Collieries Staff Association (ACSA) are the two main industry unions. The CFMEU covers coal face workers, mechanics and drivers of plant and equipment. The ACSA has industrial coverage of all professional, semi-professional and clerical employees in the coal industry. Two other unions, the Automotive, Food, Metals, Engineering, Printing and Kindred Industries Union (AMWU) and the Communications, Electrical, Electronic, Energy, Information, Postal, Plumbing and Allied Services Union of Australia (CEPU), also have coverage in the black coal industry.

Earnings

Employee earnings are high in the black coal industry relative to both average earnings for all industries and in similar industries (see Figure 4.2). In 1996–97, full-time average weekly total earnings (AWTE) in the black coal industry were 1.4 times those in metal ore mining industries and 2 times full-time AWTE for all industries (ABS unpublished data). In 1996–97, this equated to annual average earnings of almost \$80 000 for black coal employees, compared with \$57 000 in metal ore mining and \$38 000 in all industries.¹

Figure 4.2: **Real full-time average weekly total earnings for black coal, metal ore mining and all industries (\$A1996–97)**



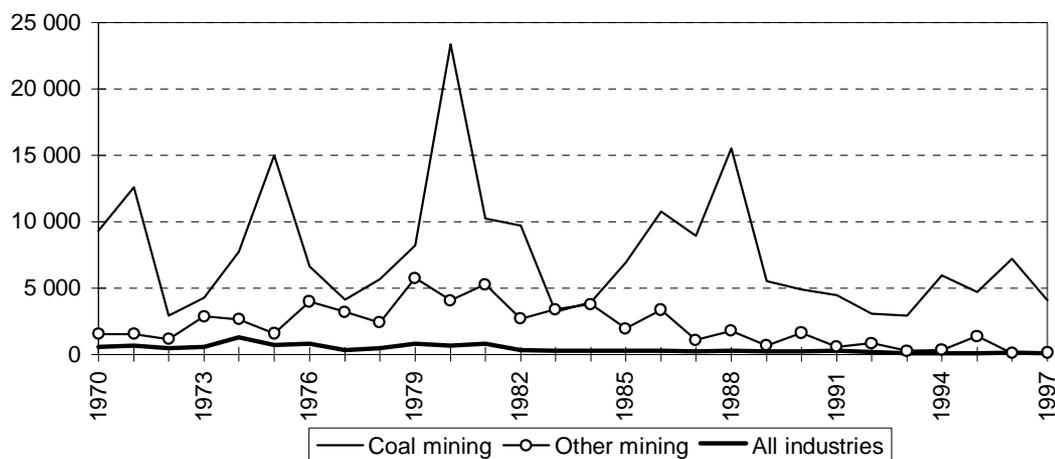
Source: ABS (Cat. No. 6203.0 and unpublished data).

¹ Annual earnings are calculated by averaging ABS quarterly observations of AWTE and multiplying by 52.

Working days lost

The black coal industry has a high level of working days lost compared with other industries. This is a combination of days lost due to sickness, workers' compensation and industrial disputes. In 1996, sick leave was 1.7 times the Australian average and workers' compensation leave was 4 times the all industries average (ABS unpublished data). Since 1990, the number of days lost due to industrial disputes has averaged seven times the mining industry average and 35 times the average for all industries (see Figure 4.3).

Figure 4.3: Industrial disputes, days lost per '000 employees per year, 1970–1997



Source: ABS (Cat No. 6101.0).

Labour turnover

For the year ended February 1996, voluntary labour turnover rates in black coal mining were less than half the average for all industries (4.7 per cent compared with 9.9 per cent, respectively) (ABS unpublished data).

Other characteristics

Over 98 per cent of black coal employees come from an English speaking background (compared with 86 per cent for the total employed labour force), 90 per cent were born in Australia (76 per cent), less than 2 per cent are female (43 per cent), 42 per cent are 45 or older (30 per cent), while only 6 per cent have tertiary qualifications (26 per cent).

In summary, when compared with the total employed labour force, the Australian black coal workforce has:

- **high employee earnings;**
- **a very high level of unionisation;**
- **a very high level of industrial disputes;**
- **high levels of days lost to sick leave and workers' compensation leave;**
- **low levels of voluntary labour turnover; and**
- **low levels of tertiary qualifications.**

The black coal workforce tends to be in full-time employment, older, predominantly male and from an English speaking background.

4.3 Industrial relations systems

Different legislative frameworks influence the environment within which formal work arrangements in black coal and metalliferous mines operate and change over time. Accordingly, this section examines issues associated with the institutional flexibility of Australia's Federal and State industrial relations systems and the counterpart system in the United States.

4.3.1 Background to Australia's industrial relations systems

Since Federation, Australia has had a highly centralised system for establishing employment and working conditions, with a primary role being given to industrial tribunals in both State and Federal legislation. The main vehicle by which these tribunals influenced wages and conditions has been and is still largely through awards.² Awards specify the wages and basic conditions of employment applying to a particular occupation or, in some cases, an industry. Changes to awards were generally either a result of national wage case decisions made by the Australian Industrial Relations Commission (AIRC) (which resulted in flow-ons from Federal to State awards) or via industry cases considered by the AIRC (typically with flow-ons to other awards). However, since most awards specify *minimum* conditions, there was also another informal layer of negotiation outside the formal tribunal system (in the form of direct bargaining, between employers and employees, of over-award wages and conditions) (Hawke and Wooden 1997b).

² While awards in the Federal system bind the parties who are respondents to an award, in the State systems, awards apply by common rule to all employees and employers in the particular industry.

There are seven industrial relations systems in Australia. One system operates at the Federal (including the Territories) level of jurisdiction while other systems operate within each of the six States.³ Outside these industrial relations jurisdictions, conditions of employment can be determined also through the common and contract law systems. This occurs where a union 'log of claims' has not been served on an employer in the Federal jurisdiction or where there is no relevant State award.

Industrial relations arrangements in Australia's black coal industry fall almost entirely under the Federal jurisdiction. The exception is Western Australia (WA), where black coal mines operate under that State's jurisdiction. In contrast, while Federal as well as State jurisdictions cover industrial relations arrangements in the metalliferous mining industry, State arrangements predominate.

At the time of writing, the primary (or parent) award in the black coal industry is the *Coal Mining Industry (Production and Engineering) Interim Consent Award, September 1990* (P&E Award).⁴ This is a consent Award between the CFMEU and the employers and employer organisations who are party to the Award. This Award, like many metalliferous mining industry awards, is minimum rates in character. It is currently being simplified in accordance with the *Workplace Relations Act 1996* (WR Act) (see Section 4.3.2).

Since the mid-1980s, both Federal and State industrial relations systems have moved towards a less centralised industrial relations framework with greater emphasis on enterprise level negotiations. These industrial relations changes stem largely from economic pressures, including increased competition in product markets (Hawke and Wooden 1997a,b).

Linkages between product and labour markets

Labour markets and product markets are inextricably linked. Generally, previous regulatory arrangements in the labour market essentially provided a 'parallel insurance mechanism' which reinforced the insurance against

³ The Victorian Government has handed responsibility for industrial relations matters to the Federal jurisdiction.

⁴ Under s.158A of the former *Industrial Relations Act*, all awards were to be modernised and consolidated. Accordingly, the P&E Award was re-written and re-organised and was handed down in December 1997 as *The Coal Mining Industry (Production and Engineering) Consolidated Award 1997*. Since this process did not involve changes to any entitlements or conditions and many of the submissions for this inquiry refer to specific clauses in the former (1990) P&E Award, in this report the Commission continues to refer to the former, rather than the modernised, P&E Award.

inefficiency and uncertainty provided by protected product markets. The reduction of product market protection, together with the stronger export orientation of Australian industries (including black coal) and the increased globalisation of investment, has reduced the scope for such ‘parallel insurance’ in the labour market. These changes have increased the need for greater flexibility in the labour market (and in its institutions and regulations) to ensure competitiveness via enhanced productivity and efficiency at the workplace (Blandy and Baker 1987).

As discussed in Chapter 2, it is only relatively recently that effective competition in Australia’s domestic and export markets for black coal has occurred. These changes, in turn, have created concomitant pressures on the black coal labour market and the various infrastructures supporting that market. By contrast, Australia’s various metalliferous mining product markets have been subject to a high degree of effective international competition for at least 15 years. For example, major changes in a number of cost and market forces at Robe River’s mining operations in the mid-1980s ultimately led to pressure to remove a series of restrictive work arrangements (Gethin 1990).

Indeed, the explicit recognition of the link between productivity and flexibility by the then Australian Conciliation and Arbitration Commission was first made in March 1987 (in a decision described as the ‘Second Tier Principle’) and again in August 1988 (in another decision, described as the ‘Structural Efficiency Principle’). Since that time, continuing economic pressures have seen the gradual introduction of an enterprise bargaining framework and the development of associated principles by the AIRC, explicitly recognising the link between flexibility and competitiveness at the level of the enterprise.

The CFMEU has contended that the black coal industry recognised the need to adjust earlier than the AIRC, since formal enterprise bargaining in this industry was introduced as early as 1990 — at least a year before the AIRC’s 1991 determination of enterprise bargaining principles (Maitland 1997). Indeed, the Coal Industry Tribunal’s (CIT) September 1988 (arbitrated) industry restructuring decision responded to deteriorating market conditions at the time by extending shift lengths, introducing year round production, extending overtime and introducing less prescriptive rostering arrangements (see Appendix E). Even so, as discussed below, many enterprise bargains struck between management and employees after that time have been similar in nature, and seem to be more representative of ‘pattern bargaining’ than enterprise bargaining.

4.3.2 The Federal system and its relationship to black coal

While each of the Australian States has direct regulatory powers over industrial relations under their respective constitutions, industrial relations legislation in the Federal arena was founded upon the so-called arbitral power in Australia's Constitution. This power does not allow the Federal Parliament to legislate generally about employment terms and conditions but does permit the establishment of industrial tribunals which have the power to act (via conciliation and arbitration) where an inter-State dispute exists. By its nature, the Federal system implicitly supported an adversarial arrangement, since it was only through conflict (an inter-State dispute) that the formalised process could be utilised. Moreover, while Federal (and State) legislation defines the framework within which tribunals and commissions operate, the bodies usually operate on the basis of previously (self) determined principles which provide practical directions for legal interpretation of industrial matters. Hence, industrial relations institutions operate through two formal mechanisms — legislative and interpretative (Hawke and Wooden 1997b).

Within the black coal industry, the former CIT was one such tribunal. Since the abolition of the CIT in 1995, industrial matters have been dealt with by the coal industry panel of the AIRC. Importantly, the AIRC was required to pay regard to previous decisions of the CIT. However, this provision was repealed by the *Workplace Relations and Other Legislation Amendment Act 1996*. The role of the CIT within the context of change is discussed in Chapter 6.

The WR Act — which now governs most black coal mining industrial relations — stipulates that awards are to be simplified to operate as a 'safety net' of fair and enforceable minimum wages and conditions of employment (see Box 4.1). Provisions are considered allowable (and therefore included in a new simplified Award) if:

1. their subject matter is covered by the twenty allowable matters (see Box 4.2);
2. they are considered incidental to the twenty allowable matters and necessary for the effective operation of the Award; or
3. in exceptional circumstances, parties have made genuine attempts to reach agreement and conciliation has failed. In this case, the AIRC may arbitrate and decide that an exceptional matter is allowable.⁵

⁵ In this case, the provision can relate only to a single matter and has restricted application (to a single business). While a Full Bench of the AIRC may apply an exceptional matter to more than a single business, this is subject to a number of tests (set out in the WR Act). Decisions over exceptional matters do not form part of the award simplification process.

The *intention* of the WR Act provisions is to limit the scope of awards to the regulation of terms and conditions of employment — excluding issues such as the organisation of work and organisational security (Corrs Chambers Westgarth 1997b). Other matters outside allowable matters are to be agreed at the enterprise or workplace level.

Box 4.1: Federal industrial relations arrangements: a snapshot

- Awards move towards a ‘safety net’ of twenty allowable matters — establishing minimum pay and conditions of employment (see Box 4.2).
- Agreements at the workplace or enterprise level to be the main focus for bargaining in the future.
- Three types of formal agreements are available: Certified Agreements (CAs) — either union or non union collective agreements; and Australian Workplace Agreements (AWAs) — individual agreements between employees and an employer.
- Third parties: Australian Industrial Relations Commission (AIRC) and the Employment Advocate. The AIRC has jurisdiction for the approval of enterprise agreements, conciliation and determining applications of unfair dismissal, making and varying awards to settle disputes and determining representational rights of employee organisations. The Employment Advocate is responsible for approving AWAs as well as investigating alleged breaches of the ‘freedom of association’ provisions.
- ‘No disadvantage’ test to apply to CAs and AWAs for their approval / certification by relevant third party (see Box 4.3).
- Protected industrial action is available during the negotiation of an agreement but industrial action is prohibited during the life of an agreement.
- Secondary boycotts are prohibited and penalised under the *Trade Practices Act*.

Source: Department of Workplace Relations and Small Business.

The Full Bench of the AIRC, in its review of the *Hospitality Industry – Accommodation, Hotels, Resorts and Gaming Award 1995* (Hospitality Award), determined a statement of principles for the process of award simplification required by the WR Act. In particular, it stated that each award would need examination and consideration of any special circumstances relevant to that award. Furthermore, while the Full Bench made no requirement for an award to contain provisions relating to any of the twenty allowable matters, it stated that award simplification would not involve a general review of award entitlements.

Box 4.2: The twenty allowable matters in Federal awards

The range of issues to be dealt with in awards is limited to the following matters:

1. classification of employees and skill-based career paths;
2. ordinary time hours of work and the times within which they are performed, rest breaks, notice periods and variations to working hours;
3. rates of pay generally (such as hourly rates and annual salaries), rates of pay for juniors, trainees or apprentices, and rates of pay for employees under the supported wage system;
4. piece rates, tallies and bonuses;
5. annual leave and leave loadings;
6. long service leave;
7. personal/carer's leave, including sick leave, family leave, bereavement leave, compassionate leave, cultural leave and other like forms of leave;
8. parental leave, including maternity and adoption leave;
9. public holidays;
10. allowances;
11. loadings for working overtime or for casual or shift work;
12. penalty rates;
13. redundancy pay;
14. notice of termination;
15. stand-down provisions;
16. dispute settling procedures;
17. jury service;
18. type of employment, such as full-time, casual and regular part-time employment and shift work. This, however, does not include limiting the number or proportion of employees that an employer may employ in a particular type of employment or the maximum number of hours for regular part-time employees;
19. superannuation; and
20. pay and conditions of outworkers.

Award provisions must be of 'minimum rates' in character as opposed to paid rates. Parties to existing awards have until 1 July 1998 to bring the award into line with these matters.

Source: Workplace Relations Act 1996.

In so far as the scope of a simplified award is concerned, the Full Bench stated that awards should not prescribe detail or processes which were dealt with more appropriately by agreement at the workplace. Importantly, the Full Bench determined that awards should not prescribe work practices that impede the efficient performance of work or contain provisions that restrict productivity, while being mindful of employee fairness considerations.

The *process* of award simplification in the black coal industry involves two stages. The first stage is the determination of allowable matters. In this first stage, allowable matters are to be determined, as far as possible, by negotiation and conciliation between the parties. Only where conciliation has failed is the determination of allowable matters by arbitration. The second stage involves a review of the Award to ensure that it does not include matters of detail more appropriately dealt with by agreement at the workplace and that it does not contain provisions or prescribe work arrangements that restrict efficiency or productivity.

At the time of writing, the parties to the P&E Award were involved in the first stage of the award simplification process but this had not been finalised. Nonetheless, an arbitrated AIRC decision of 26 May 1998 (CN 40113 of 1998) does provide some determinations on those matters over which agreement had not been reached. Two matters are currently the subject of appeal, however. The implications of the negotiations as well as the arbitrated decision (including the appeal) are referred to in the appropriate sections throughout this and the following two chapters.

The process for simplifying the ACSA Award has not yet been determined.

In addition to the changes to awards set out in the WR Act, the Federal Government has used the corporations power in the Constitution to provide industrial relations regulation through means other than conciliation and arbitration. In particular, this power enables an extension of the agreement-making options available to the parties in the Federal jurisdiction. Under previous legislation, certified agreements (CAs) made collectively with unions were the main form of agreement. While non-union agreements (known as Enterprise Flexibility Agreements [EFAs]) were also possible under previous legislation, technical and procedural difficulties virtually ensured that EFAs were limited in number (Hawke and Wooden 1997b). The WR Act now allows for three types of agreement: non-union CAs, union CAs and individual agreements (called Australian Workplace Agreements [AWAs] which can be made also by a group of individuals). The WR Act promotes agreement-making as the principal means of ensuring that matters affecting the relationship between employers and employees rest with the employer and the employee at

the workplace. However, the certification of both CAs and AWAs is subject to a ‘no disadvantage’ test (see Box 4.3).

Box 4.3: The ‘no disadvantage’ test in the Federal jurisdiction

- Applies to both AWAs and CAs.
- Takes as the reference point the relevant award or an award designated by the approving body — the Employment Advocate for AWAs, the AIRC for CAs — as appropriate for the employees concerned in the agreement, plus any other law considered to be relevant by the approving body.
- Operates as a global rather than a line-by-line test.
- Special cases in the application of the test — the Supported Wage System and for employees undertaking an approved apprenticeship or traineeship.
- An agreement passes the ‘no disadvantage’ test if, on balance, it would not result in a reduction in the overall terms and conditions of employment of employees against the benchmark.
- The AIRC has the additional power to approve an agreement that results in a reduction in overall terms and conditions of employment, if it considers that approval is not contrary to the public interest.
- The test applies to the group with the CA and to the individual with an AWA.

Source: Department of Workplace Relations and Small Business.

4.3.3 The State systems and relationships with black coal

Until recently, most States also have relied on conciliation and arbitration as the main platform for their respective industrial relations legislation. However, a number of States have either pre-dated or mirrored the recent changes to the Federal system while WA has adopted a different approach.

Notable features of those State industrial relations systems which are most important with respect to the location of metalliferous mining areas include:

- the similarity of the Queensland and the Federal industrial relations systems — the major difference being that scrutiny of individual contracts remains with the Queensland Industrial Relations Commission and not with a new specialised Employment Advocate or commissioner;
- the primacy of the award system in NSW, with enterprise bargaining undertaken only by collective agreement — either with a union or, in the case of non-union agreements, with a majority of 65 per cent of employees

in a secret ballot. Individual bargaining in NSW is restricted to part-time work;

- the lack of provision for individual bargaining in South Australia. The award system operates as the basis for a ‘no substantial disadvantage’ test for both union and non-union Enterprise Agreements. These agreements are vetted by the Office of Employee Ombudsman prior to approval by the Enterprise Agreements Commissioner; and
- the operation of a dual system in WA whereby pay and conditions are established either by an award or a Workplace Agreement (which are either union or non-union collective agreements or individual agreements). In WA, a Workplace Agreement replaces an award and its approval is not subject to a ‘no disadvantage’ test against an existing award but instead must meet five legislated minimums covering mostly pay and leave entitlements.

While the WA legislation is generally the most flexible in Australia — largely as a result of its ‘opting out’ arrangement — industrial relations arrangements for black coal mining workplaces remain within the award system in that State. Its industrial relations matters remain isolated from general industrial relations because they are dealt with by the Coal Industry Tribunal of Western Australia (CITWA) (see Box 4.4).

Box 4.4: Coal Industry Tribunal of Western Australia (CITWA)

The reasons for establishing the CITWA after the Second World War largely mirrored those which led to the establishment of the CIT in the Federal system (Chamber of Commerce and Industry of Western Australia 1994). Currently, its functions and operation are determined by the *Coal Industry Tribunal of Western Australia Act 1992* (WA).

An important feature of this legislation, which contrasts with the legislative environment in which the former CIT operated, is that the CITWA is subject to appeal as regards both its decisions and its jurisdiction to the Full Bench of the WA Industrial Relations Commission (IRC) and then to the Industrial Court of WA.

While the CITWA generally sits in association with the broader WA industrial relations legislation, black coal mining is now the *only* industry in WA with its own separate tribunal. Although the broader WA industrial relations legislation does not exclude the black coal industry from its horizon, any decision of the CITWA can over-ride a decision of the WA IRC (although there is no known precedent established as to which organisation has the final say). Importantly, the legislation does not limit the ability of black coal industry employers and employees to ‘opt out’ of the traditional award system and make individual agreements (subject to legislated minimums).

Under its legislation, the CITWA must be reviewed every five years. Such a review is currently being conducted by the Senior Commissioner of the WA IRC who is also the Chairman of the CITWA. The review is due to be completed at the end of 1998.

The Commission suggests that the Western Australian Government consider abolishing the Coal Industry Tribunal of Western Australia with a view to bringing black coal industrial relations arrangements under the umbrella of the Western Australian Industrial Relations Commission. Pertinent to such consideration is the Commission's discussion on the effects of the abolition of the CIT (see Chapter 6).

4.3.4 The United States system of employee relations

As discussed in Chapter 3, the United States was chosen as an appropriate benchmark against which to compare the performance of Australian black coal mines. Reflecting that choice, this section examines issues associated with external or institutional flexibility in the US system of employee relations.

In contrast to Australian industrial relations systems, there is a distinct dichotomy in the regulatory arrangements governing workplaces in the United States depending on whether the workplace is unionised or non-unionised. Non-unionised workplaces (which represent the majority of black coal mining workplaces, as well as workplaces more generally⁶) are subject to meeting only certain legislated minimum entitlements and to common law contractual arrangements in their employee relations. On the other hand, unionised workplaces must comply also with regulations embodied in the *National Labor Relations Act* (NLRA) which establishes the framework within which parties are free to negotiate the contents of an agreement and, in the case of unionised black coal mine sites, with the *National Bituminous Coal Wage Agreement of 1993*. In the United States, there is no provision for compulsory conciliation or arbitration by a third party, although the National Labor Relations Board (NLRB) is charged with overseeing the system of bargaining for unionised workplaces. Importantly, the NLRA excludes supervisors and managerial staff from the definition of an employee. Further, competition between unions for employee coverage in a worksite is allowed — that is, until the completion of a ballot to choose which union is afforded exclusive coverage, employees have a choice of union coverage. Hence, a union agreement in a black coal mine may

⁶ Information from the (US) Bureau of Labor Statistics (BLS) shows that in 1997, the unionisation rate of employed wage and salary workers in mining was 13.9 per cent compared with a figure of 14.1 per cent across all wage and salary workers in the United States. (Detailed data for black coal mining wage and salary workers are not available.)

not necessarily be undertaken with the United Mine Workers of America (UMWA). For example, the BHP-owned Navajo mine in New Mexico is a union mine at which the approved union is the International Union of Operating Engineers Local 953. Similarly, the UMWA is not necessarily restricted to providing coverage for mine workers.

External industrial relations arrangements governing non-unionised workplaces are much more flexible than the industrial relations arrangements faced by unionised workplaces in the United States. This is largely due to the fact that, in non-unionised workplaces, any changes which do not violate minimum legislated conditions are within the prerogative of management.

Since the only formal work arrangements in non-union workplaces are the minimums set by legislation, there appears to be very little public information available on the range of work arrangements within non-union mine sites. Generally, unionised workplaces pay higher wages to their employees (known as the union wage effect) but this pay differential is narrowed significantly due to the employer's fear of its labour becoming unionised (the union threat effect).⁷ That is, while the wages and other entitlements for employees are likely to be similar between union and non-union workplaces, there is still likely to be at least some difference between the work arrangements in the two types of workplaces — otherwise there would be no advantage in workplaces remaining non-unionised (and it would appear that many workplaces fight costly legal battles to remain non-unionised). In particular, while the pay and other entitlements received by black coal mining employees are likely to be similar at union and non-union mines, other types of work arrangements, such as those which unnecessarily inhibit productivity, are likely to be absent within non-union black coal mines. During the Commission's visit to US mine sites, while there was no direct evidence on the pay differential between union and non-union mines, the productivity of non-union mines was said to be higher because managers did not face the 'time costs of change' which they say are associated with union mine sites.

The Commonwealth and Queensland Governments have recently enhanced their industrial relations legislation and institutions so that they are now more responsive to changing circumstances faced by enterprises. However, the institutional arrangements offered by the Western Australian legislation

⁷ BLS data show that in 1997 median weekly earnings of full-time wage and salary workers in the mining industry were \$US717 for union workers and \$US668 for non-union workers. The comparable figures across all industries were \$US640 and \$US478, respectively. (Detailed data for black coal mining earnings are not available.)

(via its ‘opting out’ mechanism) and the United States legislation are more conducive to workplace flexibility.

4.4 Development of work arrangements in black coal mining

Formal work arrangements are established in the Australian black coal mining industry via the following four vehicles.

1. Awards — in particular:
 - the P&E Award which covers basic semi-skilled work, semi-skilled plant and machine operators and skilled trades levels in the Federal jurisdiction and the *Coal Mining Industry (Miners) Award 1990* which covers similar types of employees in the WA jurisdiction;
 - *The Coal Mining Industry (Supervision and Administration) Interim Consent Award, 1990, New South Wales and Tasmania* (ACSA Award) (Federal jurisdiction), as well as the equivalent Federal Award for Queensland ACSA members and *The Coal Mining Industry (Deputies) Award* (under the WA jurisdiction), all three of which cover all professional, semi-professional, supervisory, semi-supervisory, administrative and clerical employees in the coal and oil shale industry;
 - *The Coal Mining Industry Interim Consent Award (Deputies and Shotfirers) 1990* (Federal) and *The Coal Mining Industry (Deputies) Award 1990* (WA) which covers Deputies; and
 - a small number of enterprise-specific Federal awards, such as at Camberwell Coal and Shell’s Moranbah North mine.
2. Agreements — typically such agreements are union CAs, although there are also around one hundred AWAs in the industry and one EFA under the former Federal industrial relations legislation. There are also collective agreements under the respective WA awards.
3. Industry-specific legislation — the *Coal Mines Regulation Act 1982* (NSW) and the *Coal Mining Act 1925* (Qld).
4. Custom and practice — which refers to informal, often unwritten, mostly mine-specific, historically developed work rules and norms. Although they may have emerged in a short-term ad hoc way, they tend to be used as tradition-based precedents in practice. Most importantly, as a result of the inclusion of a ‘custom and practice’ provision in the P&E and ACSA Awards, customs and practices have become formal work arrangements (see Section 4.4.1 below).

Appendix F summarises the P&E and ACSA Awards in the black coal mining industry. The similarity between these two awards is notable. Although each is currently subject to the award simplification process, they establish the benchmarks by which enterprise agreements are currently negotiated and subsequently certified by the AIRC.

Rio Tinto submitted that history is important in understanding the relatively inflexible nature of awards in the industry today and the lack of distinction between underground and open cut mines in the development of formal work arrangements:

Restrictions placed on employing new recruits brought the culture of underground coal mining to the surface [mining sector]. ... In the same way, the conventional emphasis placed on maintaining continuous supply of coal to customers survived the transition to open cut. ... The consensus was that the coal must be kept moving at almost any cost. The coal unions knew this and naturally used it to seek higher wages, improved conditions and a privileged, unique status in Australia's industrial relations system.

The historical development of coal bequeaths a modern legacy which is manifested in a romanticised view of the coal industry, based on an irrelevant vision of underground coal mining. Even open cut coal mining is seen as extremely hazardous employment where the boss is a bastard and the only certainties are the coal in the ground, the mate you have crib with and the union. That romanticised view buttresses resistance to change and partly accounts for the poor employee relations performance of the industry. (sub. 22, pp. 46–47)

Wooden, Robertson and Cernaz (1996) found that the Australian coal mining industry agreements remained highly dependent on the industry awards. The Department of Workplace Relations and Small Business (DWR&SB) confirmed this view:

The Department considers that, while a significant proportion of coal companies have engaged in agreement-making under the various legislative provisions, most coal agreements have imported many of the underpinning award provisions or are silent on key working arrangements. (sub. 40, p. 7)

Appendix G documents eight recent black coal mine agreements,⁸ the contents of which tend to confirm the Wooden et al and DWR&SB findings. Nonetheless, while improvements in flexibilities across most of these agreements relative to the P&E Award have been minor, it is also the case that significant changes to work arrangements have occurred in at least two of the

⁸ According to the DWR&SB, over the period 1 December 1995 to 31 March 1998, there have been 137 certified agreements in the black coal mining industry, 37 of which are based on the agreement-making clauses in coal industry awards and thus work in tandem with the relevant award.

agreements (Ensham and MIM's Oaky Creek mine). Although not documented in Appendix G, MIM's other mines have made similar changes (see Menzies 1998). These agreements, together with the interim decision on an enterprise-specific award for Shell's Moranbah North coal mine, as well as some decisions emanating from the award simplification process for the P&E Award, are other examples of the increasing flexibility of formal work arrangements in this industry.

Work arrangements in the black coal industry are also influenced strongly by various aspects of State coal industry legislation. In particular, regulations establish statutory positions and outline in detail their associated functions and qualification requirements (see Appendix J). Further discussion is provided in Chapters 5 and 6.

Comparisons with Australian metalliferous and United States black coal mines

Formal work arrangements in Australia's metalliferous mining industry are also established in numerous awards, agreements and relevant legislation. A feature complicating comparisons between black coal and metalliferous mines is that, unlike the black coal industry, there is no single Federal parent award in the metalliferous mining sector. Nonetheless, on the basis of a comparison of various State and Federal metalliferous mining awards and Federal agreements, Wooden et al (1996) concluded that "awards and agreements applying to coal mining have left it with less flexible work arrangements and higher costs than comparable awards and agreements have left metalliferous mining" (p. v).

Appendix H presents an overview of a small number of recent awards and (collective) agreements which are representative of arrangements in the metalliferous mining sector. As outlined above, the WA industrial relations system enables employers and employees who fall under that jurisdiction to 'opt out' of the traditional award system and make individual agreements (subject to a small number of legislated minimums). This has been done by a major metalliferous producer in Western Australia — Hamersley Iron. No such WA individual agreements are publicly available for documentation in Appendix H.

Even so, a broad comparison of Appendix H with Appendices F and G reveals that the Australian metalliferous mining sector tends to display a greater degree of flexibility in formal work arrangements than its counterpart black coal mining sector. Moreover, as far as the State legislative impact on work arrangements is concerned, the comparisons between these two sectors reveal a similar story. This is discussed further in Chapters 5 and 6.

Finally, Appendix I presents information on formal work arrangements (covering production and engineering employees) in unionised workplaces in the US black coal mining industry. Comparison of this appendix with Appendices F and G reveals that the main US union agreement (the *National Bituminous Coal Wage Agreement of 1993*) is about as prescriptive as the P&E Award (a view reached also by Maitland 1997, p. 10).

Discussions with producers during the Commission's visit to the United States indicated that, as a result of the inflexibility of this unionised agreement, firms for some considerable time have been establishing non-union mines, closing union mines and initiating union agreements with unions other than the UMWA. As mentioned earlier, BHP's New Mexico Navajo mine has a collective agreement with the International Union of Operating Engineers, Local 953.

4.4.1 Custom and practice

Custom and practice involves informal rules and norms which are often *unwritten*.⁹ However, during industry visits, the Commission was told that in the black coal industry many (sometimes over one hundred) customs and practices are catalogued in a so-called 'industrial file' kept at many mine sites. For example, MIM stated:

In October 1996, ... when we attempted, with the assistance of the AIRC, to make sense of all issues governing employment, we discovered that in addition to the Production and Engineering Award, Oaky Creek employment conditions were governed by a further 360 matters of agreement or recognised customs and practices. (Menzies 1998, p. 2)

Many black coal customs and practices appear to have developed in the previous era when mine managers were prepared to sacrifice productivity performance for volume so as to ensure continuous power generation (see below and Chapter 6).

Importantly, 'custom and practice' in the black coal industry has become a formal arrangement as a result of its inclusion in both the P&E and ACSA Awards (clauses 31 and 30, respectively). Although currently subject to appeal, a recent AIRC arbitrated decision during the first stage of the award simplification process (CN 40113 of 1998) has maintained the 'custom and practice' clause in the P&E Award as an allowable matter through its

⁹ This explains why there is often a marked contrast between the formal rules set down in awards, agreements or organisational handbooks, and what happens in practice (Sutcliffe and Callus 1994).

determination as incidental and necessary for the operation of the Award. The AIRC's grounds for retaining this clause was that it had "a special reference in the coal industry having regard to the history and circumstances of award regulation in the industry" and that it "is in the nature of a machinery provision which assists in the proper interpretation and application of the substantive award provisions". Having said that, it remains to be seen whether or not the result of the appeal against the inclusion of this clause in the award or the second stage of the award simplification process will result in the removal (or modification) of this clause as an allowable award matter.

The relevant clauses prescribe that each Award is not to be read as interfering with existing custom and practice, except where stated (see Appendix F).

The way production and maintenance employees go about their work is governed by a strict code (sometimes written, sometimes not) enforced by their union through industrial action or the threat of it. This code revolves around the maintaining of 'custom and practice' established either on the site or elsewhere in the industry. (Rio Tinto, sub. 22, p. 60)

A number of recent CAs in the black coal mining industry, however, specifically preclude the employer from being bound to either existing and/or future customs and practices (see Appendix G).

Comparisons with Australian metalliferous and United States black coal mines

While provisions relating to custom and practice do not appear in the small number of metalliferous awards and agreements documented in Appendix H, the main union agreement in the United States does provide that "all prior practice and custom not in conflict with this agreement shall be continued". By contrast, non-unionised US mines do not seem to be bound by such arrangements.

Effects of custom and practice

There appear to be two main effects of institutionalising custom and practice in the black coal industry awards.

First, as documented in previous sections and in the following chapter, and as noted by Rio Tinto below, many such customs and practices may restrict productivity:

- Many custom and practice issues constitute uncompetitive work practices such as:
- restrictions on the use of contractors
 - minimum manning practices
 - demarcations between maintenance, production and staff employees
 - inflexible allocation of employees to shifts

- inflexible meal breaks during shifts
- early shift finish 'tolerance time'... (sub. 22, pp. 60–61)

Moreover, since many custom and practice work arrangements are based on seniority, they tread into areas more traditionally viewed as areas of management prerogative (see also Chapter 5):

Seniority in terms of length of service at a particular mine, [is] frequently the primary determining factor when deciding issues such as: ...

- allocation of training opportunities
- allocation of overtime
- allocation to shift
- promotion to higher levels of pay
- allocation of annual leave.

In most industries, the ability to make these decisions is a business issue, taken on efficiency and other grounds. In the coal mining industry, the union insistence on custom and practice, the costs of change and the award severely limit the ability of management to make such decisions. Seniority is the basis for many important decisions ... (Rio Tinto, sub. 22, p. 61)

The second main effect of institutionalising custom and practice in both industry awards is that the costs of change are increased unnecessarily and the ability of the workplace to respond to changing circumstances is inhibited unnecessarily. This is by virtue of the fact that such arrangements become award conditions/entitlements and possibly subject to third party involvement if negotiations over changing them break down.

In endeavouring to bring about change and to help those managers to manage in the style that reflects best practice, we keep coming up with all these institutional barriers which stop us, ie, custom and practice as entrenched within the award is an award provision. If you've already done it that way for the last x number of years, that's the way you will continue to do it.

... And that's where a level of the frustration arises. Many people have fallen back on to old practices because they can't bring about the desired change, the necessary change. And they happen in a number of areas, and if you take the employment chain right through from recruitment right through to the age based compulsory retirement, the whole of one's working life, is prescribed somewhere or other by a regulation or an award or an agreement or custom and practice. And that change is very resistant. (NSW Minerals Council, trans., pp. 89–90)

Furthermore, BHP also argued that progress in changing a number of customs and practices had been limited:

- Right to use contractors when business needs dictate;
- Acceptance of continuous improvement without undue delays;
- Shift roster and work hour flexibility;
- Flexibility between work streams and wages employees and staff;

- Right to outsource when clearly cost effective;
- Restrictions on overtime;
- Specific equipment manning issues; ...
- Crib flexibility; ...
- Removing seniority where it is a barrier to improved business performance. (sub. 30, p.15)

Although rare, when it has suited, management also appears to have relied on the custom and practice provisions in the two awards. For example, in 1996, MIM's Newlands mine asserted a right under the custom and practice provision to suspend without pay for misconduct where no award or common law right existed. Managerial practice in this case was affirmed by the AIRC (CN 40642 of 1996).

The fact that some customs and practices may be documented in the 'industrial file' while others are not creates uncertainty as to what constitutes 'custom and practice'. By implication, this uncertainty also increases the costs associated with change. The role that custom and practice plays in negotiating change and disputes is discussed further in Chapters 5 and 6.

The costs of change and the loss of management prerogative in changing customs and practices are compounded by a convention which ensures maintenance of the status quo until the award is varied to fit the altered conditions (see Chapter 6). In other words, if a management proposal to change an existing custom and practice is disputed, it forms part of the dispute resolution procedure (see Section 5.6.2). This convention, unless specifically altered by agreement, inhibits the ability of the workplace to respond, on a continuous basis, to future changes in circumstances.

The role that custom and practice plays in determining work arrangements in Australia's black coal industry should not be under-estimated. While many customs and practices may restrict productivity, the major effect of institutionalising custom and practice is that it provides a vehicle to stifle the implementation of so-called continuous change strategies. This is largely due to the fact that there are many customs and practices at each mine site. These can be included in the ambit of matters which can be subject to third party conciliation and arbitration and must remain unchanged until the Award is varied to fit the altered conditions. This unnecessarily increases the cost of change.

'Custom and practice' in the black coal industry has become part of formal arrangements as a result of its inclusion as a provision in awards. While many custom and practice arrangements may restrict productivity and efficiency, the major effect of institutionalising custom and practice is that it can hamper mine performance by limiting its ability to respond, on a

continuous basis, to future changes in circumstances. In addition, since not all custom and practice arrangements are documented at each mine site, uncertainty is created as to what constitutes ‘custom and practice’. This uncertainty also increases the costs associated with change, thereby further restricting productivity and efficiency.

While there is no direct role for government in cases where management agrees to the insertion of a general ‘custom and practice’ provision within enterprise agreements, the costs associated with such provisions suggest that they should not form part of an award.

Recommendation:

‘Custom and practice’ should not be included as part of the allowable award matters in black coal industry awards.

5 WORK ARRANGEMENTS IN AUSTRALIAN BLACK COAL MINES

While many factors influence the competitiveness of black coal mining in Australia, the impact of work arrangements is considerable. Black coal mines operate with a multitude of work arrangements which restrict productivity. Almost all of these arrangements raise unit labour costs and reduce competitiveness unnecessarily. Some arrangements (such as the exclusive use of seniority to allocate overtime, annual leave, promotion and training, and restrictions on the use of contractors) are discriminatory, as well as detrimental to mine performance.

Work arrangements in Australian black coal mines appear to be less conducive to improved productivity than those in Australian metalliferous mines and non-unionised United States black coal mines, but similar to those in United States unionised black coal mines.

The principal means of enhancing the competitiveness of Australian black coal mining workplaces is to change those work arrangements which unnecessarily restrict productivity. In this way, the productivity of labour and the utilisation of capital will be raised and, in turn, unit production costs will fall. This process should be facilitated by not including such arrangements as allowable matters in black coal industry awards. The Australian Industrial Relations Commission has begun to move in this direction.

5.1 Introduction

The central focus of this chapter is an examination of the effects on productivity of formal work arrangements in Australian black coal mines. As discussed in the previous chapter, flexible work arrangements are a necessary precondition for improved competitiveness, productivity and efficiency.

The flexibility of a number of formal work arrangements within Australian black coal mines is compared with that of Australian metalliferous mines and black coal mines in the United States. Formal work arrangements are those established in awards, agreements, the specific black coal industry legislation

and 'custom and practice'. The impact of these work arrangements on productivity and unit costs of production is also discussed.

The flexibility of work arrangements at the mine site is examined in five areas (based on the work of NEDO 1986 and OECD 1988):

1. the size and composition of the workforce — that is, the employer's ability to adjust the size and composition of the workforce to meet changes in demand;
2. hours of work and rosters — the employer's ability to adjust the quantity and timing of labour input (working hours and the timing of work) without modifying the number of employees to meet changes in demand and to permit more intensive use of capital equipment;
3. remuneration and on-costs — the employer's ability to adjust both wages (including any bonuses) and on-costs to meet changes in the product market;
4. functions, tasks and skills — the employer's capacity to move labour to different tasks within the workplace (which depends on the range of tasks employees can perform and the spectrum of their skills); and
5. general procedures — this relates to the processes for consultation and negotiation upon which the other aspects of flexibility within the organisation are discussed.

This analytical framework is based on an employer's perspective. Clearly, however, it is not in an employer's long-term interest to exploit the workforce by demanding an unreasonable amount of flexibility. In such circumstances, it is likely that worker effort and therefore productivity would be significantly below its optimal level. Moreover, the employer's ability to attract and retain employees would be undermined greatly by such action. Hence, the drive for flexibility at the mine site (to enhance competitiveness in the product market) is at the same time counterbalanced by the need, in a competitive labour market, to offer attractive terms and conditions of employment (to ensure the recruitment and retention of a highly productive workforce).

Each of the five aspects of flexibility is discussed in the sections below. The approach is to commence by describing the relevant features of the P&E and ACSA Awards, agreements, legislation and custom and practice affecting a number of work arrangements within Australian black coal mines. A comparison with arrangements in Australian metalliferous mines and black coal mines in the United States is then undertaken before the impact of the selected work arrangements on workplace performance is discussed.

The consequences (albeit interim) of the current P&E Award simplification process are discussed in the appropriate sections throughout this and the

following chapter. The process for simplifying the ACSA Award had not commenced at the time of finalising this inquiry.

5.2 Size and composition of the workforce

This section discusses the degree of flexibility of work arrangements that affect the size and composition of the workforce. It focuses on recruitment, retrenchment, and the use of casuals, part-time employment and contractors.

5.2.1 Recruitment

Prior to award simplification, the P&E Award provided for preference of employment to union members (party to the Award) and specified that new recruits were to be chosen from a list of retrenched miners ('the retrenchment list'). In NSW, miners were to be chosen from the retrenchment list in order of seniority. In Queensland, employers had to give preference of employment to miners previously employed in mines owned by the same company or, at the very least, give preference to CFMEU division members.

While there are no formal restrictions on recruitment in the ACSA Award, an informal retrenchment list appears to have existed at some mines. The Camberwell Coal submission documented the existence of both the ACSA and CFMEU retrenchment lists, and also noted their apparent demise — at least at Camberwell — since the introduction of the *Workplace Relations Act 1996* (WR Act).

In the main, unions in the industry have a closed book policy on recruitment which in turn means hiring personnel on the basis of merit is non-existent (other than from within that union). This significantly restricts a company's ability to hire the best person for the job. It restricts the ability of companies to introduce new 'blood' and new ideas into the industry. This is particularly important in the staff area, where the ACSA's policies are particularly restrictive. It is extremely difficult to introduce new blood into supervisory, managerial and administrative jobs. The ACSA even allows its members who take voluntary redundancy packages back onto the retrenched lists. This means a member of the ACSA can voluntarily leave one job with a large 'pay out' and then be placed on the retrenched list and so gain preference for re-employment back into the industry. In contrast the UMW [United Mine Workers branch of the CFMEU] policy gives no preferential rights to employees who take voluntary redundancy packages. In our case, since the introduction of the Workplace Relations Bill, we have not experienced problems in the recruiting of white or blue collar workers. (sub. 13, p. 10)

Several of the Certified Agreements (CAs) outlined in Appendix G include union preference clauses and a number also include provisions requiring recruitment in order of seniority.

Preference in employment to union members is prohibited under the WR Act and, as part of the P&E Award simplification process, the AIRC has determined that provisions providing for preference in recruitment to union members are neither allowable nor incidental or necessary for the operation of the P&E Award (CN 37716 of 1997 and CN 40113 of 1998). Similarly, preference in recruitment to retrenched mineworkers also was ruled neither allowable nor incidental or necessary for the operation of the P&E Award (CN 37716 of 1997 and CN 40113 of 1998).¹

In relation to agreements, recent amendments to the WR Act make it clear that the AIRC “must refuse to certify” agreements containing clauses contravening the freedom of association provisions of the Act. Further, the amendments provide for removal of clauses in existing agreements that contravene these provisions. Clauses specifying preference in recruitment to *union members* can no longer be incorporated in agreements. Arguably, clauses specifying preference in employment to *retrenched mineworkers* may still be included in agreements.

Comparisons with Australian metalliferous and United States black coal mines

The *Queensland Mining (Non-coal) Award* has a similar provision relating to preference of employment to union members (in this case, members of the Australian Workers’ Union (AWU)) and recent metalliferous agreements also contain union preference clauses (see Appendix H). In fact, Wooden et al (1996, p. 39) found the pervasiveness of union preference in metalliferous agreements to be similar to that in black coal.

Retrenched members lists also apply at unionised US coal mines. The *National Bituminous Coal Wage Agreement of 1993* between the United Mine Workers of America (UMWA) and the Black Coal Operators’ Association provides for a ‘panel’ of retrenched miners (similar to the Australian retrenchment list) with the filling of all permanent vacancies and new jobs created during the term of

¹ However, in relation to the provision providing for preference of employment to miners previously employed in mines owned by the same company in Queensland, the AIRC suggested that this clause may be rewritten so as to confine its operation to that of a stand-down provision, thus making it allowable. The AIRC specified that this should be addressed by the parties in the second stage of the simplification process. Employers are appealing this decision.

the Agreement to be made on the basis of seniority. Further, the Agreement includes a JOBS Program which specifies that the first three of every five job openings are to be filled by laid-off employees covered by the Agreement in order of seniority and according to geographic location (see Appendix I).

In contrast, there are no legislative or other restrictions external to the workplace on recruitment among non-unionised coal mines in the United States apart from anti-discrimination legislation applying to both unionised and non-unionised mines. Any restrictions on recruitment at non-unionised mines would exist only by agreement at the workplace.

Effects of recruitment restrictions

A number of submissions pointed to the implications of the retrenchment list for the Australian black coal industry. For example, Rio Tinto stated that the provisions facilitated the transfer of the culture from underground mining to open cut mining in the 1960s (sub. 22, p. 45). The NSW Minerals Council suggested that recruitment on the basis of seniority acts as an impediment to best practice:

To ensure an organisation has available to it the skills and experience required not only to perform existing tasks, but also to adapt and innovate, companies must select the best staff available. (sub. 25, p. 16)

While there are two caveats (outlined below), the retrenchment list is likely to affect mine performance negatively in the long term, essentially by limiting the pool of labour to which a mine has access. In fact, in some cases, there is no 'pool', and a mine manager is restricted to taking the applicant on the top of the list. Restricting recruitment in this way affects mine labour productivity and unit labour costs adversely in four main ways.

First, management's ability to develop the skill composition of the workforce best suited to the needs of the particular mine is restricted — depending on how P&E Award clause 22(c) exemption (vi)(c) is applied.² If workers on the retrenchment list do not have the requisite skills and the mine is not granted the skill-related exemption, the mine must do without the exact skills required, train incumbent workers, or recruit contractors with the requisite skills. While the first and second options tend to increase unit labour costs, the last is often not

² Clause 22(c)(vi)(c) states that an exemption from use of the retrenchment list may be granted where there is a requirement by the employer for new labour to have special skills and none of the retrenched members who responded to the advertisements holds those skills.

an option — traditionally, many mines have been restricted in their ability to hire contractors, as outlined in Section 5.2.3.³

Second, the transfer of knowledge and skills between industries is restricted by limiting the ability of those working outside black coal mining to gain employment in the industry. Where this reduces the rate of innovation, it means that productivity growth will be unnecessarily slow. Thiess Contractors stated:

... the retrenched list system was clearly perceived by employers as a real impediment to the implementation of innovation and cultural change within the industry. (sub. 15, p. 12)

Third, employers are prevented from competing for the most productive workers. (While an employer is not compelled to hire from the retrenchment list where potential recruits have higher than average absenteeism records, no such exemption relating to the relative productivity of workers on the retrenchment list exists. Hence, employers cannot choose between job applicants on the basis of relative productivity.) Removing the list and allowing employers to compete for the most productive workers would be likely to increase labour productivity at mines that were successful in attracting the most productive recruits.

Fourth, workers are provided with an opportunity to resist changes to work arrangements. There are three possible mechanisms by which this might occur. In all three cases, the impact of the list on mine performance is to reduce labour productivity (because changes that would improve productivity are impeded) and increase unit labour costs compared with what would prevail in the absence of the list.

- (i) The retrenchment list adds to miners' perceptions of job security within the industry, creating the perception that a retrenched worker will be able easily to find employment at another mine. This may reduce the incentive for miners to adopt changes to work arrangements that would improve mine performance and reduce their risk of redundancy. (In economic terms, the retrenchment list reduces the expected cost to the worker of retrenchment.) Exxon noted how the retrenchment list adds to miners' perceptions of job security:

³ The second option adds to training costs and reduces dynamic efficiency because of the training time required during which the productivity of the worker is below potential. In the event that mines are not restricted in their use of contractors, the contract premium may be above the ordinary rate for a permanent worker with similar skills — tending to increase unit labour costs over and above that existing without the retrenchment list. However, the labour productivity of contractors may also differ from that of permanent workers, making a comparison of unit labour costs difficult. If the mine decides to make do with the skills currently available to it, labour and capital productivity will be reduced unnecessarily.

... The worker recognises that if for any reason he/she were to lose his/her job (perhaps through partial retrenchments or mine closures), he will be placed on a retrenchment list and the Union will secure them employment elsewhere within the industry. (sub. 3, p. 5)

In fact, the retrenchment list has not ensured job security within the industry, as the decline in employment since the mid-1980s attests (see Chapter 1).

- (ii) The retrenchment list may increase worker resistance to change by reducing the inflow of new workers to the industry (because while the list prevails, retrenched workers must always be employed in preference to outsiders) and contributing to low labour turnover at the industry level. Employees working in the same industry with the same work practices for long periods have significant investment in skills associated with traditional work arrangements. Because of this investment, incumbent workers may resist change (if they can) because this means they will not have to expend effort in learning new skills. On the other hand, new entrants to the industry must invest in new skills anyway — so they will be indifferent to investing in the skills associated with either traditional or new arrangements (assuming that the cost to new entrants of investing in both is identical). By reducing the inflow of new entrants to the industry, the retrenchment list (in combination with the industry legislation which also limits the ability of outsiders to gain work) is therefore likely to increase resistance to change.
- (iii) Several submissions suggested that retrenchment lists foster employee commitment to the union at the expense of their commitment to the individual mine because recruitment is associated with the union, not the mine (as it is the union which maintains the list). This may reduce the ability of mine management to introduce arrangements specific to an individual mine because employees may prefer instead to abide by (possibly conflicting) union determinations. For example, the NSW Minerals Council and Exxon, respectively, hold this view:

Recruitment strictly from union lists. ... Reinforces allegiance of employee to union; ... (sub. 25, p. 31)

Employment security is also provided by the seniority system where senior workers know their individual performance is irrelevant as to whether they will retain employment in a downsizing. The award also dictates that when redeploying retrenched workers, seniority is the sole determinant. Given the above, the worker views his association with the Union as a guarantee of lifetime employment, a guarantee the company cannot provide. (sub. 3, p. 5)

There are, however, two caveats to the above list of four factors adversely affecting mine performance.

First, the use of retrenchment lists may reduce recruitment costs by providing a ready-made list of experienced applicants, thus minimising unit labour costs. However, it must be said that if the retrenchment list benefited firms in this way, a *rule* would not be required for its adoption. Further, the list is compiled on the basis of criteria determined by the union, not the employer, and the sole basis for selection is seniority rather than skill, ability or range of experience.

Second, where mines have an incentive to poach trained/skilled workers from other mines to avoid the costs of training the workers themselves, the retrenchment list may act as a barrier to poaching — that is, it may be one means of preventing any free rider problem with respect to training. Where the list has been successful in addressing any free rider problem and has prevented industry training falling below the optimal level, removing the list may result in an increase in the scarcity of certain skills, leading to a fall in labour productivity. Camberwell Coal provided some evidence of poaching by mines of trained casual workers, suggesting that an incentive to poach exists:

... we thought that we would be able to have a pool of trained casual people available in the industry so that once they got trained we could call on them for holiday relief. What we found was that we just became a training school for everybody. We'd train them to be a truck driver and then, bang, they'd get a job in the industry. ... We were training people for four weeks, using them for a couple of weeks and then found that the next set of school holidays they weren't available because they had a permanent job and that's fine. (trans., p. 56)

However, two qualifying points should be made in regard to poaching.

- The retrenchment list, with its associated costs, is unlikely to represent the best way of addressing any poaching problem; and
- the retrenchment list is not the only factor that currently limits free riding. (For example, P&E Award training and wage arrangements also inhibit poaching.) Hence the impact on mine performance of removing the retrenchment list would depend on the bundle of work arrangements in place at the time.

Table 5.1 summarises the impact of the retrenchment list on mine labour productivity and unit labour costs.

Retrenchment lists and seniority-based recruitment detract from enterprise performance in the long term by restricting the criteria on which recruitment can be based. The Commission accordingly welcomes the exclusion of such provisions from the P&E Award as part of the award simplification process in black coal.

Table 5.1: The impact of the retrenchment list on mine labour productivity and unit labour costs

| <i>Impact of retrenchment list on mine performance</i> | <i>Labour productivity</i> | <i>Unit labour costs</i> |
|---|---|--------------------------|
| Sub-optimal skill composition: | | |
| Where retrenchment list prevents recruitment of workers with necessary skills, alternatives are to: | | |
| train existing workers; | Reduced | Increased |
| hire contractors (traditionally, mines restricted in their ability to engage contractors); and | Unclear ^a | Unclear ^a |
| do without skills. | Reduced | Increased |
| Prevents transfer of knowledge from other industries. | Reduced | Increased |
| Cannot compete for best workers. | Reduced | Unclear ^b |
| Increases worker resistance to change. | Reduced | Increased |
| Caveats: | | |
| Prevents poaching of skilled workers (free rider problem with respect to training). | Increased | Unclear ^c |
| Reduces recruitment costs. | | Reduced |
| a | The productivity of contractors may differ from that of permanent workers and it is difficult to compare the contract premium with the cost of permanent award workers. | |
| b | Total labour costs may increase if more productive workers are paid more in the absence of the list. | |
| c | Total labour costs may change because training costs may fall, but the wage premium for certain sets of skills may rise (if the wage system allows this). | |

It has been claimed that retrenchment lists (together with seniority-based retrenchment) are discriminatory in their impact on the composition of the black coal mining workforce. This issue is discussed in Section 5.2.2.

5.2.2 Retrenchment

Prior to award simplification, both the ACSA and the P&E Awards specified that retrenchment was to be determined exclusively on the basis of seniority. The P&E Award specified that, when reducing the size of the workforce, an employer must adhere to the principle of ‘last to come, first to go’ (or last on, first off [LOFO]). The P&E Award also contained a number of provisions specifying that employers discuss with unions and their employees decisions that may involve retrenchment. Under the ACSA Award, retrenchment was also on the basis of seniority, although couched in different terms — that is, preference in retaining employment was to be given to members of the ACSA according to length of service at the mine.

However, both Awards allowed individual mines to reach agreement with their workforces (and union representatives) overriding the seniority in retrenchment provisions. As the NSW Minerals Council noted:

Some companies have been able to secure agreement with the union to limited variations of this clause. (sub. 25, p. 17)

Despite this provision for override, LOFO still applied at the majority of mines. Rio Tinto contended (citing 1996 NILS data):

... there are no known [enterprise] agreements which relinquish the P&E Award clause requiring forced redundancies by seniority (last in-first out). (sub22, p. 50)

LOFO provisions cover retrenchment in all but two of the black coal agreements outlined in Appendix G. At Ensham, retrenchment is to be based on merit whereas, at Stratford, LOFO will be used where an agreement overriding use of it cannot be reached.

As part of the award simplification process for the P&E Award, the AIRC has determined that provisions dealing with “the manner of selecting the persons whose employment is to be terminated in a redundancy situation” are neither allowable nor incidental or necessary for the operation of the P&E Award (CN 37716 of 1997 and CN 40113 of 1998). In coming to this decision, the AIRC made reference to the Full Bench decision in *ACSA v Gordonstone* (P9213, 4 March 1998) which determined that LOFO was neither allowable nor incidental to or necessary for the effective operation of the ACSA Award.

However, this decision does not prevent LOFO provisions being included in agreements.

Employers and unions also agreed — as part of the award simplification process for the P&E Award — to delete from the Award provisions requiring that employers discuss with unions and their employees decisions that may involve retrenchment.

Comparisons with Australian metalliferous and United States black coal mines

There are no seniority provisions covering retrenchment at metalliferous mines covered by the *Queensland Mining (Non-coal) Award*, although preference of employment in retrenchment is to be given to financial members of the Australian Workers Union (AWU). None of the metalliferous agreements summarised in Appendix H includes seniority-based retrenchment provisions and Wooden et al (1996) found that only about 14 per cent of the sample of metalliferous agreements they studied placed restrictions on hiring or firing.

Retrenchment at unionised coal mines in the United States is determined by seniority. However, there are no requirements for employers to discuss with unions or employees decisions that may involve retrenchments as specified in the P&E Award prior to award simplification. The right to discharge is vested exclusively with the employer (see Appendix I). At both unionised and non-unionised mines in the United States, retrenchment must comply with anti-discrimination legislation and the *Worker Adjustment and Retraining Notification Act* which requires an employer to provide 60 calendar days' notification of plant closings and mass lay-offs. Otherwise there are no restrictions on retrenchment at non-unionised mines except by agreement.

Effects of seniority-based retrenchment

Rules specifying that retrenchment is to be based on seniority alone significantly restrict the flexibility available to companies in adjusting their workforces. As a direct result, mines will be unlikely to achieve the labour productivity and unit labour cost outcomes that would be possible with greater flexibility. This is because, while LOFO provisions may offer some efficiencies in the immediate process of 'downsizing', their long-term costs can detract significantly from a mine's overall performance.

Undertaking retrenchment on the basis of LOFO may have some advantages as a means of reducing the size of the workforce:

- where it contributes to employee perceptions that the retrenchment process has been fair. This may reduce any consequent potential productivity loss resulting from disruption due to downsizing. (However, LOFO is not a necessary condition for this to occur. There may be alternative, lower cost measures that similarly reduce any disruption caused by downsizing.); and
- where LOFO results in the most experienced/skilled workers being retained, redundancy payouts and therefore unit labour costs will be minimised relative to a non-LOFO scenario involving retrenchment of more senior workers.

However, retrenchment based solely on seniority can impose significant costs on enterprises in the long term, reducing labour productivity and increasing unit labour costs by:

- limiting the ability of mine management to improve the productivity of its workforce by retaining the most productive workers. At mines where workers have been retrenched and LOFO applied, average labour productivity would be below what it otherwise would have been if retrenchments had occurred on the basis of relative productivity;

- preventing the mine from adjusting its workforce on the basis of skills, leading to a mismatch of skills over time (where skill deficiencies could occur in both the level of competence required as well as in the nature or type of skills required);
- increasing the incentive to train more senior workers in preference to new recruits.⁴ While this can lead to inefficiency in the allocation of training, reducing the returns to training, it also can increase total training costs where longer tenure workers are paid more;
- reducing the incentive for individual workers to differentiate themselves on the basis of productivity (since retrenchment is not based on productivity comparisons). In other words, new recruits are the first to be made redundant whether they are relatively highly productive or not. This means that, where LOFO provisions apply, labour productivity is likely to be lower than it otherwise would have been and unit labour costs higher;
- increasing recruitment costs (and thus unit labour costs) where mines allocate more resources to recruitment in order to avoid accidentally hiring low productivity workers. (Although, where LOFO is applied in concert with retrenchment lists, this effect is unlikely as retrenchment lists prevent mines from discriminating between job applicants on the basis of relative productivity); and
- increasing wage costs. Where more senior employees are paid more — perhaps because they have acquired more skills — LOFO will increase unit labour costs directly by resulting in the clustering of employees at the top end of pay scales.

Overall, in the long run, retrenchment based solely on seniority can only harm the competitiveness of an individual mine. The Australian Mines and Metals Association (AMMA) argued the importance of long-run considerations over short-term efficiencies associated with LOFO:

The industry operates in a dynamic trading environment. To survive this environment, innovative work practice requirements based on best practice arrangements are essential. The time is fast approaching when all within the industry will have no choice but to recruit the best available people, commensurate with business requirements, in order to compete in the global market place. In respect to reducing workforce numbers to meet changing work circumstances, a different approach also needs to be adopted. While the current ‘last on first off’ approach is administratively convenient, the black coal industry will continue to face pressures to retain those employees best placed to ensure the future success of the business. (sub. 14, p. 4)

⁴ Although, under the work models, seniority already applies in the allocation of training.

This would tend to suggest that a requirement to use LOFO as the basis of retrenchment should not be included in awards, allowing mines the freedom to choose the best available approach to reducing the size of their workforce. In practice, the best available approach to retrenchment is often likely to include consideration of seniority — but in conjunction with other factors such as skill, as Shell has suggested:

It is generally accepted that length of service in conjunction with other selection criteria is a legitimate indicator in determining which employees will be retained in time of redundancies. However, there is no support for the contention that retention of employees shall be determined by gate seniority exclusively. (sub29, p. 9)

The inclusion of provisions in awards requiring that retrenchment be based on seniority alone can only harm the competitiveness of an enterprise by restricting the set of factors that an employer can take into account when determining how to reduce the size of the workforce. The Commission accordingly welcomes the exclusion of such provisions from the P&E Award as a result of the black coal industry award simplification process.

The long and short-run effects of LOFO provisions are summarised in Table 5.2.

Discrimination and composition of the workforce

The retrenchment list and LOFO have had a significant effect on the characteristics of the black coal mining labour force. As Appendix C shows, compared with other industries, the black coal mining labour force has a higher proportion of men, an older age structure, and a higher proportion of people born in Australia. The retrenchment list and LOFO leave little scope for mines to employ and retain ‘new’ people, effectively limiting the ability of those not traditionally employed in coal mining to gain employment — for example, women, or younger people not related to black coal miners (and therefore, not eligible for the ‘father-son’ rule). This has led to claims that such Award provisions are, in practice, discriminatory. For example, Rio Tinto argued:

... seniority is, of course a discriminatory system for managing employees. It means that merit can rarely be a factor taken into account in employment decisions. The losers from seniority decisions will be highly capable younger people, women and people of non Anglo-Saxon and indigenous backgrounds, all of whom effectively face high barriers to entry into the coal mining industry. (sub. 22, p. 62)

Whether such provisions in the P&E Award constitute discrimination at law has not yet been resolved. According to Rio Tinto:

Table 5.2: Summary of the impact of LOFO on mine labour productivity and unit labour costs

| <i>Impact of LOFO</i> | <i>Labour productivity</i> | <i>Unit labour costs</i> |
|--|----------------------------|--------------------------|
| <i>Long-term impacts</i> | | |
| Skill mismatch (level of skill and nature of skill) — labour underutilisation, training costs, increased risk of introducing new technology. | Reduced | Increased |
| Limited ability to retrench on basis of productivity. | Reduced | Increased |
| Reduced incentives for individual workers to differentiate themselves on the basis of productivity. | Reduced | Increased |
| Suboptimal allocation of training — incentive to train only longer tenure workers. ^a | Reduced | Increased |
| Increased recruitment costs to reduce potential for mistakenly hiring inefficient workers. | | Increased |
| Clustering of workers at top end of pay scale. | | Increased |
| <i>Short-term impacts</i> | | |
| Decreased disruption due to downsizing. | Increased | |
| Reduced redundancy payouts. | | Reduced |

a Reinforced by seniority provisions under the work models.

The seniority provisions are also protected by provisions of the Sex Discrimination Act, which preserves discriminatory acts done in accordance with an award, and by provisions of the Workplace Relations Act saving certain discriminatory provisions of awards. ... State anti-discrimination laws also permit discriminatory award clauses to continue to operate. (sub. 22, p. 62)

The NSW Minerals Council noted:

Several companies have endeavoured to use the Workplace Relations Act to remove Clause 24 [LOFO] without success. Impediments include the existence of bargaining periods being in place which restrict the capacity of the AIRC to arbitrate. Applications have been made to the Federal Court to test the standing of this clause. ... The question of discrimination relating to the application of Clause 24 remains unresolved. (sub. 25, p. 18)

While unresolved at the Commonwealth and State legislative level, retrenchment based solely on seniority appears to conflict with the spirit of the International Labour Organisation (ILO) Convention on Discrimination (Convention 111), ratified by Australia in 1973.

The Commission draws attention to the fact that retrenchment lists and seniority-based retrenchment are discriminatory in practice.

5.2.3 Use of casuals, part-time employment and contractors

Casuals, part-time employment and contractors are considered together in this section because in certain circumstances they can offer mines similar benefits — that is, greater flexibility in varying hours of work or the size of the workforce. In other words, these types of employment — in combination with permanent full-time employment — allow mines to match capital and labour requirements to outputs more accurately over time, increasing labour and capital utilisation and, thus, productivity. In the words of the CEO of Ensham:

... the EFA [enterprise flexibility agreement] allows utilisation of labour at Ensham for a number of different circumstances: permanent, casual, contractor.

This flexibility of labour allows special outside skills, expertise or equipment not regularly available at Ensham to be used, as well as eliminating the need to carry extra employees for relief or peak loads. (Foots 1996, p. 156);

... Included in the advantages of this is Ensham doesn't have to commit to unnecessary capital such as Dragline Bucket Repair Facilities, Cable Repair Facilities, Major Workshops etc. (Foots 1996, p. 164)

Contractors, casuals or part-time employees offer particular benefits in situations where tasks are required only infrequently or where special skills or equipment are required — for example, to undertake maintenance, highwall mining or environmental clean-up. Contractors also can offer access to expertise from outside black coal mining. For example, Thiess Contractors contended:

The diversity of our projects in mining and also in civil construction means that Thiess brings to any mining challenge a range of solutions and expertise beyond that often available to an individual mining company. Accordingly, we and our clients have seen the advantages that can be gained from adopting mining methods that cross over from a more metalliferous style operation and even techniques that stem from our civil engineering expertise. (sub. 15, p. 6)

In addition, access to increased flexibility via the use of these types of employment is increasingly important in light of the product market changes that have occurred (outlined in Chapter 2). Powercoal illustrated the importance of workplace flexibility at coal mines supplying a deregulated electricity market, where contracts between generators and coal mines are increasingly specifying coal volumes that are contingent on the amount of electricity sold:

Now, if you have a coal that can either go to the generator or into the export market, you can manage [contingency contracts] quite simply by the variety of markets. But if you have a coal that is not suitable for other markets, you have to have this idle capacity sitting there to service [the contingency contract with the electricity generator]. So, therefore, I could envisage times where you might have a mine working say at a million tonne a year capacity, as a base case, and then bringing in contractors to mine the other million tonne a year, ... [or] it might be in steps of so much per month You can adjust that by stockpiles to some extent,

but you don't normally carry a million tonne of stock So, flexibility in that case would mean bringing in contractors to operate for so many months of the year. ... Otherwise, you would have full-time labour that's sitting idle for so many months of the year, and obviously one cannot afford to do that in those type of markets. (trans., p. 32)

In some situations, employees with long-term contracts (which may include permanent workers as well as contractors) are preferable to those employed on a relatively short-term or casual basis. Permanent or longer tenured employees allow mines to avoid the transaction costs associated with engaging short-term workers and avoid unnecessary training costs where mine-specific knowledge is of particular value in undertaking tasks. In addition, part-time employment is impractical in many cases in mining because of continuous rostering and the distance required to travel to remote locations (QMITAB 1998, p. 39).

In the past, significant restrictions circumscribed the use of contractors, casuals and part-time employees and such restrictions still exist at many mines. However, the use of contractors and casuals has been increasing in black coal mines with the increasing ability of managers to negotiate workforce agreements that differ significantly from the P&E Award. In fact, contracting companies (such as Thiess Contractors) have been engaged to carry out mining operations — previously considered core work — in a number of open cut mines. Burton and Collinsville are two examples. In both cases, the workforce agreements negotiated by Thiess Contractors dispense with some of the restrictive work arrangements specified in the P&E Award.

Restrictions on the use of casuals, part-time employment and contractors

Prior to award simplification, it was the lack of formal provisions in black coal awards covering the employment of contractors, casuals and part-time workers that restricted their use. There was no provision for casual or part-time work or the use of contractors in the P&E Award, circumscribing all three types of employment and restricting the nature of allowable employment to full-time, permanent. Restrictions on part-time work are inconsistent with the intent of the ILO Convention C175, The Part Time Work Convention, 1994, which states:

Measures shall be taken to facilitate access to productive and freely chosen part-time work which meets the needs of both employers and workers, (Article 9 ILO Convention C175)

Australia has not yet made a decision concerning ratification of this convention.

While the ACSA Award similarly has no provisions for contractors, it does provide for casual and temporary work subject to union approval.

Formal provisions relating to contractors are contained in the State coal mining industry legislation (NSW and Queensland) — which limits the ability of mines to appoint contractors to certain statutory positions — and in enterprise agreements.

A number of informal ‘custom and practice’ type provisos covering the use of contractors in black coal mining were outlined in the submissions. These differ between sites and, as documented in the submissions, include specifications or rules that:

- increase the transaction costs involved in engaging contractors, such as extended negotiation processes for obtaining union approval. For example:
 - Companies in general have to go through a long arduous process to get union approval to use contractors on site. (Camberwell Coal, sub. 13, p. 12);
- restrict the contracting companies or workers that can be engaged. For example, the *Drayton Coal Industrial Agreement 1996* locks Drayton into using the United Mining Support Services (UMSS) for supplemental labour (sub. 48). UMSS is part-owned by the mine workers union;
- otherwise influence the costs associated with engaging contractors — for example, by restricting contractors’ conditions of employment; and
- specify the types of tasks that contractors can undertake — for example, according to Exxon:

Certain work, eg bathhouse cleaning, is a ‘prohibited’ activity for the use of contractors as a result of entrenched custom and practice. ... If the Union believes the work could be considered ‘core work’, its position will be that the company needs to hire additional full-time employees. (sub. 3, p. 6)

The Commission notes that, arguably, the second and third points above involve instances of anti-competitive behaviour in the market for labour services. However, these restrictions are unlikely to be covered by the relevant provisions of the *Trade Practices Act 1974* (Cth) given that the relevant Part (Part IV except s.48) does not cover acts, arrangements, contracts or understandings relating to “remuneration, conditions of employment, hours of work or working conditions of employees”.⁵ Such restrictive provisions in employment agreements are covered instead by the industrial relations legislation — the aim of which is to promote and enforce agreements freely arrived at between employers and employees at the workplace level. **The Commission questions whether the industrial relations legislation gives adequate consideration to any adverse consequences of restrictive provisions in employment agreements for other businesses not party to an agreement (for example, in**

⁵ Section 51(2) *Trade Practices Act*.

this case, suppliers in the market for supplementary labour services other than the UMSS).⁶

Comparisons with Australian metalliferous and United States black coal mines

According to Wooden et al (1996), while provisions for the employment of contractors are present in the majority of both black coal mining and metalliferous mining agreements, black coal mining agreements are much more likely to circumscribe closely the conditions under which contractors might be used. With the exception of Ensham and Southern Colliery, all of the black coal agreements outlined in Appendix G contain clauses circumscribing the use of contractors to varying degrees. The *Queensland Mining (Non-coal) Award* allows metalliferous mines to employ casuals and contractors as long as it is not a condition of employment and a certain weekly minimum pay level is reached.

Unionised mines in the United States also have limited ability to engage contractors. The main unionised agreement restricts the use of contractors for transport, repair and maintenance, rough grading in mine reclamation, and construction, in most cases allowing use of contractors only where consistent with custom and practice. In contrast, there are no restrictions on the use of contractors in non-unionised mines in the United States, except by agreement at the workplace.

Effects of restrictions on the use of contractors

Circumscribing or preventing the use of contractors can reduce mine labour productivity and increase unit labour costs by:

- forcing mines to carry excess (underutilised) capital and labour. Exxon commented:

... an outgrowth of [restrictions on the use of contractors] is that the coal industry tends to carry higher levels of regular employment to carry it through the heavier work periods, whereas other industries and international competitors operate with leaner workforces supplemented by additions of contract labour during periods of greater work requirements. (sub. 3, p. 6);
- increasing the transaction costs associated with engaging contractors because of the cost of complying with the restrictions;
- reducing the speed with which mines can respond to change in the short-term — for example, by engaging contractors to cover shortfalls in labour or capital;

⁶ Any adverse consequences of such restrictive provisions for the employer party to the agreement should be the responsibility of the employer concerned.

- restricting innovation and inhibiting the adoption of new more productive management and work arrangements by reducing access to both new ideas and alternative supplies of management and other skills; and
- limiting the options available to mines in obtaining access to capital.

Restrictions on the use of contractors, casuals and part-time employees detract from mine performance and deny employment opportunities to people who wish to work in this way.

5.3 Hours of work and roster arrangements

This section examines the degree of flexibility of work arrangements dealing with working hours and the timing of work. Four areas are examined — hours of work, shift and roster arrangements, paid breaks, and leave provisions.

5.3.1 Hours of work

Ordinary hours of work in the P&E Award are 35 hours per week. In the ACSA Award they range from 35 to 40 hours per week. It is not expected that the award simplification process will change these arrangements. All of the black coal agreements examined in Appendix G stipulate 35 ordinary hours of work.

Comparisons with Australian metalliferous and United States black coal mines

A number of submissions noted that ordinary hours in black coal mining are less than those stipulated in other industries. For example, Thiess Contractors noted that the 35 hour week (alongside a host of other entitlements) compares generously with the norm for similar workers — particularly in the Australian metalliferous mining industry — as well as broader society norms:

These standards constitute a substantial additional labour cost compared to other Australian mining operations and necessarily limit the reserves which can be economically extracted. (sub. 15, p. 11)

Furthermore, the AMMA (sub. 14) noted that the *Gold Mining and Engineering Maintenance Award* (Qld) stipulates 40 ordinary hours and the metalliferous mining awards and agreements documented in Appendix H suggest that the metalliferous mining industry standard ordinary working hours in Queensland are around 38 hours per week. The comparisons undertaken by Wooden et al (1996) show that half of their sample of metalliferous mines provided for 38 ordinary hours per week while a further 42 per cent of such mines provided

for 40 ordinary hours per week. (The balance provided for even longer ordinary working hours.)

The US union agreement indicates that a 40 hour ordinary week is the norm among unionised US black coal mines. This is also the case among non-union mines in the United States (Appendix I).

In addition, a number of submissions cited informal work arrangements (that is, 'customs and practices') which inhibit the efficient use of overtime in black coal mining.⁷ These include the allocation of overtime by seniority and (district union) restrictions on either the amount of overtime worked in a roster period or the total hours actually worked per week (sub. 22, p. 60 and sub. 25, p. 29). Examples of overtime restrictions were highlighted in Camberwell Coal's submission:

There is a district limitation that provides for a maximum number of hours to be worked in any one week to be no more than 51 hours (35 hours ordinary plus 16 hours overtime). This does not allow our employees to work in excess of these hours if they wish to.

Also there is a restriction on how this overtime can be worked — it must be worked in 'blocks'. E.g. Employees are only able to work one shift of overtime per week. The number of hours is not counted in this instance and if an employee only works two hours then that constitutes his overtime 'shift' for the week. This leads to people not working overtime unless they are offered an 8 hour shift which often does not suit the needs of the business. (sub. 13, p. 9)

Effects of hours of work restrictions

The labour cost effects of a relatively short ordinary time week operate through the consequent relatively high use of hours paid at overtime rates:

The short duration of the working week coupled with the pressures placed on mining organisations to meet increasingly robust production targets, guarantees that overtime will be worked. ... At Callide Coalfields, overtime runs at around 20 per cent for both the production and engineering streams, and adds significantly to the overall labour costs of running the Callide operation. (Callide Coalfields, sub. 6, p. 8)

That is, while black coal mine industry production and engineering workers typically work an average of 43.5 hours per week (Wooden and Robertson 1997b), a comparatively high proportion of this average is worked (and paid) as overtime hours. However, while the lower ordinary hours is a factor

⁷ Both the P&E and ACSA Awards state that employees are required to work reasonable hours of overtime (provided that at least 10 consecutive hours off duty eventuates after completing such overtime, excepting staff members in Groups G to P in the ACSA Award). The method of allocating overtime is not stipulated in either Award.

contributing to the relatively high levels of overtime in the black coal industry, other factors include: the low incidence of part-time, casual and contract employment; greater restrictions on the use of contractors; and the low incidence of twelve hour shifts.

The effects of seniority in allocating overtime as well as restrictions on how overtime is worked, respectively, include the following:

An employee cannot complete a partly completed job on overtime, sometimes the level of skill required for a job means a specific person is needed. ...

CFMEU district rule requires employees work no more than 14 hours overtime per week. Normal roster uses 5–7.5 of these hours leaving little for employer flexibility. (Rio Tinto, sub. 22, p. 60)

The relatively short ordinary hour week of 35 hours, on which overtime and penalty rate payments are based, imposes relatively high unit labour cost outcomes at black coal mines.

5.3.2 Shift and roster arrangements

A key aspect of working time in the mining industry is shift work. According to the P&E and ACSA Awards, the maximum shift length is eight hours. Longer shifts are possible only by agreement. In many cases, longer shifts (such as twelve hours) involve changing the roster system from a five to a four panel (or crew) system. In so far as roster arrangements are concerned, both awards state that an employee's place on the roster shall not be changed, except on one week's notice or payment at overtime rates. Whether this basis for allocating personnel to rosters will be maintained as an allowable award matter is to be considered during the second stage of the P&E Award simplification process.

Longer shifts have been reached by agreement in a number of Australian black coal mines (see Appendix G).

Comparisons with Australian metalliferous and United States black coal mines

Wooden et al (1996) show that 22 per cent of their sample of black coal mines had provisions for twelve hour shifts. This compares with a corresponding figure of 35 per cent among their sample of Australian metalliferous mines. Hence, the small sample of Australian metalliferous awards and agreements contained in Appendix H appears to be broadly representative of the fact that shift lengths longer than eight hours are not uncommon in metalliferous mines. In addition, Wooden et al (1996, p. 21) "find the presence of provisions for hours averaging over an extended period much more prevalent in the metal ores

mining sector than in coal mining”. Furthermore, arrangements for changing rosters also appear to require significantly less notice by metalliferous mining employers than their counterparts in black coal. Similarly, there appears to be greater flexibility for metalliferous employees to swap rosters and shifts among themselves (Appendix H).

According to the main unionised agreement, in US unionised-mines the basic shift length is between seven hours and fifteen minutes and eight hours and each shift has regular starting times established in accordance with past custom and practice. Upon approval by two-thirds of union members at the mine, open cut mines may extend the work day to eight hour shifts. Individuals with the greatest seniority are to be given their shift preference. In so far as non-union mines are concerned, the *Fair Labor Standards Act* does not impose any restrictions on shift lengths or times.

Furthermore, while some submissions suggest that shift and roster arrangements in Australian black coal mines are becoming more flexible (via arrangements introduced by contractors) —

The use of contractors has become more prevalent in the industry and is growing, and there has been a gradual emergence of more innovative work rosters and shift arrangements. (Queensland Mining Council, sub. 24, p. 5)

— other mines appear to face considerable informal restrictions on changing shift and roster arrangements, largely depending on the union district concerned (see Box 5.1). Indeed, the Queensland Government, BHP, Thiess Contractors and Rio Tinto submissions nominated shift and roster arrangements among their industry-wide restrictions.

Effects of restrictive shift and roster arrangements

Restrictions on shift lengths which prevent the introduction of the twelve hour shifts result in: unnecessary levels of non-productive (or idle) time associated with shift changeovers; overmanning (and therefore unnecessarily high labour costs) associated with a five panel compared with a four panel roster system; decreased capital utilisation; and an increased level of capital (especially the truck fleet) required at each mine. On the other hand, the relatively generous overtime pay provisions in the black coal industry may mean that twelve hour shifts are not cost-effective for some mines.

In addition to the effects of shift and roster restrictions outlined above, another informal arrangement (or ‘custom and practice’) involves the use of seniority provisions in the allocation of personnel to shifts. This results in a poor skills mix across and within shifts.

Box 5.1: Examples of informal restrictions on changes to shift and roster arrangements in black coal mines

One example was provided by Exxon:

NSW Unions refuse to work shift lengths greater than 8 hours without payment of extra rates above the already high penalty rates contained in the industry awards. ... The combination of the above makes it prohibitively expensive to adopt a roster for 7-day operations. The resulting under-utilisation of high cost capital severely disadvantages the Australian black coal industry vs its international competitors who operate on a 7-day basis. (sub. 3, p. 9)

Another example came from Camberwell Coal:

[While] Award provisions are general in respect to this clause, custom and practice and subsequent decisions of the Coal Industry Tribunal have reinforced that if companies wish to work 7 days per week 24 hours per day in the Northern District then we must work a 5 panel roster (that is 5 complete crews are required). This has a significant extra cost because of increased manning levels and penalty rates associated with the roster. In Queensland, Coal Mines are able to operate a more cost effective 4 panel roster (ie 4 complete crews) to cover 7 days per week, 24 hour per day operations. Effectively the 5 panel roster means that Hunter Valley mines must employ 20 per cent more people to maintain a 24 hour per day, 7 day per week operation than our competitors in Queensland or overseas. Of the 35.7 hours worked per week in the 5 panel roster, only 24 hours are paid at single time with the remaining hours paid at least at double time (higher on weekends). We would like to introduce a 4 panel 12 hour shift roster as this would allow us much more flexible allocation of our labour. The current system greatly increases the costs of employing labour to man equipment 24 hours per day, 7 days per week, particularly for shovel truck operations common in the Hunter Valley. In fact, the high cost of labour for continuous operation is a strong dis-incentive to the employment of more labour. As a result high cost equipment is under-utilised further adding to our cost structure. (sub. 13, p. 8)

Camberwell Coal pointed to other difficulties in establishing a four panel, 12 hour shift system as an alternative to the status quo:

The current standards in the Coal Industry (NSW) on the working of 4 panel 12 hour shifts has been set with a recent agreement at BHP's Mt Owen Mine. The terms and conditions attached to the implementation of the 12 hour shift roster at Mt Owen do not provide any cost incentives from the current 5 panel 8.5 hours system that is currently operating in the Northern District. ... The metalliferous mining industry along with many other industries in Australia and our competitors overseas have adopted a 4 panel 12 hour shift system covering 7 day per week, 24 hour per day operations at no additional cost to the employer because of the mutual benefits of the system. The UMW refuses to consider 12 hour shifts on any realistic basis. (sub. 13, p. 10)

The costs to black coal mines of changing shift and roster arrangements in the past have been prohibitive and unnecessarily increased unit labour costs.

5.3.3 Paid breaks

The Australian Coal Industry Research Laboratories (ACIRL 1994), Swan Consultants (1994) and Tasman Asia Pacific (1997, 1998) all point to time lost during paid breaks in Australian coal mines as being greater than in Australian metalliferous and US black coal mines. According to Swan Consultants (1994), meal breaks and lost time while joining and leaving shifts amounted to approximately 18 per cent of shift hours in some Australian dragline mines. Rio Tinto, using material from Tasman Asia Pacific (1997), estimated the effect of idle time (mainly resulting from the time taken in joining and leaving shifts and travelling to and from the mine face) in terms of lost production to be considerable:

For a hypothetical 8 hour shift, the Australian black coal mine employee works approximately 6.5 hours compared to their counterparts in the Australian hard rock industry who work 6.9 hours. ... This represents 24 minutes additional idle time per employee, per shift, every working day of the year. ... Applying this to 1995–96 coal industry production and employment (194 million tonnes from around 25,000 employees), over 11 million tonnes of lost production is due to idle time, amounting to more product coal than Australia's largest mine (Pacific Coal's Blair Athol Mine) produced in the same year. (sub. 22, pp. 8–9)

Production and engineering workers and some staff are entitled to meal (or 'crib') breaks paid at 30 minutes per shift. Further, they can work more than five hours without a break — only if they are paid at overtime rates beyond five hours. This is consistent with many other awards including metalliferous awards and in the United States (see below). Additional provisions in black coal relating to crib (meal) breaks and meal allowances on overtime are detailed in Appendix F.

Participants also pointed to a number of customs and practices applying at some mines in this area which contribute to high levels of idle time (and therefore relatively low levels of equipment utilisation), especially in open cut mines in the black coal industry. These include such practices as 'tolerance time' (resulting in 'early knock off') in open cut mines:

Many custom and practice issues constitute uncompetitive work practices such as: ... early shift finish 'tolerance time' which is a hangover from the underground coal mines where 'shower time' was allocated at the end of each shift. (Rio Tinto, sub. 22, pp. 60–61).⁸

The cost of this arrangement is not insignificant, as noted by Camberwell Coal:

⁸ Rio Tinto has ended this practice at its Hunter Valley No. 1 open cut mine and required employees to work their full shift length as specified in the P&E Award.

... approximately 10-15 minutes paid at double time must be allowed for shower or tolerance time at the end of each shift. The cost is approximately \$2000 per annum per person. (sub. 13, p. 9)

However, Thiess Contractors observed:

This is an arena in which the owners, managers, unions, employees, governments and industrial authorities all have significant historical responsibility.

... Greenfield sites do not typically attract such restrictions today but many existing operations are no doubt struggling with these and similar issues as a result of the historical legacy of the industry. (sub. 15, p. 8)

Other work arrangements in this area include restrictions on staggering crib breaks:

Decision 3/1991 by the Newcastle Local Coal Authority, and decision 2/1991 of the Coal Industry Tribunal, preventing management at Hunter Valley No. 1 mine from staggering meal breaks in all but exigent circumstances. (Rio Tinto, sub. 22, p. 5)

The effects of this restriction on staggering crib breaks (which includes travel by open cut coal miners to and from their crib huts in order to eat together) are: lower levels of equipment utilisation; truck queuing problems associated with the return from crib; and the prevention of continuous operation of critical or priority pieces of equipment.

A number of recent black coal agreements, however, have introduced staggered crib breaks (Appendix G). In so far as comparison with the metalliferous mining sector is concerned, a similar length of meal break appears to be provided (30 minutes) as well as a minimum ten hour break between work days. In addition, paid rest pauses totalling twenty minutes per day are allowed in the *Queensland Mining (Non-coal) Award*. This practice also appears in the black coal industry but is not written into the parent Award. It is unclear from the examination of awards and agreements in Appendix G whether the practice of staggering meal breaks (or the taking of 'tolerance time') applies across the metalliferous mining sector.

A staggered 30 minute break appears in the US unionised agreement. No legislative requirements are faced by non-unionised mines in relation to the taking of paid breaks.

Provision for paid breaks is reasonable, not only for safety but for productivity reasons. It would appear, however, that a number of black coal mining work arrangements inhibit flexibility in the taking of breaks, thereby compromising continuous production, especially in open cut mines.

5.3.4 Leave provisions

Table 5.3 presents an overview of annual leave, long service leave and sick leave provisions in Australian black coal and metalliferous mines and unionised black coal mines in the United States. These comparisons are based on the P&E Award, a sample of awards and agreements in the metalliferous mining sector and the main unionised mine agreement in the United States, respectively. Additional factors relating to the flexibility of these leave entitlements are outlined below. Australian black coal mines generally provide higher leave entitlements than do Australian metalliferous or US black coal mines (Table 5.3). It is not expected that the award simplification process in the black coal industry will result in changes to these leave provisions.

Table 5.3: An overview of leave provisions: Australian black coal, metalliferous and US black coal mines

| <i>Type of leave</i> | <i>Black coal</i> | <i>Metalliferous</i> | <i>US black coal (unionised)</i> |
|----------------------|---|---|--|
| Annual leave | 5 weeks; 6 weeks for continuous shift workers. | 4 weeks; 5 weeks for continuous shift workers. | 14 days minimum plus additional days depending on length of service (up to a maximum of 13 additional days for employees with 18 years of continuous service). Four additional days of floating vacation are also provided. Each employee is also entitled to a holiday on their birthday. |
| Long service leave | 13 weeks for each 8 years of service. | 13 weeks after 10 years of service. | No provision. |
| Sick leave | 15 days per year cumulative without limit. | 8–10 days per year Variable cumulation arrangements. | 5 days per year minimum to a maximum cumulation of 10 days per year. |

Sources: P&E Award, Wooden et al (1996) and *National Bituminous Coal Wage Agreement of 1993*.

The P&E Award places constraints on when annual leave can be given and taken — in not more than three periods, one of which is three weeks. (Similar annual leave entitlements and constraints are provided in the ACSA Award.) In addition, the allocation of annual leave appears to be subject to the ‘custom and practice’ of seniority rules in some mines (Rio Tinto, sub. 22). While the recent agreements set out in Appendix G do not result in reduced annual leave entitlements, there is some evidence of increased flexibility in the taking and allocation of such leave.

Wooden et al (1996) found that the Australian metalliferous sector appears to have less flexible annual leave provisions than the coal industry (see Appendix H).

The P&E Award also places conditions on when long service leave can be taken. Many participants also noted the coal-specific long service leave arrangements, which are portable between employers, as an example of a feature that reinforces the industry focus rather than the enterprise focus of employees. The NSW Minerals Council commented:

We have a long service leave scheme which again entrenches the differences in this industry, its portable nature between companies, it again entrenches this view that employees work for the industry or for the union which will protect its continuing employment that their fortunes are not linked to the fortunes of the company. (trans., p. 79)

The Minister for Workplace Relations and Small Business has recently initiated a review of the funding arrangements for this scheme. In particular, the following two aspects of the scheme are to be reviewed:

- the need for continuing Commonwealth Government involvement in the funding arrangements; and
- the appropriateness of retaining a central industry fund when the primary focus for managing employee relations has shifted to the enterprise (Reith 1997).

The P&E and ACSA Awards provide for sick leave to be cumulative (without limit) and to be paid out on retirement or retrenchment. Employees must inform the employer within 72 hours of commencing sick leave (or by the completion of the first shift for staff members). While recent black coal mining agreements do not tend to dilute sick leave entitlements, in many instances the requirement to inform the employer is reduced from the 72 hours requirement in the P&E Award. Some innovative sick pay arrangements and absenteeism policies are seen in these recent agreements (Appendix G).

Provisions relating to accumulation and notification appear to vary between Australian metalliferous mines (Appendix H and Wooden et al 1996).

Among unionised mines in the United States, employees are required to notify the employer at least 24 hours in advance or at least two hours in advance in the case of sudden illness. Unused sick days can be paid in lieu or carried over to the next calendar year. However, the maximum accumulation is ten personal or sick leave days in any one year. Under the *Family and Medical Leave Act*, entitlements for sick leave and parental leave in non-unionised mines consist of up to twelve weeks protected, unpaid leave during any twelve month period.

Employees cannot accrue benefits during the period of leave but they have the right to return to their job upon completion of the leave (see Appendix I).

Effects of leave provisions

In summary, the effect of these relatively generous leave provisions is to increase the cost of labour in the black coal industry. Other effects include reduced labour and capital utilisation and the need for additional personnel to cover for employees on planned and unplanned leave. For example:

The combination of 'employment protection' and extremely liberal industry leave policies (sick leave, annual leave, long service leave, domestic leave, workers' compensation program, etc) contribute to an absenteeism rate well above industry norms. Total absenteeism at ECMAL managed sites is at 15–20 per cent with approximately 8 per cent falling in the 'unplanned' (sick, workers' comp., domestic, etc) category. This level of absenteeism impacts management's ability to effectively operate the business, and leads to higher baseload manning complements and associated increased labour costs to cover for the non-working personnel. (Exxon, sub. 3, pp. 5–6)

The Australian black coal industry awards contain relatively generous leave entitlements. Maintaining these as allowable award matters in simplified awards would result in relatively high 'minimum' labour costs.

5.4 Remuneration and on-costs

This section examines the levels and flexibility of both wages (including any bonuses) and non-wage labour costs against the background of the significant changes which are occurring in the product market. In particular, the section examines base pay, penalty rates and bonus arrangements.

5.4.1 Base wage

Relative pay levels

A comparison of base award wages in the black coal industry with their metalliferous counterparts is complicated by several factors. First, while base wages covering the main occupations in the black coal industry may be found in the P&E and ACSA Awards, base wages in the metalliferous sector are spread across many State and Federal awards. Hence it is necessary to obtain a representative sample of metalliferous awards with which to make comparisons. Second, since minimum rates do not necessarily accord with actual pay, award-based wage comparisons are meaningless if one is seeking to compare the relative cost of labour between the two industries. In addition, the interaction of

various overtime and penalty rates and other entitlements complicates comparisons of wages and labour costs. Accordingly, other types of data (aside from award data) need to be examined to address the issue of relative pay levels and relative labour costs.

Chapter 4 found that employee earnings are high in the black coal industry when compared with average earnings for all industries and with earnings in similar industries.

A number of submissions point to relatively high (take-home) pay levels received by non-managerial black coal mine employees in their own mines (Camberwell Coal, sub. 13), in the industry in NSW (DWR&SB, sub. 40), or across the industry as a whole (Wooden and Robertson 1997b). Relatively high incomes are received also by employees in managerial, professional and associate professional occupations in the black coal mining industry (see Table 5.4).

Table 5.4: Proportion of individuals with annual income of \$52 000 or more, selected occupations, black coal mining compared with metal ore mining, Australia 1996^a (%)

| <i>Occupations</i> | <i>Metal ore mining</i> | <i>Black coal mining</i> |
|---|-------------------------|--------------------------|
| Managers and administrators | 83.3 | 93.6 |
| Professionals | 55.7 | 84.4 |
| Associate professionals | 41.7 | 83.0 |
| Tradespersons and related workers | 53.4 | 72.5 |
| Intermediate clerical, sales, service workers | 18.5 | 59.9 |
| Intermediate production and transport workers | 44.6 | 68.5 |
| Total | 47.2 | 71.9 |

a Population is wage and salary earners, Australia for metallic minerals, NSW and Queensland for black coal.

Source: ACIRRT 1998, based on ABS 1996 unpublished census data.

Many factors may have led to the relatively high pay levels observed in the black coal mining industry. Such factors could include high workforce productivity,⁹ super-normal profit-sharing¹⁰ activity by employers, monopoly

⁹ The relatively high pay levels may result from the payment of so-called 'efficiency wages'. This occurs where a wage premium is paid to encourage effort in cases where individual

power of trade unions, compensating differentials for undesirable or hazardous working conditions, and the male-dominated nature of the industry (Wooden and Robertson 1997b). The relatively capital-intensive nature of the industry and the relatively high level of fixed specific investments at individual mines may also contribute to relatively high pay levels. This is due to the relatively costly nature of strikes in such industries, in turn enhancing the bargaining power of unions and existing employees (see Chapter 6).¹¹ Distinguishing between these factors is a difficult task. Historical support for some form of super-normal profit-sharing combined with the monopoly power of trade unions is found in Mumford and Dowrick (1994).

As for the possibility of higher wages reflecting higher productivity in the black coal industry, a number of submissions point to the reverse. For example,

The key point here is that rates of pay in coal are 25 per cent higher than in metalliferous mines. However, productivity in most coal mining activities is up to 48 per cent lower than metalliferous mining ... (Rio Tinto, sub. 22, p. 51)

Indeed, the informal ‘custom and practice’ of seniority-based promotion to higher pay levels has the effect of further uncoupling the link between productivity and pay.

The more hazardous and unpleasant nature of underground black coal mining would tend to suggest that underground mine workers would receive a higher compensating differential than their open cut counterparts. While the evidence presented above by DWR&SB appears to be at odds with this hypothesis, it may be that the higher productivity levels in open cut mines more than counterbalance the compensating differential factor in practice. In addition, it is questionable whether open cut black coal mining is inherently more dangerous than open cut metalliferous mining (see Chapter 9). Hence, the observed pay differentials between these two groups of (open cut) workers do not appear to be warranted on the grounds of the hazardous nature of the work.

effort is not readily observed. The idea is that higher pay leads to a consistent work effort because the penalty from not performing at an acceptable level of productivity — namely, job loss — is more serious the higher the wage. (In cases where individual effort can be observed, piece rates or performance-related bonuses are not uncommon motivation mechanisms.)

¹⁰ Super-normal profit is defined as the amount of profit which is above the profit level that would be observed in a competitive market situation. Another term for this is ‘economic rent’ and, hence, the term ‘monopoly rent-sharing’ is a common term in economic discussions.

¹¹ This proposition is difficult to sustain in circumstances where existing employees were easily replaced from the stock of unemployed.

Relative labour costs

Although pay received by employees represents a large part of the actual cost of labour, ‘on-costs’ paid by employers need to be added to the wage bill in order to gauge labour costs more accurately. This is the case in all industries. The issue here is whether such on-costs are unnecessarily high in the black coal industry.

The ILO (1966) definition of on-costs includes the cost of food, drink and other payments in kind, the cost of workers’ housing borne by employers, employers’ social security expenditures and the cost to the employer for vocational training, welfare services and miscellaneous items, such as transport of workers, work clothes and recruitment, together with taxes regarded as labour cost.

While the ABS *Survey of Major Labour Costs* excludes some items from the ILO definition, information on major labour on-costs includes: superannuation, payroll tax, workers’ compensation and fringe benefits tax. This information indicates that the two major factors contributing to the relatively high labour costs per employee in the black coal mining industry, when compared with metalliferous mining and the total for all industries in 1993–94 were employee earnings and employer superannuation contributions (Table 5.5).

Table 5.5: Major labour costs per employee, black coal mining compared with metalliferous mining, Australia, 1993–94 (\$)

| <i>Industry</i> | <i>Earnings</i> | <i>Super-annuation</i> | <i>Payroll tax</i> | <i>Workers’ compensation</i> | <i>Fringe benefits tax</i> | <i>Total</i> |
|--------------------------------|-----------------|------------------------|--------------------|------------------------------|----------------------------|--------------|
| Black coal mining ^a | 69 473 | 5 328 | 3 963 | 1 883 | 616 | 81 263 |
| Metalliferous mining | 58 263 | 2 822 | 3 040 | 1 857 | 1 510 | 67 492 |
| Total all industries | 26 654 | 1 480 | 1 056 | 566 | 266 | 30 022 |

^a Calculated as coal mining in Australia excluding Victoria.

Source: ABS (Cat No. 6348.0 and unpublished data).

Camberwell Coal pointed to the relatively high employer superannuation contributions among black coal operations:

Superannuation [is] approx 14–17 per cent [compared with] 6–7 per cent [average across all industries]. (sub. 13, p. 7)

While exchange rate variations make wage and labour cost comparisons between Australia and the United States somewhat problematic, Figure 3.13 in Tasman Asia Pacific (1998) shows that the labour cost per face hour worked (a

measure of unit labour cost) in truck and shovel operations is much lower in United States coal mines (\$51 per hour) than in Queensland and NSW black coal mines (\$69 and \$75 per hour, respectively). The cost per face hour worked in truck and shovel operations in the United States was the same as observed in Australian hard rock mines. A similar story was observed in Tasman Asia Pacific (1997), although the cost gap between Australian black coal truck and shovel operations and their counterpart metalliferous and United States black coal operations has narrowed in the latest estimates.

The labour cost structure inherited by today's black coal producers is relatively high when compared with Australian metalliferous mines and United States black coal mines.

Some participants argued that, while this cost structure would not be able to be changed in the short run, it established the imperative for further increases in productivity in order to enhance competitiveness. For example,

We've got to make sure that they don't continue to increase further, and the only way we can combat them is to try and get increases in productivity. I think the increases in productivity to try and get our unit costs down are probably easier to achieve than trying to wind back wages and conditions in absolute terms. (Camberwell Coal, trans., p. 58)

Camberwell Coal also argued that the increasing competitive pressures provided the opportunity to reduce some of the generous award conditions (at least for some producers):

We are not advocating that Australian wages should drop to the low levels of our competitors. We are however saying that because our unit costs for labour are so high then our labour practices must be the most efficient and cost effective in the world which is not the case at present. We are also suggesting that there are a number of areas where significant savings could be introduced by setting aside some of the more favourable award and above award conditions that exist within the industry which were introduced in more favourable market circumstances than is faced by the industry at present. ... Certainly the time has come where higher wages and improved conditions cannot be bargained for changes to improve productivity. These changes must come without any increase in pay rates or conditions so that productivity increases lead to an immediate reduction in unit costs. This change in philosophy is necessary just so we can survive. (sub. 13, pp. 6-7)

The effects of a relatively high cost of labour are three-fold. First, it discourages investment in some potential new mines. Second, it results in a switch in demand from labour to capital, creating over-capitalisation at existing (and some other new) mines. A third effect is that it causes lower than desirable voluntary labour turnover, resulting in lack of 'fresh blood', inhibiting the transfer of new ideas to the workplace arising from the cross-fertilisation from

work experience in other industries. The failure of labour costs to adjust downwards where necessary inevitably results in quantity (that is, employment) adjustment in the relevant industry.

5.4.2 Penalty rates

Penalty rates are paid typically to compensate for any ‘unsociable’ hours that may have been worked. The various coal mining industry award penalty rates are specified in Table 5.6 (see also Appendix F). Australian black coal mine penalty rates are not expected to change as a result of the award simplification process.

Table 5.6: Comparison of penalty rates in Australian black coal, metalliferous and US black coal mines

| | <i>Australian black coal and metalliferous mines</i> | <i>US unionised black coal mines</i> |
|-----------------|---|---|
| Overtime | Time and a half for the first three hours and double time thereafter for Monday to Friday employees, and double time for all other employees. | Time and a half. |
| Shiftwork | 115 per cent, except for permanent night shift workers, who are paid at 125 per cent of the ordinary rate. (Metalliferous mines more likely to have flat rate amounts which are set at levels likely to result in additional total labour cost which is below 115 per cent of total base hourly pay.) | Afternoon shift: US30 cents additional for each hour worked. Midnight shift: US40 cents additional for each hour worked. |
| Weekends | Time and a half for the first four hours on Saturday, and double time for all other hours on weekend. | Saturday work at time and a half, except overtime on a Saturday and all Sunday work paid at double time. |
| Public holidays | Double time and triple time for overtime on a public holiday. | Triple time. |

Sources: Wooden et al 1996 and *National Bituminous Coal Wage Agreement of 1993*.

Wooden et al (1996) noted that agreements have changed these provisions in a minority of black coal mining operations (see also Appendix G). They also noted that the penalty rate arrangements in place in metalliferous mines do not differ greatly from those in black coal mines. However, shift premiums are the

exception to this observation — in metalliferous mines, there is a greater tendency towards flat rate amounts which are set at levels “likely to result in an additional total labour cost which is below 115 per cent of total base hourly pay” (Wooden et al 1996, p. 27).

Moreover, an informal arrangement (that is, a ‘custom and practice’) relating to the calculation of overtime on weekends and public holidays suggests that penalty rate costs are higher than in Australian metalliferous mines. For example, at Camberwell Coal:

On weekends and Public Holidays we are subject to an increased penalty as the hourly rate for overtime purposes is the base rate divided by 30 rather than 35 thus giving an inflated hourly rate. To our knowledge this provision does not exist in any other industry. Effectively this means that the hourly rate paid for any time worked at the weekend is 233.3 per cent of the ordinary time rate for hours worked Monday to Friday (e.g. ordinary time hourly rate of \$20.00/hour becomes a rate of \$46.67 for all hours worked at weekends). (sub. 13, p. 8)

The Commission is unsure as to how widespread this ‘custom and practice’ is at other black coal mines. The ACSA Award specifies a similar provision relating to the calculation of overtime for certain types of staff members. In particular, for employees averaging 37.5 or 40 ordinary time hours per week, for the purposes of calculating overtime, the relevant weekly rate is divided by 35 (instead of 37.5 or 40 as would be appropriate).

In addition, it would appear that some mines, by virtue of either custom and practice or formal agreement, pay overtime and penalty rates at levels higher than stipulated by the P&E Award:

Overtime provisions which allow the average worker to double their basic wage. With all overtime and weekend work paid at double-time rates, only 16 hours a week of overtime is required to double a workers wage. This level of overtime is easily achieved given that in addition to normal production and operational demands, nearly all training, company and/or Union meetings, participation in safety, continuous improvement and other employee involvement committees, etc. are conducted on overtime. (Exxon, sub. 3, p. 8)

Night shift employees (other than those on permanent night shift) are only entitled to 15 per cent loading (award provision). We pay employees 25 per cent loading for night shift because of ‘custom and practice’. Shift allowances must also be applied to overtime worked Monday to Friday and at weekends — effectively creating a situation where penalties apply to penalty rates which is foreign to the situation prevailing in other industries. (CamberwellCoal, sub. 13, p. 9)

A comparison of penalty rates in US unionised mines is found in Table 5.6, based on information from the main unionised agreement. The legislated minimum penalty rate for work beyond 40 hours per week in non-unionised mines is at least time and a half (Appendix I).

Overtime and penalty rates do not differ between Australian black coal mines and metalliferous mines, but tend to be higher than in United States unionised black coal mines.

5.4.3 Bonuses

According to Annexure 1 of the P&E Award, bonuses are to form the subject of individual mine agreements. The ACSA Award makes no provisions for bonuses, although the AIRC determined recently that a production bonus applying to Newlands Coal for staff members at that mine be inserted into the ACSA Award (NSW Minerals Council, sub. 25). Consideration of bonuses as an allowable matter in the P&E Award is to be dealt with in the second stage of the award simplification process.

Production bonuses in the black coal industry make up a hefty proportion of employee pay. For example, according to the NSW Minerals Council:

... the average weekly bonus [increased] from \$217.80 in calendar year 1990 to \$310.9 in 1996. (sub. 25, p. 34)

More importantly, such bonuses appear to form part of the 'guaranteed' award-based pay arrangements with very few reflecting productivity or profitability. Thiess Contractors noted that bonuses have:

... been the subject of determinations by industrial authorities, despite its over-award nature, that go to the requirement for a substantial payment to be made. (sub. 15, p. 11)

Callide Coalfields stated, for example:

The requirement to pay a coal bonus is a major hindrance to achieving cost effectiveness in the coal industry. ... For Callide Coalfields, the cost of paying the Coal bonus in the bonus year 1996 was \$3.9 million, which is over 10 per cent of the total labour costs of running the Callide mining operation. ... Over time, the coal bonus has metamorphosed into a guaranteed payment, and the degree of productivity incentive associated with its payment has decreased. This has further eroded the benefit of the bonus to Coal Mine operators. (sub. 6, p. 4)

The size of these bonuses represents a significant proportion of the relatively high wage levels, which were observed earlier, among both managerial and non-managerial employees in the black coal mining industry.

Comparisons with Australian metalliferous and United States black coal mines

Confirming the earlier findings of Pragnell (1995), Wooden et al (1996) found a much greater incidence of performance-related pay clauses in black coal than in

metalliferous mining agreements. Their findings suggest that most of the Australian black coal schemes “operate as bonus arrangements based on achieving some pre-determined performance target, usually output related (e.g., coal tonnage or mine development metres)...” (p. 29). Importantly, they noted two caveats: first, if the performance targets are too easily achieved, they will be little different from over-award payments; and second, output bonus arrangements do not necessarily result in productivity-improving behaviour.

In particular, they found that the most common performance target provisions in recent black coal mining agreements relate to output and attendance.

The US unionised mine agreement establishes procedures and conditions for implementing bonus plans but does not specify the details of how the bonus is to be calculated. Non-unionised black coal mines in the United States are not legally required to provide such payments (Appendix I). Nonetheless, the existence of bonus arrangements in unionised mines is likely to provide an impetus to non-union mines to provide such bonuses.

While the amount or method of calculating the bonus is not prescribed in the P&E Award, the presence of the provision (in combination with the ‘custom and practice’ provision) effectively requires mines to pay bonuses which are generally based on output or attendance rather than on productivity or workplace profitability.

The NSW Minerals Council (DR trans., p. 22) drew attention to the potentially perverse consequences of a production based bonus for labour costs, highlighting the need to negotiate bonus schemes which better reflect the circumstances of individual mines. In their view, AIRC decisions did not always recognise this need and, hence, felt that that bonuses should not form an allowable award matter in the black coal industry.

Bonus schemes seem best left to individual parties to agree and determine in the light of the conditions applying at individual workplaces. The inclusion of bonuses as an allowable award matter, in conjunction with the maintenance of the ‘custom and practice’ clause as an allowable matter, results in a relatively high labour cost structure for Australia’s black coal industry.

5.5 Functions, tasks and skills

This section analyses the flexibility of work arrangements dealing with the movement of labour to different tasks in the workplace. Since this also depends on the range of tasks able to be performed and the skills possessed, this section

also examines issues associated with skill acquisition. These arrangements are discussed in the following two sections on demarcation rules and training.

5.5.1 Demarcation rules

Task allocation in Australian black coal mines is determined to a large extent by demarcation rules, of which there are four main types.

Union-based demarcations

Two types of demarcation rules have evolved as a result of the structure of unions in the industry. First, a strict distinction is made between the work undertaken by managerial and non-managerial employees (called staff and production and engineering workers, respectively). Second, production work (mining/machine operation) and engineering work (maintenance) are also strictly segregated. Both distinctions arise out of the separate unions covering staff, production and engineering workers.

The demarcation between production and engineering workers has been given a legal basis in the work models contained in schedules to the P&E Award which separate workers into two streams — production and engineering. The work models arose out of award restructuring in the late 1980s, which in part aimed to reduce demarcation. As outlined in Appendix K, this was successful to some extent. It eliminated multiple job classifications by switching to a pay regime based on acquisition of a broad range of skills rather than narrow occupational definitions (the impact of which is discussed below), and rationalised pay levels. However, significant restrictions on task allocation remain because the models distinguish between production and engineering workers. Camberwell Coal illustrated the strictness of this distinction:

One of the problems we have had from day one, and it was a situation we tried to address in the early days, is that we still have the demarcation in respect of our production people and our engineering people. When we started Camberwell off one of the philosophies that we had was that we really wanted a multi-skilled flexible team that we could use people when and where required, if that meant we had a tradesman in the workshop who really wasn't busy and we needed someone to operate a truck, that we could utilise that skill if the person was so skilled and trained.

I suppose that we have been working since day one, to try and change that demarcation, but it is a district or national CFMEU policy that there is no cross-over between the production and engineering streams, other than for minor issues such as changing hoses, changing mirrors or — I suppose where we sit today, that would be one area for us that we could gain some substantial benefits by being able to utilise people more flexibly. (trans., p. 50)

Some mines (Ensham, Oaky Creek and Moranbah North are some examples) dispense with the stream approach. The CEO of Ensham has claimed that removal of this type of demarcation has contributed to an increase in employee utilisation of 30–40 per cent over the national work model contained in the P&E Award (Foots, 1997).

Occupation and equipment capacity

A third form of demarcation, as outlined in Appendix K, arises under the wage rates clause (no. 8) of the P&E Award, where there is significant scope for demarcation based on occupational definitions and equipment capacity. Mines that do not apply the work models and instead base their pay structure on clause 8, face nine groups of occupational classifications — with up to 32 job classifications within each group. In addition, some occupational classifications include different pay rates for operating equipment of different capacities.

Comparison with Australian metalliferous and United States black coal mines

In Queensland metalliferous mines covered by the *Queensland Mining (non-coal) Award*, there would appear to be less scope for demarcation. Employees are graded according to nine levels based on competencies which contain broad functional outlines. There is no separation by stream as in black coal. Similarly, in the metalliferous agreements outlined in Appendix H, there are no demarcation rules.

Anecdotal evidence also suggests that demarcation is less of a problem at Australian metalliferous mines — and also at some US mines. For example, Shell stated:

... if we go to other industries, metalliferous mining or general industry — I'm not saying that demarcation doesn't exist, I'm sure it does — you can always find examples — but in general those artificial demarcations have evaporated and the focus is on working within a responsible range of skills in a safe manner. (trans., p. 218)

Exxon compared its US and Australian mining experience:

Clear demarcations exist between Production and Maintenance employees [in Australian black coal mining]. Work demarcations also exist between unionised Staff employees and those employed in the maintenance/production areas. The list of restricted practices is significant, effectively preventing companies from running their businesses in the most effective way. In other industries and at international coal mines, a multi-skilled approach is used where employees can be utilised in the areas for which they are trained.

Using the Caballo [US] mine experience again as a single example, a shovel operator would carry his own tool box and often effect minor repairs himself. Replacing a trip rope may require an operator 5–10 minutes. Because this is a ‘maintenance issue’ at our Australian coal mines, the time lost in the call out of maintenance personnel to perform this work typically results in a 30 minute loss of production. Similar restrictions apply to activities such as cable moves, replacing bucket teeth, changing shovel shims, etc. Similarly, best practice longwall mines in the United States will utilise all available labour on the production unit to restore their high cost, high capacity longwall system from a down event rather than rely exclusively on ‘maintenance’ personnel to engage in this critical activity. (sub. 3, p. 6)

However, other US mines are not so flexible. In unionised US black coal mines covered by the main union agreement, there would appear to be three types of demarcation restrictions (see Appendix I). First, there are specifications which limit the ability to switch between prescriptive job classifications. (For example, in ‘underground at deep mines’ the Agreement specifies 38 job classifications, each containing numerous job titles — the ‘beltman’ classification alone includes 39 job titles.) Second, there are specifications which prevent supervisors undertaking ‘classified’ work; and third, there is demarcation of specific tasks. (For example, repairs on electrical components or power circuits are reserved for qualified UMWA electricians and the duties of oiler, groundman and drill helper are specified.) There may be other more informal demarcation rules in unionised US coal mines, but the Commission was unable to ascertain ‘custom and practice’ arrangements. By contrast there are no formal demarcation restrictions at non-unionised mines in the United States (Appendix I).

Legislative demarcations

The fourth type of demarcation rule is contained in the State coal industry specific legislation which sets aside certain functions for people with particular qualifications. The positions set out in the legislation and their associated functions and qualifications are described in detail in Appendix J.

The coal mining legislation is far more prescriptive in this respect, involving significantly more statutory positions, than that covering non-coal mines in both NSW and Queensland. The positions required in non-coal mines also are outlined in Appendix J.

The basis for creating these demarcations in the legislation is safety, and it is certainly the case that there are likely to be tasks in black coal mining that require specific knowledge or training before they can be carried out in a safe manner. However, whether or not the prescriptive demarcations in the coal legislation have contributed to a safe work environment in the black coal

industry is open to debate. As discussed in Chapter 9, safety performance in Australian underground black coal mining is poor, even though the industry has highly prescriptive legislation.

Effects of restrictive demarcations

Demarcation rules detract from productivity by significantly restricting the flexibility of the workplace in allocating tasks. The principal difficulty associated with demarcation rules is the inability to change the associated demarcation categories over time — in both the short and long term. The most appropriate way of combining and allocating tasks is likely to vary over time according to the changing circumstances of each individual workplace. For example, task allocation may need to be modified in the long term in response to technological change and the changing nature of skills required, or in the short term according to immediate priorities that might arise out of product market demands, geological faults or equipment failure. By limiting the ability of the mine to respond to change and make these necessary adjustments, demarcation rules unnecessarily depress labour productivity and increase unit labour costs.

Basing demarcation categories on historical precedent and the structure of unions in the industry provides an additional avenue by which demarcation rules in black coal mining adversely affect mine performance. The optimal allocation strategy is likely to depend on a combination of factors including skill requirements, gains from specialisation, gains from job variety or depth, priority task demands and, importantly, safety. The demarcation categories now existing in black coal mining (both legislative and otherwise) provide little scope for allocating tasks based on any of these factors at the mine level. This inflexibility leads directly to underutilisation of labour, skills and capital — for example, by increasing paid idle time whilst one group of workers waits for another to complete a complementary activity or because staff and engineering workers are unable to undertake production work despite having the skills to operate machinery — unnecessarily reducing labour productivity and increasing unit labour costs.

The demarcation rules that exist in black coal mining by virtue of the structure of unions in the industry, the job classifications in the pre-simplified P&E Award and the coal-specific industry legislation reduce workplace flexibility and dynamic efficiency by limiting the factors that can be taken into account in allocating tasks.

5.5.2 Training

Training can benefit both firms and workers — increasing worker productivity, and leading to higher wages. Other benefits to employees include increased job mobility and, possibly, reduced risk of unemployment. However, training is also costly. For example, at mine sites, where most training of non-managerial employees is on the job, decreased productivity while workers and machines are taken off production for training purposes will constitute a significant portion of training costs.

An efficient allocation of resources to training involves balancing these costs against the benefits of training. Since it is unlikely that, for each worker or team of workers, every increment in training will result in the same constant increase in the level of associated benefits, at some point, the costs of further training are likely to outweigh any associated increments in the value of output produced by a particular worker or team of workers. Hence, from the employer's point of view, if allocated inefficiently, training is likely to result in unnecessarily high unit labour costs. Where training allocation becomes more efficient, improvements in labour productivity may accrue both from a decrease in production time lost due to training and an increase in the amount of increment to the productivity of each worker that is attributable to training.

At present in black coal mining, there appear to be three types of barriers to the efficient allocation of training at the mine level. The nature and extent of training is determined in large part at the industry level — first by the State coal industry legislation and, second, by industrial awards and agreements. Third, many of the work arrangements in black coal mining also indirectly prevent mines from allocating training efficiently. These barriers are discussed in turn below.

Legislation

As mentioned above, the qualifications and training required of all levels of management to the first line supervisor level, as well as a number of other positions, are determined by the NSW and Queensland coal mining industry regulations. These regulations specify both the nature and extent of training required (see Appendix J).

The nature of the skills and the competence levels required to obtain these qualifications also are determined at the industry level by regulatory bodies — the NSW Coal Mining Qualifications Board and the Queensland Board of Examiners. The former (as its name suggests) is specific to the coal industry; the latter covers all mining in Queensland.

Mines are required by law also to provide a mine site induction for all new employees. The nature of this induction — at least in NSW — also is determined by regulation at the industry level (by Order 34 of the Joint Coal Board (JCB)¹²). In addition, JCB Order 34 requires NSW colliery managers to establish and maintain an approved training scheme (covering induction training, skills training, and retraining) and an accurate record of all training given to each mine worker.

While this prescriptive legal regime has been the traditional approach to ensuring safety — and extends to training in recognition of the links between training and safe work practices — it does not necessarily constitute the best approach to either training or safety. Some of the costs of such legislation are outlined in Chapter 6. In particular, by encouraging a ‘compliance mentality’ and a focus on technical knowledge to the exclusion of other types of skills (because certificates require technical knowledge only), the legislation may result in a lack of recognition that skills other than those specified in certificates may also be important. This will be especially problematic where the skill bundle specified by the legislation does not coincide with the most appropriate balance of skills at the mine level. Exxon stated:

Unlike technical training, there is a need to improve the quality of ‘people skills’ within the industry through enhancements in supervisory training and general communication skills training. (sub. 3, p. 7)

In addition, detailing in legislation the skill structure of the workforce (that is, who holds which skills at any particular workplace) does not allow for innovation or variations of approach in human resource management. For example, while it is highly desirable for managers to have access to a range of skills and knowledge — including both technical, industrial relations and management skills — this does not necessarily require that they invest in such skills personally. An alternative might involve managers depending on the advice of a number of specialist assistants. However, the legislation does not allow for such differences of approach.

The prescriptive nature of the State coal-specific industry legislation with respect to the structure of the workforce and the qualifications associated with that structure does not encourage adequate recognition by management of the full range of skills likely to be of value in promoting high productivity mine performance. In addition, it does not allow innovations or improvements in management strategies relating to the skill structure of the workforce.

¹² JCB Orders are legal requirements.

The Coal Mining Qualifications Board (CMQB) and the role in the black coal industry of the Queensland Board of Examiners (QBOE) will be superseded once the Training Package under the National Training Framework (NTF) (discussed below) has been fully implemented in black coal mining. In particular, the establishment of detailed competence standards in the industry — developed by representatives of management, unions, regulatory authorities, technical experts, training/education providers and mines rescue services — in addition to the qualification quality assurance system associated with the NTF duplicate the work of the CMQB and QBOE. Importantly, the existence of bodies such as the CMQB and QBOE regulating training and qualificational requirements at the industry level contributes to the lack of enterprise focus in relation to training and management of skills in the industry. Implementation of the NTF, in conjunction with a less prescriptive approach to mine management (as discussed in Chapter 6), would increase the flexibility available to companies in adapting the skill structure of the workforce most appropriate to a particular mine.

Recommendation:

The Coal Mining Qualifications Board (NSW) and the role in the coal industry of the Board of Examiners (Qld) should be abolished.

Industrial relations

The second barrier to the efficient allocation of training stems from its formalisation in the P&E Award (as it stood prior to award simplification). Given the links between training, pay, productivity and safety, all parties (employers, employees and unions) have an understandably strong interest in training. Thus, it is no surprise that training constitutes a major employee relations issue. For example, around 70 per cent of the black coal agreements studied by Wooden et al (1996) contained a commitment to training. However, Exxon suggested that there has been inadequate recognition in the industry of the links between training and productivity:

Training is not viewed as a significant factor affecting black coal industry competitiveness. (sub. 3, p. 7)

This is reflected in the way training is specified in the P&E Award. While there are no training provisions in the ACSA Award (as the training issues relating to the occupational coverage of ACSA are dealt with in the industry legislation discussed above), the P&E Award contains provisions specifying the training required at each level of the pay hierarchy (via the work models), the employment of apprentices, pay rates for apprentices and trainees, youth wages,

and other training wages specified as experience payments (one to two years of experience being required before the employee moves to a higher wage and the rate of pay for experience differing depending on the occupation).

Perhaps the most influential aspect of the P&E Award with respect to training is the work models. As outlined in Appendix K, the work models were developed by joint working parties at the national level, but CIT decisions required that they be implemented by agreement at site level. The models are contained in two of the six black coal agreements examined in Appendix G, and Wooden et al (1996) found they were included in just over half of the coal agreements they sampled. However, they also found that:

... only a little over half of the agreements concerned with implementing work models could be described as site specific, with the remainder being modelled very closely on the industry standard. (Wooden et al 1996, p. 31)

While the work models might differ in detail from mine to mine, their overall characteristics are the same — that is, workers are divided into two streams; pay is based on skill accumulation rather than application; and training costs are incurred by employers. A further characteristic of the models as they are specified in the P&E Award is that promotion and training are allocated on the basis of seniority.

The impact on mine performance of dividing workers into two streams has already been discussed. Some of the other characteristics of work models are also likely to detract from mine performance. Basing pay on skill acquisition rather than application is likely to increase unit labour costs by encouraging workers to acquire skills that are underutilised — adding unnecessarily to both training and wage costs. In addition, it does not allow scope for pay adjustments to account for scarcity of skills. Nor is there any recognition of quality of skills acquired (which also depends on training quality and innate ability). The allocation of training and promotion on the basis of seniority alone is likely to lead to the underutilisation of some skills and reduce the returns to training — unnecessarily increasing unit labour costs. Thus, in various ways, the work models limit the ability of employers to influence the most efficient combination of skills that each worker will attain and use.

Moreover, the structure of the work models — in particular, the seniority provisions and the pay system based on skill acquisition rather than skill application — also disturbs the nexus between training and productivity from the employee's point of view, contributing to the lack of focus on the link between training and productivity.

The way training is currently prescribed in the P&E Award results in significant costs to mine performance. Better outcomes would be reached if

training arrangements were more flexible and negotiated at the enterprise level.

Other work arrangements

The third main type of barrier to the efficient allocation of training at the mine site exists indirectly through other work arrangements. For example, restrictions on the amount of overtime that can be worked per employee (see section 5.3), the allocation of overtime on the basis of seniority and relatively generous leave provisions in black coal are likely to result in: higher than necessary training relative to other industries in order to maintain skill availability (unnecessarily increasing unit labour costs); and training allocation that will not necessarily reap the highest net return (from both the worker's and the company's point of view).

Government involvement in training in black coal

Government policy has encouraged a move towards competence-based training in all industries, most recently through the National Training Framework (NTF). The NTF was agreed in principle by the Commonwealth, State and Territory Ministers responsible for vocational education and training in November 1996. One of the major components of the NTF is the Training Package, representing a national vocational qualification and qualification assurance system developed by industry to meet current and emerging skill needs. A Training Package is being developed separately for black coal mining by the National Mining Industry Training Advisory Body (NMITAB). As part of this Package, a Traineeship is being developed at entry level for black coal. The CFMEU is playing a significant role in the development of the both the Training Package and Traineeship through its participation in the NMITAB.¹³

The Commission notes that a compulsory coal-specific Traineeship for black coal mining could create further barriers to potential employment of workers from outside black coal. The Commission therefore supports the current approach to adoption of the Traineeship on a voluntary basis.

Training in Australian metalliferous mining and in other countries

In the metalliferous sector, training is determined far less at the industry level than it is in black coal. As Appendix J shows, the metalliferous regulation is also far less prescriptive in relation to training than that for black coal. Given the greater enterprise focus in metalliferous and the lack of one overarching

¹³ All national ITABs are structured to include industry stakeholders such as unions and employers.

industry award, individual metalliferous mines have more freedom to determine their approach to training at the site level. (Appendix H notes that the *Queensland Mining (non-coal) Award* has no provisions relating to training costs, but does specify the content of standard induction training. The Gunpowder and Mt Isa agreements both include provisions relating to training pay, with Gunpowder specifying that progression through the classification structure be based on the acquisition of skills.) Further, the metalliferous sector is lagging black coal in the development of a set of competences and Training Package.

Unionised mines in the United States are covered by relatively prescriptive training provisions under the main union agreement. However, it would appear that training at non-unionised mines is determined solely at the enterprise level. The NMITAB provided the Commission with a report of its 1992 overseas study mission, which visited the United States, France, Germany, the United Kingdom and South Africa to collect information about training. The report concluded that the two systems of most interest in the Australian context were those of the United States and the United Kingdom.

[The US] industry's high labour productivity performance appears to be achieved without any government intervention or a national/state industry structure influencing training and accreditation.

The UK is the model with which key aspects of the Australian reforms are most closely aligned. (NCS-MITAP 1992, p. 17)

Table 5.7 summarises the NMITAB mission's findings on these two countries.

Table 5.7: An overview of training in the United States and United Kingdom

| <i>Country</i> | <i>Training</i> |
|----------------|---|
| US | No structured or standardised training, with control at the enterprise level. Training is "largely unaffected by any external agencies outside minimum legislated safety standards". (NCS-MITAP 1992, p. 7) The USA Coal Industry does not rely on portability or standardisation but focuses on enterprise and mine-based training by line supervision as well as availability of a large pool of skilled unemployed miners. (NCS-MITAP 1992, p. 7) |
| UK | Similar to Australian system based on national competence standards. This system is "bringing under scrutiny the role of all remaining statutory" bodies such as the Mines Qualifications Board. (p. 11) |

Source: NCS-MITAP Tripartite Overseas Study Mission (1992) *Training for the future*, 7–30 November.

5.6 General procedures

This section focuses on the flexibility of general procedures covering the consultation and negotiation of change in the workplace. This includes dispute settlement arrangements.

5.6.1 Negotiating change

While the ACSA Award makes no provision for negotiating workplace change, prior to award simplification the P&E Award did so. In particular, employers were required to notify and discuss changes which had ‘significant effects’ with their employees and relevant unions — where significant effects included: termination of employment; major changes in the composition, operation or size of the workforce or in the skills required; elimination or diminution of job opportunities, promotion opportunities or job tenure; the alteration of hours of work; and the need for retraining or transfer of employees to other work or locations or the restructuring of jobs.

Several of the CAs outlined in Appendix G maintain the P&E Award clause. However, several agreements have established other types of consultative mechanisms, aimed principally at ensuring regular communication between the parties but which do not have a definition of ‘significant effects’.

In its recent award simplification decision (CN 40113 of 1998), the AIRC noted that following discussions between the parties and the conciliation conferences, agreement had been reached that employer-union consultative processes regarding the introduction of change would not form an allowable matter in the P&E Award.

Comparisons with Australian metalliferous and United States black coal mines

Wooden et al (1996) showed that there is no difference (on a statistical basis) between the Australian metalliferous and the black coal sectors in relation to provisions covering consultative arrangements (presumably covering aspects associated with change in the workplace). Indeed, the awards and agreements documented in Appendix H are supportive of Wooden et al’s detection of a tendency towards a broader range of work-related matters for discussion in metalliferous than in black coal awards and agreements.

The main unionised agreement in the United States (Appendix I) provides for the establishment of a Labor Management Positive Change Process (LMPCP) “designed to discard old ways of negotiating in an atmosphere of mistrust and to foster a new environment of mutual trust and facilitate new and creative

approaches to labor-management relations through increasing the involvement of employees in the success of the mine” (Article II(G)). The LMPCP is an industry-based process for unionised mines and establishes committees within nominated facilities, which receive a grant (funded by employers to a central fund). By its nature, the LMPCP is broad (it does not stipulate topics of change) and it explicitly recognises the need for the parties to change the atmosphere in which discussions occur.

The only legislated minimum which affects non-union mines in negotiating change with their employees, is under the *Worker Adjustment and Retraining Act*. The Act requires an employer to provide 60 calendar days’ notification of plant closings and mass lay-offs in order to provide workers and their families with some time to adjust to the loss of employment and search for alternative employment (Appendix I). As for other types of change, the ‘union threat’ effect (see Chapter 4) acts as an incentive for management to keep its workforce informed about important developments and to negotiate major changes with its workforce in a positive environment.

Difficulties in negotiating change

Rio Tinto and the DWR&SB each provided evidence which indicates that negotiating change in black coal mining workplaces has been a major factor underlying the high level of industrial disputation in the industry:

Principally due to the variability over time of disputes data, there are risks in relying too heavily on it. However, the data ... provide a quite strong basis for several conclusions:

- the settlement of major employment conditions is not the principle cause of industrial conflict in coal
- on the other hand, attempts by management to make changes in work practices appear to generate considerable resistance from unions in the coal industry.

In short, there appears to have been active resistance to change in workplace arrangements at the same time as enterprise bargaining delivered better employment conditions. Rio Tinto estimates that as much as 70 per cent of management time is consumed in negotiating employee relations changes other workplaces have taken for granted. (sub. 22, p. 53)

A comparison of dispute figures provides clear evidence of the relatively poor industrial record of the coal mining sector, particularly over the past eighteen months. As mentioned earlier in the submission, in the Department’s view, the majority of the disputes in this period reflect the coal producers’ reaction to the impact of competitive pressures; most of the disputes relate to union resistance to changes in work practices and concerns about merit based retrenchment processes. (sub. 40, p. 8)

Many other participants also commented on the difficulties associated with changing work arrangements in the black coal industry, although none pointed to the previous P&E Award provision regarding the negotiation of change as a specific impediment.

The IC (1991b) noted that, at the time of that inquiry, relations between management and production and engineering workers at an industry level were characterised by an adversarial style:

... relations between employers and unions are generally poor, stemming largely from the many bitter industrial battles fought in the past. This has fostered an 'us and them' philosophy which at times blinds either party to the other's point of view. (IC 1991b, p. 544)

The Commission welcomes the agreement reached between parties to the P&E Award that provisions relating to the process of negotiating change will not form an allowable award matter. It is also encouraging that some black coal agreements had already moved away from this specific provision, with discussions and negotiations taking place in a less adversarial environment. However, in many cases the attitude and abilities of the parties still appear to inhibit workplace adaptability and flexibility.

5.6.2 Dispute settlement

Dispute settling procedures are commonly found in awards and agreements and, indeed, form one of the twenty allowable matters in the award simplification process. The dispute settlement process in the P&E Award outlines five main steps or levels to dispute settlement — discussions proceed to the next level if a settlement is not reached in the previous level. By agreement, parties can bypass levels (2) to (4) for speedy resolution (Appendix F). Changes to the process of dispute resolution were made in the first stage of the award simplification process. These changes mean that the various levels of union representation no longer have an automatic role in this process but do so if invited. The parties to the P&E Award agreed to delete provisions requiring the use of the (former) process in disputes over unfair dismissals (in conjunction with another clause related to unfair dismissals more generally).

Surprisingly, the ACSA Award does not appear to contain a dispute resolution procedure within the workplace. Instead disputes are heard by Boards of Reference. Nonetheless, all CAs must contain dispute resolution or grievance procedures.

The small number of black coal agreements documented in Appendix G generally contain similar dispute resolution procedures as the P&E Award, with

steps proceeding ultimately to the AIRC if the grievance remains unresolved. Recent notable examples in the black coal mining industry have resulted in the AIRC being unable to arbitrate on a dispute because of jurisdictional/legal issues. Accordingly, MIM's Oaky Creek Agreement provides a number of additional steps which ensure that any dispute is resolved ultimately by a third party if necessary. However, subsequent to the certification of MIM's Oaky Creek agreement, the Full Bench of the AIRC confirmed (in the case of Rio Tinto's Hunter Valley No. 1 mine) that under the WR Act the role of the AIRC in resolving disputes is limited — effectively handing back resolution of the dispute at that mine to the parties themselves.

Nonetheless, the most important elements of MIM's Oaky Creek Agreement in relation to dispute resolution relate to its stand-alone nature, removal of the traditional custom and practice provision and the ability to undertake continuous improvement. This means effectively that there is no general requirement to observe the status quo of either formal or informal work arrangements while a dispute is being resolved, hence reducing the costs of change. The MIM agreement also reduces the scope of matters potentially under dispute and therefore subject to compulsory third party conciliation or arbitration.

Comparisons with Australian metalliferous and United States black coal mines

The dispute resolution procedures in the small number of metalliferous awards and agreements contained in Appendix H tend to have three to five steps, with union involvement in the process tending to be an entitlement of the employee if he/she requests such involvement. Since custom and practice do not appear to be formalised in the work arrangements in awards or agreements in metalliferous mines, a number of the dispute resolution procedures in these awards or agreements (which include the maintenance of the existing work arrangement while the dispute is being resolved) may only apply to formal work arrangements.

Detailed dispute settlement arrangements and grievance procedures are found in the main US unionised mine agreement (Appendix I). However, since custom and practice is formalised also in the main non-unionised agreement, it would appear that dispute resolution procedures relate to disputes about changing both custom and practice and formal work arrangements. It is not clear whether the status quo is maintained while the dispute is being resolved.

While non-union mines in the United States are likely to have their own established policies for the handling of grievances and disputes, there are no formal legislated minimums in this area. Moreover, whether or not the status

quo is maintained while a grievance is resolved is also not subject to formal legislation.

Difficulties in resolving disputes

While dispute resolution procedures are necessary, Rio Tinto was the only producer to raise the link between their use and the approach of third parties to resolve matters of dispute:

... coal unions continued to use dispute notification as a means of bringing grievances and similar disputes before the [AIRC] for recommendations or orders or voluntary arbitration, often in protest against action taken in accordance with management rights under awards or agreements. Rio Tinto's experience was that the [AIRC] continued to make recommendations which compromised those rights.

Under the *Industrial Relations Act*, the absence of a clear distinction between industrial disputes over the making of employment conditions, and over reacting to management initiated change, probably contributed to the confusion in the role the [AIRC] played.

To some extent, this lack of clarity has been addressed by the *Workplace Relations Act*.

The distinction between 'protected' and 'unprotected' industrial action, and the availability of orders under Section 127, are steps forward in clarifying the [AIRC]'s role.

There continues to be, however, insufficient clarity over the role of conciliation in disputes over the making of awards and the negotiation of agreements, and the role of conciliation in resolving grievance disputes.

In other words, the distinction between agreement making processes and the application of award or agreement provisions governing the settlement of grievances arising from management action is not clear. (sub. 22, p. 58)

In contrast, comments by BHP suggest that it was more up to mine management and the unions to resolve grievance issues at an earlier stage than that involving the AIRC:

As far as the AIRC is concerned, I guess if you go back to the early 80s we found ourselves through various dispute resolution procedures spending a fair bit of time in the [AIRC]. We spend very little time in the [AIRC] now. ... We don't avoid it but we don't find ourselves in the [AIRC]. We have tended to not rely upon the legal fraternity, if you like, to resolve issues for us on the job. We haven't found that necessary in general terms. I think most of our experience in the [AIRC] now would be in fact an experience that sees us taking agreements along for certification. (trans., p. 189)

This was based on the premise that all parties recognised the need for change in the approach to dispute resolution:

It seems, in my experience, to take an event, a significant event to, if you like, bring people into reality. To some extent we saw that in the late 80s, and I think even the unions would agree that in the late 80s the significant event was in fact the so-called hours case, and the union movement at that time saw that if they weren't prepared to change it would occur anyway. (trans., p. 188)

This issue of dispute settlement and the role of third parties in resolving disputes is discussed further in Chapter 6.

5.7 Conclusion

Work arrangements matter because of their direct and indirect effects on human relations, productivity and unit costs of production and therefore ultimately on the survival of a business in a highly competitive environment. This chapter has outlined a host of formal work arrangements in Australian black coal workplaces and compared them with those in Australian metalliferous and US black coal mines.

In the AIRC Full Bench decision on award simplification of the Hospitality Award, it was made clear that the Federal award simplification process would not involve a general review of the level of award entitlements (see Chapter 4). Hence, award-based remuneration and other entitlements in the black coal mining industry are unlikely to be changed substantially in the short term. Nevertheless, recent experience would indicate that some mines may negotiate wage freezes and reductions in over-award rates depending on the circumstances they face. Accordingly, the impact of work arrangements (including custom and practice) on productivity is of central concern for this inquiry. Indeed, even without any further increase in product market competition, the relatively high remuneration of black coal mine employees is, by itself, an important imperative for higher productivity.

Although there is a growing number of exceptions, the Commission finds that a multitude of work arrangements (including customs and practices) have restricted and may continue to restrict productivity at black coal mines. These include:

- the lack of merit-based recruitment mechanisms — through the requirement to use 'retrenchment lists' of previous industry employees and selection from the list based on seniority in NSW;
- retrenchment on the basis of seniority;
- restrictions on the use of casual, part-time employment and the use of contractors;

- the allocation of overtime on the basis of seniority and restrictions on the amount of overtime worked;
- informal restrictions on changing shift and roster arrangements;
- the use of seniority in allocating personnel to shifts;
- practices which contribute to relatively high levels of idle time, such as ‘early knock off’ and restrictions on staggering ‘crib breaks’;
- seniority-based allocation of personnel to annual leave;
- seniority-based promotion;
- strict enforcement of demarcations between production work and engineering work, and between the work of production and engineering employees and supervisory staff;
- rigid job demarcations through State coal industry legislation which specifies ‘statutory positions’ and their associated functions and qualifications;
- the possible inefficient allocation and inappropriate type of supervisory training from a workplace perspective as a result of its determination in coal-specific legislation;
- basing pay on skill accumulation rather than the application of skills (as specified in the work models);
- the allocation of training (and therefore tasks) based on seniority;
- the limited focus of communication and consultative arrangements; and
- the negative approach to dispute resolution at some mine sites.

The prominence of seniority in determining many human resource management decisions in the workplace is particularly notable in the above list.

The AIRC’s recent award simplification decision (CN 40113 of 1998) that the use of retrenchment lists in recruitment and LOFO in relation to redundancy are neither allowable award matters nor incidental to or necessary for the effective operation of the P&E Award is a step in the right direction.

It is apparent that some companies have managed to change quite a number of such productivity-restricting work arrangements, at least at some mines. The following chapter examines the issues associated with changing work arrangements.

Recommendation:

The following should not be included as part of the allowable award matters in the black coal industry:

- retrenchment lists and seniority-based recruitment;
- provisions which require retrenchment based on seniority alone;
- restrictions on the use of part-time, casual or temporary employment or on the use of contractors;
- bonuses;
- specific demarcation provisions;
- prescriptive training provisions; and
- provisions relating to the process of negotiating change.

6 WORK ARRANGEMENTS: ENABLING CHANGE

Until the mid-1980s, there was little competition in the market for black coal. The main goal of management was to maintain supply, and this was reinforced by legislative and institutional structures in the industry. Management and its workforce faced little or no pressure to change and improve productivity. The main industry unions gained (on behalf of their members) high wages and work arrangements which hampered productivity.

Some legislative and institutional impediments have been removed, but State legislation on the black coal industry remains a key barrier to reform. By establishing flexible labour market structures and facilitative legislative frameworks, governments can provide an environment more conducive to change.

Increasing competition in the market for black coal has been the key stimulus for productivity growth in the industry. Hence, a major role for governments is to ensure the existence of competitive product markets, both domestically and internationally.

Unions — as bargaining agents for employees — and managers are also important within the context of change in the industry. If a constructive bargaining approach is adopted, the capacity to cope with essential change is enhanced.

It is understandable that employees are wary of pressures to change work arrangements. Yet change is occurring, with employees agreeing to new work arrangements at some mines, for the sake of the competitiveness and continuing viability of those mines.

There is likely to be some job loss in aggregate in the black coal industry in the years ahead. The size of that job loss will be reduced by changing work arrangements which restrict productivity growth.

6.1 Introduction

This chapter examines issues associated with changes to work arrangements in Australia's black coal industry. The pressure to change, and adopt continuous

change strategies, stems from the increasingly competitive nature of the market for black coal.

While a growing number of mines are introducing change, it is apparent that many mine sites continue to find it difficult to achieve changes to the productivity-restricting work arrangements documented in Chapter 5. Consequently, a key question facing those with a stake in the industry — investors, managers, unions and employees — and the relevant institutions, is whether there are any unjustifiable impediments which inhibit the pace of change.

The chapter opens by discussing workplace culture. It then examines the role of the following three players in changing work arrangements and their various approaches to change: managers, unions and employees. The role of government is also discussed in each section. Issues associated with adjustments to change are discussed at the end of this chapter.

6.1.1 Workplace culture and change

Underlying the issue of change in the industry is the role of workplace culture.

While those who seek reform might see a departure from the culture as an important objective, their strategies, and the proposals of the Commission, should be cognisant of the cultural context. (DWR&SB, sub. 40, p. 13)

Workplace culture is a reflection of the complex inter-relationship between the roles that criticism, conflict and hierarchy play in an organisation (Trompenaars 1993). Consequently, it is a difficult concept to measure. Moreover, a distinguishing feature of any culture — whether national, corporate or at the workplace — is its slowly changing nature (Hofstede 1980).

Previous studies have identified the attitudes of industry participants and the culture pervading the industry as a barrier to changing work arrangements. Attributed to the industry's confrontational background, product market characteristics and the historically hazardous and difficult nature of underground work, the prevailing 'attitude and culture' contributed to, and in turn was shaped by, an industry that, according to Taylor (1994), was characterised by:

... aggressive/adversarial industrial relations; centralisation of authority of unions and management and little devolution of authority; poor management/employee relations at the workplace; hierarchical management style with limited consultation with the workforce and reliance on high levels of supervision; and undue reliance by the union on custom and practice rather than best practice. (p. 115)

Many participants in this inquiry also pointed to the ‘industry culture’ as a barrier to change, suggesting that little change had occurred over time. For example, the NSW Minerals Council stated:

One of the major impediments to change in the coal industry is the ‘culture’ of the industry or the set of attitudes which pervade the industry as a result of its history and the institutional and other arrangements which have existed.

This culture, certainly as it applies to many employees in the industry, tends to be characterised by attitudes such as the following:

- coal is unique, special, different — therefore requiring special legislative, regulatory and other arrangements (typically on an industry wide basis).
- the employee sees himself/herself as working for the ‘industry’ (rather than the particular company or mine) and identifies very strongly with the union.
- many of the problems in the industry are due to incompetent management, lack of controls on the industry’s production and marketing and damaging investment and purchasing practices by importing countries — these tend to form the rationale for resistance to change.

... In recent years there has been some change in attitudes within the industry, with some employers more successful than others in achieving change and in breaking down some of the resistance to change. ... Nevertheless the old industry culture as outlined above is still strong and presents a major challenge for management if it is to continue and speed up the process of lifting minesite performance... a number of other institutional barriers and other barriers still exist which are continuing to inhibit change in the industry and which need to be addressed by management and governments. (sub. 25, p. 30)

The interrelationship between the institutional environment of the industry, its history and resistance to change by management can be illustrated with three specific examples. First, it has been argued that managers in some cases have been reluctant to institute change because of conflicting loyalties arising out their union affiliations. The DWR&SB commented:

The coal unions and their members (especially the CFMEU), which have been able to exercise considerable influence not only in the operation of mines but also in the social fabric of mining communities, have been key players in developing and maintaining the culture of the industry, but managers have also played a part. Coal producers have advised the Department that, historically, companies often selected former members of the union for appointment to first level management positions. As these managers progressed through higher management levels, the industry culture with which they had been imbued expressed itself in the management approaches which were adopted at their workplaces, further contributing to the maintenance of existing industry arrangements.

... Such managers’ loyalties were, at times, with their former peers. The unions meanwhile promoted the now strongly held view that the union looked after employees, developed and pursued the training agenda and maintained an active

interest in OHS matters. Some industry representatives now argue, with hindsight, that management all but vacated these fields and employees saw the union as the provider of all things good. (sub. 40, p. 12)

Second, in black coal mining, management (until very recently) had few examples of successful implementation of productivity improvements to draw on and may have ‘learned’ that attempts to introduce change were futile. Their experience was of a prescriptive legislative and industrial relations environment, as the NSW Minerals Council suggested:

... the difficulty is ... many of the managers have been brought up in an environment which is prescribed. ‘Thou shalt recruit in this way, thou shalt allocate work in this way.’ And that is what they’ve learnt over their many years of working in the coal industry. (trans., p. 89)

Third, since the pay and conditions of staff (including certain managers) is linked to that of production and engineering workers, this provides a disincentive to managers at mine site level to constrain growth in labour costs. This is because a successful argument by one union for improvements in wages and conditions generally results in flow-ons to other awards. Hence, once improvements in wages and working conditions were won by the CFMEU for production and engineering workers in the parent P&E Award, the ACSA would find it easier to argue for and obtain similar conditions for staff. According to Menzies (1998) this point largely explains the wide margin between management salaries in coal and metalliferous mines.

While acknowledging that the existing ‘attitude and culture’ of the various players in the industry may represent an important barrier to changing work arrangements, the Commission’s view is that governments’ role with regard to bringing about a permanent positive change in the culture of the black coal industry is best limited to ensuring that *appropriate incentives* are in place to *enable* change to occur over time. Accordingly, this chapter focuses largely on those incentives that are within the purview of government. This does not mean that managers, employees and unions do not need to take greater responsibility for the prosperity of the industry.

6.2 Managers and workplace change

A primary role in introducing flexible and productivity-enhancing work arrangements within the workplace lies with management. Accordingly, this section examines the role of managers in driving change in work arrangements. In doing so, it highlights a number of institutional arrangements which have inhibited or which continue to inhibit managers in driving reform.

6.2.1 Management performance

Managers play a primary role in fostering continuous improvement at the workplace including by instituting flexible and productivity-enhancing work arrangements. While it is difficult to measure management performance without some benchmark, the indicators of mine performance detailed in Chapter 3 together with the persistence of restrictive work arrangements at many mines raise questions about management performance in the black coal industry.

A number of industry participants suggested that management's performance in black coal mining has been inadequate. For example, some contended that responsibility for both the existence and the persistence of restrictive work arrangements rests for the most part with management. Callide Coalfields commented:

... there is another side that we need to look at, and that's the effectiveness of management. I dare say that a lot of the restrictions that we're now faced with were probably the results of decisions that were taken more in the interests of expediency rather than the long term view, and we certainly have to address that if we are going to take the industry into the future and succeed. (trans., p. 223)

Thiess Contractors suggested more broadly that effective systems to track and minimise costs have not been established in black coal mining, adversely affecting mine performance. Thiess attributed this to poor management:

It needs also to be noted that most of the poor work practices in the ABCI [Australian black coal industry] were not mandated by the relevant industrial awards and partly arose out of poor management on site. It is inappropriate to lay the blame for such practices solely on unions and employees when they were simply pursuing what was available from management that was suffering from cash flow priorities, poor cost control, a siege mentality and a herd mindset within the ABCI. (sub. 15, p. 8)

The CFMEU has also laid the blame for poor mine performance with management:

That [mines operated by contractors] are producing results which may be the envy of others in the industry says more about the ideological problems and management competency of those others. Thiess and Henry Walker are getting on with the business of making money through managing effectively. And for them that means being pragmatic and working with unions. They are not engaged in an ideological war like the management of Rio Tinto, MIM and ARCO. (Maitland 1997, p. 4)

The Commission's view is that the performance of management in black coal mining reflects a set of market-based, legislative and institutional forces. In other words, the previous low level of competition in the market for black coal (discussed in Chapter 2), the industrial relations regime, and the prescriptive

industry-specific legislation together created a relatively perverse incentive structure for managers. This is discussed in Sections 6.2.2 to 6.2.4 below. In addition, some of the characteristics of mining created an environment which tended to favour the union in bargaining over work arrangements. This is discussed in Section 6.3.

6.2.2 Product market influence on management performance

Until about the mid-1980s, the coal industry was insulated from strong competition in both the domestic and international markets. This lack of strong competition impeded productivity improvement by allowing the focus of management to shift away from cost minimisation as well as by discouraging and insulating the workforce (including management) from change. Higher mine costs could simply be passed on to customers in the form of higher prices, as MIM noted:

Until approximately 1980, the coal industry as a whole operated as price setters rather than price takers, effectively operating both in domestic and export markets on a cost plus basis. Accordingly no real management skills were required. There was no driver to become efficient, and insufficient experience in the industry of using resources — capital or labour — properly. (Menzies 1998, p. 3)

Lack of strong competition in the market for black coal had three significant effects. First, it created inertia, because there was no need to change. Second, it reduced the cognisance of the consequences of not changing — that is, industry participants in the past did not experience the costs (including job loss) of failing to change in response to adverse changes in market circumstances. And third, there was no credible threat of job loss for management to use as leverage in the event that it did wish to introduce change.

More recently, however, product market incentives facing managers have changed. Shifts in the basis on which coal is sold, the emergence of low-cost suppliers of energy (including gas), and increasing substitutability between types and sources of coal have contributed to greater competition in the market for black coal. While demand for black coal is growing, supply is increasing more rapidly, placing downward pressure on prices. The market is now more dynamic. This has created a compelling need for higher productivity in black coal mining, with implications for management and workplace practices.

Changes in work arrangements in black coal mining have been occurring in response to these changes in the product market. The Taylor report attributed the 1988 workplace reforms to the increasing exposure of the black coal industry to the world market (Taylor 1994, p. 113). The DWR&SB also

contended that work reform in black coal had its origins in the increasingly competitive product market:

In the light of the developments mentioned earlier in the submission — international competition, price pressures and other economic factors — some firms now consider that they must regain lost ground with their employees in ways which, in other industries, are taken for granted. Coal companies are putting more effort into training their mine managers to manage effectively. Moreover, several firms are adopting strategies, based in part on the use of the Workplace Relations Act, to improve their competitive position. (sub. 40, p. 13)

However, while increased competition in the market for black coal has been driving change at many mines, the nature of that change has been constrained in some cases. In particular, it appears that while some mines have been able to achieve once-off improvements, continuous improvement has been more difficult to introduce, particularly at brownfield sites. For example, Camberwell Coal stated:

... we still find it very difficult to get ongoing progress and ongoing change and we are a long way ahead of most of the industry. (trans., p. 48)

Once-off changes vs continuous improvement

Several factors appear to have inhibited continuous change. Lack of management experience in seeking and instigating productivity improvements on a continuous basis has acted as one constraint. Institutional factors also have influenced the nature of change — the industrial relations framework existing prior to the introduction of the WR Act and the NSW and Queensland coal industry legislation creating an institutional framework that encouraged management inertia, significantly increasing the costs to managers of instigating change. (See Section 6.2.3 below.) ‘Economic’ factors also played a role in inhibiting change on a continuous basis. In particular, the capital-intensive nature of mining and the specific nature of some investments made by companies in individual mine-sites created a barrier to management-driven improvements in productivity by reinforcing union bargaining power. (See Section 6.3.1.)

Increasingly, employment arrangements in black coal mining are offering sufficient flexibility to allow for continuous improvement. This is in part due to improvements in management performance at some mines (for example, by bringing in new managers with a new approach) and demonstrated management commitment to change. Recent examples of very flexible arrangements include Shell’s Moranbah North (underground) enterprise award and MIM’s Oaky Creek (open cut) agreement.

Given the linkages between increasing competition in the market for black coal and the need for stronger productivity growth, a major role for governments is to ensure the existence of competitive product markets, both domestically and internationally.

6.2.3 Facilitating change: the role of regulation

While increased competition in the market for black coal has provided a significant incentive for managers to bring about productivity improvements through negotiating more flexible work arrangements, it is only recently that changes to the industrial relations framework in black coal mining have facilitated the task of raising productivity at black coal mines. In particular, legislative changes to the role of industrial tribunals and to the scope for industrial action appear to have been important. In other areas of government regulation of black coal mining, less progress has been made.

The industrial relations framework

Until relatively recently, industrial tribunals were involved extensively in matters relating to the management of mines at the workplace level. This is because of both the high incidence of disputes in the black coal industry and the relative ease of referral of disputes to a tribunal under the former IR Act. The unlimited scope for inclusion of matters in awards under the former IR Act also played a role in extending the range of matters in which tribunals were involved — particularly in black coal mining where significant numbers of work arrangements have been considered ‘custom and practice’.¹ The extensive involvement of industrial tribunals in black coal industry disputes tied up management resources and tended to favour the status quo rather than facilitating change. Further, specific characteristics of the Coal Industry Tribunal (CIT) also appear to have impeded workplace reform in the industry.

The abolition of the CIT and the introduction under the WR Act of both limitations on the extent of involvement of industrial tribunals in disputes at the workplace as well as restrictions on the matters that can be included in awards have supported reform. These recent changes to the industrial relations framework and the way in which the previous industrial relations framework tended to hinder change (including change on a continuous basis) are discussed under the four subheadings below.

¹ Longstanding work arrangements considered by tribunals to be ‘custom and practice’ become implied terms in employment agreements at common law and prior to award simplification were included automatically in black coal mining awards (by virtue of the general custom and practice provision as discussed in Chapter 4).

The Coal Industry Tribunal

The CIT governed the resolution of disputes in black coal mining until 1995. Employers argued that the existence of an industry-specific industrial tribunal — separate from the conciliation and arbitration framework applying to the majority of Australian industry — impeded productivity improvement in black coal mining by encouraging a perception that black coal mining was unique and sheltered from the adjustments experienced in other industries. It also tended to insulate black coal mining from workplace reform occurring elsewhere.

Further, specific features of the CIT — that is, its legislated objective to maintain the supply of coal and lack of appeal to a Full Bench — gave it a narrower focus than other industrial tribunals (which had broader legislated objectives) and reinforced its isolation. Bach Consulting suggested that achievement of the legislated objective to maintain the supply of coal was at the expense of profitability and minimisation of costs (trans., p. 119).

Employers generally applauded the abolition of the CIT.

Industry-wide application of arbitration decisions

Under the previous IR Act, tribunal decisions had wide application across work sites in an industry — implemented in industry awards of unlimited scope. In black coal mining, this promoted uniformity in work arrangements across the industry and diminished the ability of managers at each mine to seek a solution best suited to the site's individual circumstances. The WR Act, on the other hand, increases the focus on workplace-specific solutions by restricting the matters that can be included in awards and limiting the role of arbitration.

The approach of industrial tribunals

The approach of industrial tribunals in resolution of disputes tends to favour the status quo, placing the onus on those advocating change. Because of this approach, together with particular characteristics of the CIT, the extensive involvement of industrial tribunals in decisions relating to the management of individual black coal mines contributed to resistance to change in the industry.

Three aspects of the approach of tribunals in resolving industrial disputes tend to favour the status quo.

First, tribunals order that the status quo remain until a dispute is resolved.

Second, one factor often considered by tribunals is the likelihood that the parties to a dispute will accept any decision made (Creighton, Ford and Mitchell, 1993, p. 702) — entrenching the historical balance of power at the workplace and sometimes requiring extensive industrial strife (at high cost to

both parties) in order to demonstrate to the tribunal a change in the commitment of one party to reform. Thiess stated:

Although the industrial authorities may from time to time have resisted employer moves to clean up some of these issues, ... such resistance arose largely from the perceived power relationships within the industry, whereby the employers would generally not stand up to any determined resistance from the mining unions.
(sub. 15, p. 8)

Third, tribunals adopt a legal approach, basing decisions on precedent. This can entrench a focus on past circumstances rather than on a continuously changing environment.

Where tribunals are extensively involved in issues at the workplace, their tendency to favour the status quo can militate against the adoption of strategies for continuous improvement, requiring significant management resources in advocating change. In the black coal industry, the inadequate skills, resources or commitment to change of managers in the past resulted in the creation of precedents and insertion of provisions into agreements and awards that were not necessarily conducive to high productivity performance. In concert with the application of tribunal decisions industry-wide, managers were constrained in their ability to adapt work arrangements to suit the circumstances at their particular mine. Exxon illustrated how these factors created a self-reinforcing system that constituted a significant barrier to change:

Management resources are consumed in the day-to-day industrial relations demands of the worksite. Instituting even the simplest of initiatives requires extensive time and effort directed toward convincing/cajoling/negotiating/arbitrating with the workforce as to the benefits or reasons for the initiative. This demand on management resources takes away from their ability to focus time and attention to improving the business.

Middle management must share the responsibility for the lack of change. Because attempts at change bring on confrontation, the mindset of management has evolved over time to one of acceptance. The prevailing philosophy is that there is more to lose through jeopardising the relationship with the entire workforce, than through attempting to achieve 'wins' on individual issues geared to improve the business.
(sub. 3, p. 7)

Legislative changes under the WR Act have removed some of these constraints on managers seeking to introduce change. The WR Act:

- restricts the extent to which the AIRC can intervene to settle a dispute;
- limits the matters subject to arbitration and the application of an arbitrated outcome;
- allows parties to an agreement to nominate arbitrators other than the AIRC in any dispute settlement procedure; and

- restricts the matters that can be included in awards.

According to MIM:

Limitation generally of the arbitral role of the AIRC to 19 allowable matters has been extremely important to the whole industry shackled as it was in mechanisms to entrench custom, practice, and the status quo. It has enabled ... employers ... to avoid a lot of history and has forced employers to resolve their problems directly with workforces. (Menzies 1998, p. 10)

Industrial action

Another feature of the new industrial relations environment that appears to have facilitated management in driving reform in black coal is changes in the scope for industrial action. The Commission found some examples of employers who had used the following provisions in the WR Act (and the *Trade Practices Act* (Cth)) to assist in introducing change:

- limits on the ability of employers and employees to engage in industrial action not subject to court action to a period outside the operation of an agreement;
- the ability of the AIRC to grant injunctions against unprotected industrial action (including against proposed future action or sympathy action); and
- prohibition of sympathy actions and secondary boycotts.

These provisions effectively confine the costs that can be imposed on one party by another engaging in industrial action — thereby limiting bargaining power.

State coal industry legislation

Legislation specific to the black coal industry in NSW and Queensland has constrained the introduction of more innovative management and work arrangements in black coal mining. In these States, industry-specific Acts and regulations prescribe a rigid mine site management structure, specifying a range of compulsory and non-compulsory management and other statutory positions. These positions are outlined in Appendix J. Prerequisite qualifications, training and experience are specified for most positions, as well as the functions to be undertaken by the person filling each position.

There are four points to note about the legislation.

First, it is very prescriptive — especially in underground mines. This diminishes the flexibility available to mine management in responding to different situations, reducing the scope for differentiation between mines in approaches to management, human resources and industrial relations and lessening competition. The Queensland Mining Council stated:

... [The Act] prescribes a rigid management structure for the mines which is increasingly unsuited to modern operational arrangements. (sub. 24, p. 5)

Second, the primary function designated for many of the positions is to enforce compliance with the legislation. This focus on compliance is reinforced by prerequisite qualifications that require applicants to show knowledge of the legislation and an ability to apply it.

Third, applicants for certificates are obliged to show a high level of technical knowledge only — no study of management, industrial relations, or other human resource subjects (such as supervision, conflict resolution etc) is required. The DWR&SB commented:

Managers traditionally received very little management training and were often technical specialists rather than proponents of change. (sub. 40, p. 13)

Fourth, the legislation makes it difficult for people who have not worked in the coal industry to obtain employment in management positions by requiring:

- specific black coal industry experience as a prerequisite for obtaining a statutory management position; and
- in-depth knowledge of the coal industry legislation in order to obtain a certificate.

Creating barriers to entry for managers from other industries into black coal mining may result in significant costs in terms of lost productivity by restricting access to new and perhaps more productive approaches to management and human resources. This is especially so given that management per se could be considered a general skill — highly transferable between industries. Camberwell Coal commented:

The regulatory environment ... just helps to continue to preserve the status quo because you can't introduce mining supervisors from outside, introduce a bit of new blood. You can't even use modern management techniques based on a team based approach without a supervisor in the mining environment. (trans., p. 60)

MIM concurred:

... as a result of the requirement that to obtain the necessary statutory qualifications in coal, long periods of coal specific experience is required of all officials in management positions particularly in undergrounds, an effective closed shop in management ranks is preserved. These existing hurdles apply not only to mine managers, but to all professionals and officials, down to the level of even mine surveyors. This severely limits the extent to which new blood can be introduced, and the extent to which legislated management structures can be altered.

Less prescriptive rules in open cuts have assisted operators like Thiess who in our experience have not been able to duplicate their credible open cut performance in

underground operations. They simply cannot import industry outsiders into key positions in underground mines. (Menzies 1998, p. 3)

The NSW Minerals Council noted how the legislation constrains the introduction of new approaches to supervision in the industry:

The legislative requirement for the role of Deputies inhibits the development of a role within the range of supervisory skills evidenced in other industries. A review of this aspect of the legislation would be welcome during the review of Coal Industry Safety Legislation. (sub. DR60, p. 9)

From a broader perspective, through its impact on the composition of management skills and by engendering a focus by managers on compliance, the legislation appears to have contributed to a passive management style. This reinforced other incentives for managers to maintain the status quo such as the long period of weak competition in the product market and allowed union representatives to drive the industrial relations and human resources agenda. Rio Tinto stated:

... I think that one of the effects of having an industry which has ranked production ahead of productivity has been about the skills of managers. In particular, the skills of managers in relation to people have been more developed in terms of managing relations with unions and managing the interface between the site and the industrial relations system, and less focused on the improvement in the quality of managerial leadership and ... the development of what most of industry would regard as pretty conventional human resource practices. (trans., p.105)

Prescriptive black coal industry State legislation undermines good management practices by:

- **stifling innovation in management by fostering a compliance mentality, and prescribing a specific workforce and mine-site management structure;**
- **encouraging a focus on technical aspects of mine operation without a concurrent emphasis on management/human resources skills; and**
- **making it difficult for mine owners to bring in new ideas, skills and knowledge from outside the industry.**

Recommendation:

Governments should facilitate improvement in management by increasing the choices available to owners and managers in managing mines. They should not prescribe:

- the management hierarchy at the mine site;
- the bundle of skills held by mine managers (including management experience); and
- the functions of mine managers.

The Commission notes that the proposed new Queensland legislation for the coal industry (currently in draft form) — the *Coal Mining Safety and Health Bill 1998* (Qld) — appears less prescriptive functionally than the *Coal Mining Act 1925* (Qld), and allows more freedom for the mine manager (‘site senior executive’) to determine the supervisory and management structure appropriate to the individual mine.

6.2.4 Conclusion

The way in which these institutional and market-based factors combined to encourage inertia in the management of human resources and industrial relations in black coal mining has been described by Ken Foots, CEO of Ensham:

“Middle managers who tried to remove union blocks to productivity improvements were often left out to dry by owners who pulled the rug from under them in the name of keeping the coal flowing in the short term without regard to the long-term consequences” said Foots. “Consequently, middle managers often became gun shy and ineffective, handing over their management rights to [union] delegates in return for a quiet life.” (Muil 1998, p. 67)

In other words, the preferred approach for many managers and mine owners has been to accommodate the demands of employee (union) representatives in order to maintain production and limit disputes. This has allowed the mine workers’ union in large part to drive the human resources and industrial relations agenda, creating an alternative leadership structure in the process. While managers focused on technical problems and compliance with the legislation, the workforce looked to the union for leadership in human resources and industrial relations issues, contributing to employee commitment to the union rather than their company. Overall, this created a self-reinforcing system that impeded management-driven change.

6.3 Unions and workplace change

The CFMEU and the ACSA historically have played an important role as bargaining agents for both non-managerial and managerial employees. Accordingly, this section examines the role of unions in the context of changing work arrangements in the industry. The role of government in this context is also examined and discussed.

6.3.1 Bargaining power

Bargaining over work arrangements in black coal mining has been influenced by a number of features of the industry which contributed to an environment tending to favour employees and their representative unions in the balance of power at the workplace. The role of these industry features in creating the potential for employees to capture a substantial portion of the returns from investment in the industry — as long as competition in the supply of labour could be controlled — is outlined below. It is also noted that the way in which employees capture returns is important.

Maximising bargaining power

Generally speaking, unions are associated with positive and negative economic effects. Positive effects derive mainly from union ‘collective voice’. The collective voice enables employees to express their complaints through unions in an environment of protection and without fear of victimisation by the employer. The collective voice also potentially improves communication channels between employees and employers, thereby reducing transactions costs. These positive economic consequences include the enhancement of productivity and reductions in labour costs. Negative effects typically result from a union’s monopoly over the supply of labour. This monopoly results in higher than competitive wages, productivity-restricting arrangements (known as ‘featherbedding’ in the US) and arrangements which inhibit competition in the labour market. Thus, except where unions face monopsony power² on the other side of the labour market, the union ‘monopoly’ effect results in a reduction of productivity and output in the economy (Bosworth et al 1996).

These negative consequences are enunciated typically within the context of competitive product markets. But where firms operate in uncompetitive product markets, a rational strategy for unions (whose members are employed in such firms) is to form a monopoly over the supply of labour (via a closed shop and/or amalgamating with other unions). By maximising their bargaining power in this

² That is, a monopoly purchaser of labour.

way, the union(s) may elicit the greatest possible share of super-normal profits for their members. Hence, the greater the bargaining power, the greater the share of super-normal profit for their members.

Historically, the main sources of union bargaining power derived from the characteristics of black coal (that is, its relative importance in the supply of energy both industrially and domestically) and the lack of competition in the market for black coal. These two sources of bargaining power were complemented by the legislative and industrial relations arrangements (discussed in Section 6.2.3) which tended to encourage management inertia and hinder the introduction by managers of change. Increased competition in the market for black coal has dissipated these main sources of union bargaining power.

At least two other characteristics of the black coal mining industry reinforced the bargaining power of unions and employees.

First, employee (or union) bargaining power is enhanced in black coal mining because the industry uses capital relatively intensively. The cost to employers of strike action in capital-intensive industries is greater than in industries that are relatively labour-intensive. While strikes eliminate the need to pay wages, the fixed costs associated with capital equipment such as interest or lease payments continue. The ongoing (fixed) costs of mine maintenance in black coal mining — for example, monitoring gas and controlling water levels — also contribute to the relatively high cost of employee industrial action to employers. Unions, such as the CFMEU, that are successful in controlling the supply of labour are able to exploit the relatively high cost to employers of strikes in these circumstances.

Second, employee (or union) bargaining power is enhanced by the high level of fixed investments specific to individual mines. These types of investments — for example, mine construction and development — are not transferable to other mines and therefore do not have alternative uses. Once capital has been committed, the value of these investments is determined by the profitability of the mine. As employers cannot threaten to redeploy this capital, unions can inflate wages and erode the return to the company of these investments. This contrasts with industries with fewer specific investments where the threat that capital will be deployed elsewhere and workers made redundant acts as a check on the wage claims of unions. At brownfield sites in particular, the unions — by withholding labour — have been able to drive up the wage to a level which effectively transfers much of the return on this investment from the company to employees. At greenfield sites (which include expansions to new and separate mine sites within a large existing deposit) on the other hand, where companies have not yet invested, employers and unions are more evenly matched in terms

of bargaining power. As soon as the specific investment is made, however, the balance of power tips in favour of the union. The experience of MIM — where reforms to work arrangements were relatively easier at a new and separate underground site within the existing Newlands deposit — can be used to illustrate this effect:

With our Newlands Underground Mine we took the decision neither to employ people nor commit capital until we had satisfactory industrial conditions fixed. ... (Menzies 1998, p.12)

... While it was relatively straight forward to obtain agreement to these conditions at Newlands Underground, negotiation of similar arrangements at our brownfield operations was more difficult. (Menzies 1998, p.14)

The key to union success in this instance has been its control over the supply of labour (both by creating a closed shop and gaining a monopoly over employee representation). However, once alternative sources of labour become available (for example, through Thiess employing workers utilising non-traditional work arrangements) the incumbent employees lose their advantage.

The unions' ability to control the supply of labour has allowed employees to capture a relatively high share of the super-normal profits arising from the lack of competition in the market for black coal. The union monopoly has also allowed the unions to exploit features of the industry that tend to enhance employee bargaining power. This is particularly the case for brownfield sites. The unions' success in bargaining is reflected in a number of benefits for union members and areas of strong influence for the unions, as documented in this chapter and Chapters 4 and 5.

How returns are captured matters

The means by which a union(s) seeks to appropriate a share of super-normal profits matters. If the means is only through achieving higher than competitive wages, then monopoly labour supply arrangements enable a *transfer* of these profits (from owners to labour) — in other words, there is simply a redistribution of the 'economic pie'. If, however, the means by which the super-normal profit is shared is through the introduction of productivity-restricting work arrangements (which, in turn, reduce the utilisation of capital or raise the amount of labour required), output is reduced from what it would have been and there is a reduction in the size of the economic pie. Accordingly, in situations where profits are reduced substantially, the ease with which reductions in super-normal profit sharing arrangements occur also depends on the manner in which the super-normal profits have been shared — the hidden nature of productivity-restricting work arrangements as a super-normal profit sharing activity makes it more difficult to change such arrangements. Hence as a general principle,

because of these effects (on the size of Australia's economic pie and the difficulties in changing them in different economic circumstances) work arrangements which unnecessarily restrict productivity should not be included in awards.

6.3.2 Union-related impediments to change

This section discusses three impediments to change — the unions' approach to bargaining, provisions of the State coal industry legislation giving responsibility for employee workplace safety inspections to union nominees, and legislative restrictions preventing the development of a market for union services.

Bargaining approach

Under the coal industry's basically collective approach to employee relations matters, the conduct and approach of the parties (both management and unions) have generally been adversarial — as witnessed by the relatively high rate of industrial disputation (see Chapter 4) and perceptions of participants, including the NSW Minerals Council:

The view held by the CFMEU officials and strongly supported through their formal and informal communications is that all employers are callous and uncaring, and that anything the employer seeks is to be resisted and fought. This adversarial win-lose philosophy is deeply ingrained and provides explicit and implicit barriers to the development of constructive and supportive relationships at many mine sites. (sub. 25, p. 29)

As mentioned in Section 6.2, this relationship has probably been determined partly by poor management practice. Nonetheless, the adversarial approach and philosophy has been successful in achieving significant bargaining power and gains for union members, at least in coal market circumstances that were able to accommodate them. Despite current competitive pressures, this approach is now taking the form generally of an apparent 'resistance to change' in bargaining (Exxon, sub. 3). General President, Mining and Energy Division, CFMEU, Mr John Maitland (1997), has argued that since labour costs represent only about 30 per cent of the fob price of coal, the focus on increasing productivity or reducing the cost of labour was unwarranted. However, the size of this figure has very little to do with the rationale for improving productivity and reducing labour costs. In an increasingly competitive black coal market, the point is whether there is efficient and productive use of all resources (labour and capital) not the size of the labour (or capital) costs as a proportion of total costs.

Enterprise bargaining in the black coal industry is characterised by a 'give up' approach by the unions, resulting in unnecessary increases in costs. Some

participants suggested that this has been facilitated by the relatively centralised nature of union bargaining in the industry. For example, Exxon stated:

Even at the enterprise level, the CFMEU effectively engages in a system of centralised pattern bargaining. Union district officials coordinate the bargaining process at each site, utilising a 'blueprint' model enterprise agreement as the basis for negotiations. Individual changes which may be beneficial at a given site are resisted if they are deemed to have potential detrimental effects at other Union sites. 'Sacred cows' are unilaterally protected across CFMEU represented sites. (sub. 3, p. 8)

Other submissions pointed to the decentralised nature of bargaining. Powercoal in the public hearings drew on a quote from the CFMEU General President pointing to the power of the mine site lodges and districts:

... Mr Maitland has developed a keen understanding of the power of the lodges, (that's the local mine site union lodge), and the districts, (that's the areas):

"They have enormous power, in essence, we are still a Federation, it's how we operate. They, the districts, have their own autonomy, their own history, their own traditions. You could say the union is still a bit tribal. I ... often refer to our union as a group of Scottish clans that fight each other all the time and only unite when they are told the English are coming."

And I think that says a lot, and for my 32 years in the industry, I think Mr Maitland has certainly said it as it really is. (trans., p. 28)

The power of the mine site lodges within the CFMEU structure would appear to be consistent with the enterprise bargaining approach of the WR Act. As indicated in Section 6.4.1 below, the credible threat of contractors at MIM's Newlands mine recently saw the employees at that mine agree to significant changes from the union's 'blueprint' enterprise agreement (see Section 6.3.1). Similar changes also occurred at the then greenfield site of Ensham in 1995 as well as among many of the (greenfield) sites operated by contractors.

An adversarial bargaining approach, particularly at brownfield sites, may impede the speed of change. The 'give up' approach also requires an improved management capability in convincing its workforce of the need for change. The advantages of a co-operative industrial relations climate are discussed further in Section 6.4.1 below.

State coal industry legislation

The NSW and Queensland coal industry legislation gives employee responsibility for workplace safety inspections to union nominees. It does so by

allocating control of elections for workplace safety inspectors³ to the relevant union. Rio Tinto stated:

Part of the prescriptive regime in both states involves the appointment of union elected “Check Inspectors” and “District Check Inspectors” who have statutory powers under the various legislation. The employees in those roles face a tremendous conflict of interest between their union allegiance and appropriate safety performance.

A recent example of this conflict occurred in August 1996 at the Blair Athol Mine in central Queensland when the CFMEU disrupted the commencement of manufacturer-provided equipment training by use of the Check Inspector’s statutory powers. Training was stopped by the Check Inspector making an entry concerning the safety of the training process in the mine’s Record Book. The Department of Minerals Inspectorate has confirmed that this was an improper use of these powers. (sub. 22, p. 42)

Employee representatives play a valid role in maintaining workplace safety — in particular, through site inspections. However, allocating this role specifically to union nominees creates a nexus between safety at the enterprise level and other industrial relations issues at the industry level. It also fosters a perception that the union (together with the employer) — rather than each individual worker — is responsible for maintaining vigilance over safety. While the Queensland Government suggested that the union had played a very important role in the coal mining industry from a health and safety perspective (sub. 32, p. 37), the Commission sees advantage in an approach which removes provisions in the legislation that allocate safety inspections specifically to union nominees. This would also be consistent with the WR Act which promotes freedom of association.

Recommendation:

The role of employees in carrying out safety inspections should not be restricted by regulation to union nominees.

A restricted market for union services

Further to the discussion in Section 6.2, the WR Act appears to have facilitated management-driven change by moving the Federal industrial relations system in a *direction* which:

³ District Check Inspectors, Check Inspectors, District Workers Representatives and District Union Inspectors.

- makes agreements at the workplace the centrepiece for the determination of wages and conditions;
- turns the role of awards into a basis for agreement-making by providing a minimum ‘safety net’; and
- limits the intervention of third parties while ensuring that agreements have been negotiated in an environment free from coercion and collusion (on the part of both managers and unions or other bargaining agents).

This approach to labour market regulation (and its accompanying institutions) is broadly consistent with the increasingly competitive nature of Australia’s product markets. However, the degree to which the WR Act facilitates the last of the three elements described above may be questioned.

In particular, although the WR Act limits the scope for unions to continue with explicit monopoly arrangements (closed shops, union preference clauses etc), the ‘more conveniently belong to’ rule (s.189) in combination with the provisions relating to the representational rights of existing unions (s.118A) still ensures the maintenance of existing monopoly of union representation in union CAs (see Box 6.1). Hence, given the historically high rate of unionisation in this industry, it is likely that the CFMEU and the ACSA will be able to continue to act as (monopoly) agents for non-managerial and managerial employees.

Abolition of the ‘more conveniently belong to’ rule together with changes to provisions relating to the representational rights of existing unions, might assist in the establishment of a more contestable or competitive market for union services. This type of development in the labour market would parallel developments in product markets. More importantly, it would enable the pattern and size of unions or bargaining agents to be determined largely by the pattern of demand of the purchasers of union services. There are, however, a number of arguments for and against the establishment of such a market.

One of the arguments against such changes is that employers might be faced with a multitude of unions with which to bargain on an enterprise basis. This, in turn, could increase the transactions costs associated with workplace bargaining. The consumers of union/bargaining agent services (that is, employees) also might face additional costs (through possible delays in reaching an enterprise agreement and the loss of benefits associated with a collective voice) where there are multiple bargaining agents within the workplace.

Box 6.1: The role of unions in Federal agreement-making*Union CAs*

Under the WR Act provisions, when negotiating union CAs, the only type of bargaining agent that can represent employees is a registered union (provided it obtains the genuine consent of employees in reaching such an agreement).

While modifications to the ‘conveniently belong’ rule were made under the WR Act and the ability to register enterprise-based unions introduced, the new ‘more conveniently belong to’ provision (s.189) appears unlikely to increase the level of competition between unions over the representation of employees (Corrs, Chambers and Westgarth 1997b, p. 20). In particular, the ‘more conveniently belong to’ provision means that an application to register a new union will not be granted if, in the AIRC’s judgement, the applicant’s members could more conveniently belong to and would be effectively represented by another union(s). (However, the criteria for registration of enterprise unions do not include such factors.)

Moreover, s.118A provisions can help entrench the representational rights of existing unions. Under this section, in considering whether to make an order, the AIRC must give primacy to the views of employees involved, and consider the effect of any order it may make on the operations of the business and any prior understandings about representation rights or previous demarcation orders involving the organisation to which an order would relate.

Hence, with the exception of new enterprise unions, the CFMEU and the ACSA are likely to continue representing most black coal mine employees, at least in the short term.

Non-union CAs and AWAs

In contrast, provisions relating to the making of non-union CAs provide for greater competition between bargaining agents in representing the interests of employees — in this environment unions (or any other agent) may play a role in representing employees, if so appointed by employees. However, these unions or agents do not become a direct party to any agreement that is reached. A similar story applies to AWAs.

Sources: WR Act 1996, Corrs, Chambers and Westgarth 1997b, Department of Workplace Relations and Small Business.

On the other hand, others would argue that it is the employees’ interests — not the employers’ — that are paramount in developing the market for union services. In these circumstances, there is likely to be a range of different patterns and structures of unions and bargaining agents depending on the different circumstances facing employees, both individually and collectively. It would be still possible that the most efficient outcome could be the emergence

of a monopoly supply of union services in some industries. However, where such a monopoly arrangement became slack and did not act in the interests of its members, the contestability features of the market should ensure that either the threat of (or actual takeover by) other unions or bargaining agents should act as an appropriate point of leverage on its behaviour. Moreover, government intervention in this market (like any other market) should be based on establishing a case of market failure — say, through cases where inadvertent and costly negative consequences arise in the operation of the market which can be corrected efficiently by intervention. If a contestable market for union services were to be developed, consideration therefore would need to be given to the approach taken in ss.189 and 118A of the WR Act and the coverage of the *Trade Practices Act* (for example, in relation to collusive behaviour, mergers etc, in the market for union services). Consideration of the issue would benefit from investigating the legislative arrangements governing unions and/or bargaining arrangements in other developed economies. The NSW Minerals Council (sub. DR60) concurs with this call for further research, suggesting that a broadening of the ‘more conveniently belong to’ provisions may have different effects on existing and new mine sites.

Although the Workplace Relations Act has diluted the ability of unions to continue explicit monopoly arrangements (such as closed shops, union preference clauses and the like), the ‘more conveniently belong to’ provision and existing representational right provisions appear to inhibit contestability in the market for union services in union certified agreements. Although the issue is broader than the scope of this particular inquiry, the Commission suggests that further consideration of aspects associated with the development of a contestable market for union services (including the mechanisms whereby such a market would be achieved) would be worthwhile.

6.4 Employees and workplace change

This section examines the role of employees in the context of change in the industry. This is important because ultimately it is the employees themselves (both non-managerial and managerial) who must recognise the need to change and participate in undertaking the necessary changes — though, depending on the circumstances facing each mine, the bundles of changes may differ between mine sites. An important element of the enterprise bargaining framework is the genuine agreement of employees to change. The role of government within the context of employees and workplace change is also discussed.

6.4.1 Employee-related impediments to change

This section discusses three potential impediments to change. They are the employees' attitude to change, their commitment to the enterprise and their perceptions of the benefits and costs of change.

Attitudes to change

The dominant traditions of collectivism and the relative strength of union commitment form a major contextual backdrop to employees' attitudes to change in the black coal industry. Previous management behaviour (such as talking directly to the relevant unions but not to their employees) is likely to have reinforced this collective tradition among employees. However, it would appear that this 'traditional' management approach is changing, providing a counterpoint to the union in employee relations approaches. As a consequence, some employees have agreed to move away from some industry-based customs and practices.

A potential impediment to increased flexibility is the view apparently held by employees that change is not a continuous process. Camberwell Coal stated in the public hearings:

... the difficulty is getting people to accept the ongoing need for change and certainly in a way that allows us to reduce our cost structure. (trans., p. 48)

This lack of appreciation of the need for continuous change, especially at brownfield sites, may be explained by the emphasis previously placed on the maintenance of supply and the concomitant lack of emphasis on productivity performance as a key to long-term job security and the survival of the enterprise:

Change is resisted as workers in the Australian coal industry do not connect their livelihood with that of the financial performance of the company. Workers feel they have a career within the industry and are protected within the Union umbrella; consequently they see no need to change to improve the profitability of the enterprise. (Exxon, sub. 3, p. 7)

As such, the current expectations of employees have been shaped by past behaviour — in particular, previous attempts by management to introduce change usually were forsaken at the outbreak of industrial unrest.

Yet there is evidence of a breakdown in the 'resistance to change' attitude among employees at some mines. For example, at MIM's planned underground development at Newlands, employees apparently considered union concerns over giving up industry-based custom and practice but chose instead to give preference to keeping their jobs. In particular, these employees agreed to accept fundamental changes to working arrangements, such as the abolition of site-

based customs and practices and the end of the LOFO principle in redundancy. Similar changes were accepted by employees at the then greenfield site of Ensham in 1995 and at Centennial Coal's mines. The major factor underlying such attitudinal change appears to have been the changing product market circumstances facing mines and the concomitant threat to either the viability of the mine or the jobs held by incumbents if workplace change did not occur (the credible threat referred to in Section 6.2.2).

Enterprise commitment

As already discussed, historically the workforce has displayed high levels of union commitment but low levels of commitment to mining companies. This view was characterised by Powercoal at the public hearings:

This culture that we are an industry and therefore as an employee, we ... don't believe the employer is relevant. We believe the industry is relevant, because by the nature of the process of union membership, seniority, long service leave, and Joint Coal Board workers' compensation insurance, the employees see themselves employed by the industry. If one mine fails, so what? There'll be another one opened, and therefore, there's no allegiance to the business enterprise. (trans., p. 28)

Enterprise commitment, however, is considered to be integral to any management change strategy (Iverson 1996). It could be argued, therefore, that the low levels of such commitment by employees may be inimical to achieving change in the industry.

Nonetheless, it is likely that the increasingly competitive nature of the coal market, together with the removal of the use of the retrenched members list as an allowable award matter (CN 40113 of 1998), will assist in developing increased commitment by employees to the enterprise and its goals (which include a focus on productivity performance as a major key to survival and job security). In particular, with the abolition of retrenched members lists, individuals with poor work records will not be guaranteed employment in the industry, introducing a positive incentive to employees to increase their commitment to their current organisation.

This may not necessarily imply a switching of commitment from the union to the enterprise, since 'dual' commitments to the goals and values of both the union and their employer are not necessarily mutually exclusive. United States research has found that a co-operative industrial relations climate is conducive to the existence of higher levels of commitment to an employees' union and their employer (Gordon and Ladd 1990). Similarly, Australian research suggests that a favourable industrial relations climate may reduce conflict and hence may

mean that employees are spared the choice between commitment to the union or their employer (Iverson and Maguire 1997).

Increased coal market competition and the associated breakdown of industry-wide arrangements (such as the retrenched members list) are likely to bring about an increased identification with the goals of the enterprise among employees and an understanding of change within the context of continuous improvement strategies

Benefits and costs of changes to work arrangements

Each employee's decision (individually as well as collectively) about whether or not to agree to accept changes to existing work arrangements will involve a weighing up of the benefits and the costs of reforming work arrangements or resisting change.

Part of this 'weighing up' will include a consideration of the likelihood of retrenchments in the industry — in particular, whether miners are likely to face unemployment in either scenario. The general view of participants in this inquiry (and, it seems, of the CFMEU) is that retrenchments are likely in both scenarios. That is, some job losses are likely whether miners agree to change work arrangements or not. However, where miners resist change, the extent of job loss is likely to be greater. In the absence of a marked improvement in the demand for coal relative to supply — which seems unlikely — an acceleration in productivity growth is the key to more investment in the industry and more satisfactory employment prospects.

The introduction of reforms in work arrangements that allow increased flexibility in the workplace will improve the ability of companies and their mines to adapt to change, facilitating adjustments necessary in future.

The economic modelling undertaken for the Commission by the Centre of Policy Studies at Monash University indicates that an acceleration in black coal mining productivity could result in there being around 2500 more jobs in the industry by 2009–10 than would be the case if the recent (slow) trend in productivity growth continued. The modelling also points to some inter-State differences in the expected pattern of job loss in black coal mining. In particular, if productivity growth continues at its current trend level, the modelling suggests that job loss would be greater in NSW than in Queensland. However, if productivity growth strengthens, the relative extent of job loss in NSW would fall. This is based on the view that there is more room for improvement in productivity growth through work arrangement reform in NSW than in Queensland. Table 6.1 sets out information on the significance of black

coal mining within selected regions and the unemployment rates in these regions.

Table 6.1: Coal mining employment and unemployment rates for selected labour force regions, NSW and Queensland, November 1997

| <i>Statistical region</i> | <i>Employed in coal mining</i> | <i>Coal mining employment as a per cent of total employment in the region</i> | <i>Unemployment rate</i> |
|--|--|---|------------------------------|
| | <i>'000</i> | <i>%</i> | <i>%</i> |
| <i>NSW</i> | | | |
| Hunter | 6.9 ^a | 2.9 | 10.2 |
| Newcastle | 5.7 | 2.9 | 10.4 |
| Illawarra | 3.2 ^a | 2.0 ^a | 9.5 |
| Wollongong | 2.8 | 2.5 | 8.0 |
| Northern, Far West-North Western and Central West | 0.4 ^a | 0.2 | 5.9 |
| <i>Queensland</i> | | | |
| North and West BSD Balance | 0.7 ^a | 0.4 ^a | 10.5 |
| North and West Moreton (Ipswich) | 0.3 ^a | 0.3 ^a | 11.2 |
| Northern-North West | 1.4 ^a | 1.3 ^a | 10.0 |
| Mackay-Fitzroy-Central West | 10.3 | 6.0 | 8.0 |

a Relative standard error greater than 25 per cent.

Source: ABS (Cat. No. 6101.0 and unpublished data).

In the Commission's judgment, there is likely to be some job loss in aggregate in the black coal industry over the next decade. The size of the job loss would be reduced by changing productivity-restricting work arrangements documented in Chapter 5. The extent to which unnecessary job loss and associated adjustment costs are avoided appears to be largely in the hands of employees themselves.

6.5 Adjusting to change

Around the world, coal mining is characterised by the demise of some mines and the emergence of others over time. The rate of mine closures and

expansions can reflect — and has reflected — a range of different factors. Some of these factors have been outlined in this report:

- technological change in steel production — for example, the development of pulverised coal injection resulting in changes in demand for different types or qualities of coal;
- changes in the structure of markets — for example, deregulation of the Australian and Japanese electricity markets and an increase in the number of suppliers due to investments in countries such as Indonesia and Columbia;
- changes in the price of substitutes for coal;
- the quality of management;
- the geology and the age of mines — for example, as seams deepen, open cut mines may become underground mines, requiring different mining techniques and skills;
- changes in general economic conditions; or
- changes in consumer tastes resulting in greater concern for the environment.

Moreover, investors will take an increasingly global view of opportunities to expand or establish coal mines because of the progressive liberalisation of investment and other regulations in various countries. Hence, the market for black coal is likely to become more competitive rather than less.

These factors and market trends reflect the ongoing nature of change, and the continuous need for adjustment to shifts in a variety of economic and social forces. Reform in this environment is not a once-off event, but will need to enable constant accommodation to change. While some of these changes can create jobs, other changes can lead to difficulties and costs. In particular, some people will lose their jobs.

The major issues faced by miners and their communities in adapting to the changes brought about by the economic and social forces outlined above are discussed in Section 6.5.1. Some of the assistance available to help people adjust to change is outlined in Section 6.5.2.

6.5.1 What does adjustment involve?

The costs and difficulties associated with adjustment depend on the ease with which individuals can relocate to alternative employment, either within the same region or other regions (including metropolitan and non-metropolitan areas). The ability to relocate is influenced by:

- the availability of suitable alternative employment;
- the transferability of skills where individuals seek employment in alternative occupations and the ability to undertake re-training, where necessary (the latter being partly dependent on demographic features, such as age);
- the costs of moving — substantial costs are involved, particularly for families;
- government impediments to mobility — some government taxes (for example, stamp duty on the purchase of residential property), charges and regulations discourage labour mobility; and
- emotional attachment to a particular location — people dislike moving away from friends, family and the familiar environment (schools, etc).

Particular difficulties that may be faced by coal miners in finding alternative employment could arise because:

- coal miners often work in non-metropolitan areas where job opportunities are fewer and the costs of relocating can be relatively high (compared with workers in metropolitan areas);
- on average, coal miners are older than those working in other industries. Research suggests that mature age workers face a greater chance of longer periods of unemployment, in part because retraining is a less attractive option to older workers with a relatively short period in which to reap the returns from training; and
- in some cases, coal miners' skills may not be easily transferable to other industries. Table 6.2 outlines the major occupations in mining, showing that most miners work as tradespersons or production and transport workers. Metalliferous mining and quarrying may be an obvious source of alternative employment for some coal miners. Others with trades or engineering qualifications that are highly transferable between industries may find it relatively easy to find alternative work or establish their own businesses.

In addition, when mines close, falling property prices in shrinking regions can result in significant losses for those who are forced to relocate. The Emerald Shire Council suggested that, in some cases, governments may have exacerbated this problem by restricting private non-mining investment and development in various communities through the types of land-leases made available (sub. DR62, p. 1). However, the Queensland Department of Natural Resources noted the costs to State governments and local authorities that can be associated with converting leases to freehold — particularly in smaller communities likely

to shrink in the event of mine closure.⁴ Fly-in, fly-out (or drive-in, drive-out) arrangements in some mines can significantly reduce these problems for governments and individuals.

Table 6.2: Employment by occupation, mining and all industries, August 1997

| <i>Occupation</i> | <i>Mining</i> | | <i>All industries</i> | |
|--|-------------------------------|----------------------------|-------------------------------|----------------------------|
| | <i>Number employed ('000)</i> | <i>% of total employed</i> | <i>Number employed ('000)</i> | <i>% of total employed</i> |
| Managers and administrators | 3.3 | 4.0 | 628.7 | 7.6 |
| Professionals | 11.3 | 13.9 | 1465.2 | 17.6 |
| Associate professionals | 7.1 | 8.7 | 889.0 | 10.7 |
| Tradespersons and related workers ^a | 15.7 | 19.3 | 1126.5 | 13.6 |
| Advanced clerical and service workers | 0.9 | 1.1 | 383.0 | 4.6 |
| Intermediate clerical sales and service workers | 4.5 | 5.5 | 1364.5 | 16.4 |
| Intermediate production and transport workers ^b | 34.4 | 42.2 | 763.9 | 9.2 |
| Elementary clerical sales and services | 0.7 | 0.9 | 832.8 | 10.0 |
| Labourers and related workers | 3.6 | 4.4 | 861.8 | 10.4 |
| Total | 81.5 | 100.0 | 8315.5 | 100.0 |

a Includes mechanical and fabrication engineering tradespersons, automotive tradespersons, electrical and electronic tradespersons, construction tradespersons, food tradespersons, skilled agricultural and horticultural tradespersons, other tradespersons and related workers.

b Includes intermediate plant operators (for example, bulldozer, loader, grader operator), intermediate machine operators, road and rail transport drivers, other intermediate production and transport workers.

Source: ABS (Cat. No. 6203.0).

The Association of Mine Related Councils Inc outlined the difficulties that can be faced by remote communities when mines close:

The conclusion of mining typically results in a substantial number of people having no prospect of local employment and a significant number of local

⁴ Two major costs of conversion to freehold include: first, increased transaction costs for governments and local authorities that are forced to deal with large numbers of individual freehold owners rather than one leaseholder (such as a mining company); and second, where freehold leases are not able to be sold and are left vacant, owners may fail to pay rates and local authorities must wait a number of years before foreclosing and using the land for other purposes.

businesses having little prospects of alternate customers. The usual outcome is a rapid exodus from the area, reducing the rating base a council has from which it can raise revenue to pay for the community facilities and services.

The council is then faced with the problem of keeping up the infrastructure and services the remaining community continues to demand with fewer funds. Costs cannot always be scaled down to the new circumstances because the infrastructure cannot be appropriately reduced. A proverbial example is that of a community swimming pool. It is not possible to fill in a few lanes of the pool to reduce the running costs. ...

The Council with a reduced rating base could then be in the position of having to reduce the services provided to the remaining community (and would probably need to lay off some staff, exacerbating the unemployment situation); and/or may have to let infrastructure run down; or increase individual rates to maintain revenue and the level of infrastructure and services, increasing the burden on the remaining community. (sub. DR57, p. 2)

The Association included further examples of specific difficulties that can arise when coal mines close:

If major retailers leave, shopping patterns could change, with people shopping at larger neighbouring centres. This would further shrink the local economy.

An excess of accommodation can depress the local real estate market. Those who choose to leave and sell their properties will not be able to purchase the same level of housing in the cities or larger regional centres.

Those unemployed who choose to stay may now need to rely on the social security system and local community assistance programs. (sub. DR57, p. 2)

Given these community adjustment problems, both the Association of Mine Related Councils Inc. and the Emerald Shire Council requested State and Federal Government assistance for redeveloping their communities.

It is worth noting in this context that, in most regions, total mining employment and total employment increased between 1986 and 1996. In those regions where total mining employment declined, the fall was outweighed by rises in employment in other industries (see Table 6.3.) It is also worth reiterating that the extent of job losses in black coal mining is likely to be smaller if productivity-enhancing changes in work arrangements are put in place. Nonetheless, there will no doubt be particular areas in which job losses will require adjustment assistance for the people concerned.

Table 6.3: **Employment in coal mining regions, 1986 to 1996**

| <i>Region</i> | <i>Employment</i> | <i>1986</i> | <i>1991</i> | <i>1996</i> |
|-------------------|-------------------|-------------|-------------|-------------|
| <i>NSW</i> | | | | |
| Hunter | Total | 181,768 | 200,483 | 210,244 |
| | Mining | 11,856 | 10,012 | 9,242 |
| Illawarra | Total | 114,998 | 127,626 | 135,966 |
| | Mining | 4,193 | 3,465 | 2,739 |
| Northern | Total | 69,371 | 71,914 | 69,454 |
| | Mining | 720 | 626 | 465 |
| North Western | Total | 42,520 | 45,015 | 45,719 |
| | Mining | 1,219 | 1,151 | 1,623 |
| Central West | Total | 63,921 | 65,702 | 69,018 |
| | Mining | 1,751 | 1,453 | 2,095 |
| <i>Queensland</i> | | | | |
| Mackay | Total | 42,351 | 47,591 | 55,418 |
| | Mining | 4,462 | 4,495 | 4,919 |
| Northern | Total | 69,760 | 77,735 | 83,969 |
| | Mining | 1,097 | 1,772 | 1,674 |
| Fitzroy | Total | 64,649 | 69,815 | 75,703 |
| | Mining | 4,515 | 4,292 | 4,810 |
| Moreton | Total | 133,765 | 191,729 | 246,316 |
| | Mining | 639 | 691 | 961 |

Source: ABS Integrated Regional Data Base, census data.

6.5.2 Adjustment assistance

Government assistance

In light of the economy-wide nature of change and the associated adjustment difficulties experienced by individuals, Commonwealth Government policy more recently has tended towards the provision of general assistance to those adversely affected. This is in contrast to assistance packages offered previously which were aimed at specific industries such as the Labour Adjustment Packages (LAP) for textiles, clothing and footwear, passenger motor vehicles, forestry and, at one time, coal. The LAP scheme has been replaced by more general assistance such as the Regional Assistance Program targeted to regions

with relatively high unemployment.⁵ In equity terms, this means that all those experiencing difficulties related to adjustment are more likely to be treated in a similar manner. Specific adjustment assistance advantages its recipients compared with others who are experiencing adjustment pressures elsewhere in the economy.

Generally available welfare assistance (such as the Commonwealth Newstart Allowance), and provision of information by the Commonwealth Government about job vacancies, careers and assistance with job search (now provided through the employment services market established in May 1998 incorporating the Flexible Labour Exchange [FLEX] system) improve labour mobility. Developments in education and training policy at the Commonwealth and State level are also likely to facilitate adjustment by improving labour mobility. The introduction of competence-based training in a framework involving recognition of skills nationally, in particular, is likely to improve the ability of coal miners (for example) to transfer to employment elsewhere. (Competence-based training is discussed in Chapter 5.)

Assistance provided by companies

Some companies provide outplacement services, in addition to retrenchment payouts which employees are entitled to receive under agreements and/or awards (see Box 6.2).

The Commission considers that the difficulties and costs associated with change faced by workers in black coal mining are being driven by factors also causing change elsewhere in the economy. Thus, while these difficulties and costs can be significant for some individuals, they are not confined to black coal miners. General assistance available economy-wide — rather than industry-specific assistance — is therefore preferable in equity terms, as all those experiencing difficulties relating to adjustment are more likely to be treated in a similar manner.

⁵ The Regional Assistance Program (RAP) administered by the Department of Employment, Education, Training and Youth Affairs (DEETYA) provides general assistance to regions to promote employment opportunities by encouraging industries to locate in certain areas. Funding is allocated on the basis of State unemployment per head of population and then allocated to regions with particularly high unemployment. The assistance provided is of a general nature and might include surveys identifying barriers to employment, feasibility studies for the establishment of industries or businesses, or facilitation of networking between businesses. The particular assistance is adapted to best suit the region concerned by area consultative committees set up by DEETYA.

Box 6.2: Restructuring at Drayton Coal

Restructuring at Drayton Coal resulted in a decision to reduce the size of the workforce at the mine. To assist employees in coping with retrenchment, the company initiated outplacement services which operated from 10 December 1997 to 6 April 1998. Employees were able to have access to services (including during work time) that consisted of:

- personal counselling on a 24 hour basis;
- career counselling; and
- financial counselling.

Training and information sessions were also provided on topics such as:

- coping with change;
- job search;
- resumé writing;
- interview and interpersonal skills;
- financial advice; and
- starting up your own business.

Drayton Coal has indicated that it is continuing to support exiting staff leaving after 6 April 1998.

Sources: Drayton Coal Pty Ltd and NSW Minerals Council, DR60, Appendix A.

7 COAL RAIL TRANSPORT

Available evidence suggests that after adjusting for differences in the operational environment, the productivity of coal rail freight services in Australia is somewhat lower (by around 20 per cent) than that of better operations overseas. The prospect of competition in freight-carrying services has led to some improvements in performance. The introduction of third party access to rail infrastructure, if pursued vigorously by the NSW and Queensland Governments and if supported by fair and transparent access regimes, offers significant opportunities to remove much of the remaining performance gap. By introducing competition into rail freight services, access arrangements are likely to stimulate improved productivity and efficiency in pricing.

The approach to and progress of the proposed access arrangements in NSW and Queensland have differed. Although both States have now indicated that they will waive the Trade Practices Act exemption on coal-carrying services, there have been significant delays in the introduction of effective competition. This has raised concerns about the commitment of governments to seeking the full benefits offered by competition in rail freight.

Issues in the pricing of rail access, such as asset valuation, rates of return on assets and price discrimination are important. The adoption of transparent and economically sound pricing systems developed by existing independent State pricing tribunals (IPART and QCA) is recommended, together with a right of appeal to these tribunals regarding particular access pricing decisions on a case-by-case basis. In addition, the structure of State rail enterprises should give a clear signal of arm's length relationships between State-owned infrastructure operators and State-owned freight providers.

7.1 Introduction

Black coal is carried by rail in NSW, Queensland, South Australia, Western Australia and Tasmania. This chapter concentrates on the coal rail freight task in NSW and Queensland which account for the vast majority of black coal carried.

Approximately 75 per cent (around 140 million tonnes (Mt)) of black coal is transported by rail. The rest is transported by road and barge — less than 4 per cent in Queensland but around 40 per cent in NSW (although only 20 per cent of export coal is not transported by rail). Over the last twenty years, the rail system (infrastructure and rolling stock) has had to expand significantly to transport the large increases in mostly export coal.

At present, State rail authorities provide all coal rail freight services in NSW and Queensland, with the exception of a small line to BHP's steel works at Port Kembla. However, the organisational structures of the two rail authorities have moved in quite different directions in recent years. NSW has established separate businesses for different services and functions while Queensland has retained an integrated organisation providing all rail services. All have independent boards which are accountable to shareholding Ministers for their performance.

NSW operates a standard gauge rail system which has two corridors connecting 29 inland rail terminals with three coal export terminals at two ports (see Appendix C). In 1996–97, 58.7 Mt of black coal was carried, of which 57.4 Mt was exported. This represents a 44 per cent increase in coal freight since 1990–91.

Queensland Rail (QR) operates a narrow gauge rail system which connects more than 30 coal mines with six coal export terminals at four ports (see Appendix C). The coal rail network involves five rail corridors outlined in Table C.11. In 1996–97, QR hauled 91 Mt of black coal, 33 per cent more than in 1990–91.

Rail freight is a significant cost for exported black coal, averaging around 15 per cent of the free on board (fob) cost of production (excluding royalties) in 1997 (Barlow Jonker 1997). However, for some mines freight is up to twice this share due to implicit royalties included in rail charges. An efficiently operated and priced rail system is therefore important to the competitiveness of the Australian black coal industry. The Commonwealth Department of Primary Industries and Energy observed:

Improvements in work practices in the Australian coal industry on their own will not ensure competitiveness — the most efficient mine possible will be disadvantaged if the quality of its transport infrastructure to the port and at the port is poor. (sub. 43, p. 7)

Coal and railways in Australia have a particularly strong mutual dependence. Coal is the single largest commodity transported by rail and the export coal industry is heavily reliant on rail to provide transport to ports. Around 81 per cent of freight by weight carried by FreightCorp and 86 per cent of

freight by weight carried by QR was coal in 1996–97. In NSW, coal contributes 49 per cent of freight revenue while in Queensland it makes up 70 per cent of freight revenue. This compares with around 37 per cent of freight by weight and 33 per cent of freight revenue for CSX Transportation (a major US rail company) in 1996.

Australia has an advantage in the international supply of black coal because mines are much closer to ports than is the case for many of its overseas competitors. Average coal hauls in NSW are 135 km and in Queensland 250 km, compared with about 1000 km for Class 1 US railways and 600 km for South African railways (Spoornet) (BIE 1995a). However, historically some of this advantage has been eroded by very high cents per net tonne kilometre (cntk) freight rates. While relatively short rail hauls have an influence on these high freight rates, the two key contributing factors have been:

- State governments using rail charges as a means of taxing the coal industry; and
- productivity performance of State rail authorities being somewhat below best practice levels.

Australian railways have undergone gradual reform of their organisational structures, financial arrangements and competitive environment. Essentially, these reforms have involved changing the structure and objectives of public monopolies to encourage better performance, winding back monopoly pricing in certain freight services and commencing the process of providing for third party access to rail infrastructure. They are gradually reducing freight rates towards more competitive levels and leading to improved productivity. These changes have formed the foundation which, if built upon, can provide an efficient coal freight transport system. This chapter considers the pace and nature of current and future change which could further improve pricing and performance of coal rail freight.

7.2 Efficiency and prices of coal rail freight services

There have been several studies in recent years examining the efficiency of Australian coal freight services (BIE 1992, 1993 and 1995a; JAG 1994) and the prices charged for them (BIE 1992, 1993 and 1995a; Easton 1996 and sub. 7). QR has undertaken several more recent productivity benchmarking studies but has not been willing to make these available to the Commission. In addition, participants in this inquiry have provided information and comments on rail pricing and performance. This section notes the limitations of international comparisons of charges and efficiency and briefly summarises the more recent

studies. Sections 7.3, 7.4 and 7.5 consider recent and future policy changes designed to improve the performance and pricing of coal rail freight.

As observed by several participants (NSW Government (sub. DR68), FreightCorp (sub. DR67) and Queensland Government (sub. DR61)), these studies are several years old. Given the important and ongoing changes to pricing, organisational structure and competitive environment that have occurred in coal rail freight in recent years, the performance shortcomings observed in past benchmarking studies will have been moderated. Indeed, many participants have observed recent improvements in pricing and productivity of coal rail freight. However, most participants (including governments and their rail authorities) have conceded that significant further improvements are available.

It is important to recognise that particular caution is required when comparing rail freight charges and productivity between rail systems. Ideally, comparisons should be between producers with similar operating environments. However, Australian coal rail freight systems differ significantly from those overseas. In discussing rail freight rate comparisons and operating efficiency performance measures, the BIE observed:

Variables like traffic density, traffic mix, terrain, climate, average haul length and differences in the prices of key inputs are factors largely beyond the control of railroad management. Accordingly, they need to be formally taken into account to enable meaningful comparisons of performance. (BIE1995a, p. 68)

When comparing rail systems it is important to consider:

- the length of the haul. The longer the haul the larger the total cost of rail transport but the lower the cost per net tonne kilometre (ntk);
- traffic density. The larger the volume of coal and the greater the traffic density, the cheaper the cost per ntk to haul coal;
- that volume more than weight drives costs. For example, coal is a bulkier commodity than iron ore — it takes up more space for a given weight — and therefore requires more wagons and more locomotives to pull the wagons; and
- the gauge of the railway. For a given height, a wagon on a wider gauge railway will have a greater volume. Also, the narrower the railway gauge the lower the maximum axle load and the shorter the train length.

Productivity measures and rail freight charges need to be adjusted for these differences before being used to compare performance. Such adjustments are inevitably imperfect for a service with such variable operating conditions as coal rail freight. Hence, performance comparisons need to be treated as broadly indicative rather than as precise indicators of relative performance. When all

rail freight systems differ significantly, the concept of system-wide world best practice is a somewhat artificial construct.

In addition to significant differences in rail operating environments, exchange rate variations add a significant arbitrary element to international comparison of freight rates. From June 1997 to June 1998, the Australian dollar devalued by close to 20 per cent against the US dollar. This causes Australian coal rail freights to compare much more favourably with those of US railways, without any change in relative efficiency or performance of the rail systems. Such currency swings had a limited impact on price comparisons when large implicit royalties made Australian freight rates much higher than freight rates overseas. However, as royalties and monopoly rent are removed from freight charges, there will be a much lower gap between Australian and overseas rates. Hence, comparisons will be much more sensitive to exchange rate changes.

Comparisons of domestic rail charges with raw freight rates from overseas are not an appropriate means to establish best practice performance. Australian railways should not have the objective of matching other countries' rail freight rates, as many factors outside the control of rail operators, such as operating environment, input prices and exchange rates will impinge on such comparisons. Rather, rail providers should be aiming to provide the most efficiently operated and priced service within Australian conditions, and governments should seek to provide the competitive, legislative and organisational frameworks to make this possible.

7.2.1 Coal freight rates

Inquiry participants indicated that rail freight rates per ntk for coal in Australia are very high relative to those paid by mines overseas, particularly in the United States. MIM stated:

Rail and port charges for export coal in Queensland are internationally uncompetitive. (sub.18, p. 1)

Similarly, Exxon argued:

The high cost of transport of black coal in NSW is well known and documented as being significantly out of step with world's best practice. (sub3, p. 10)

However, in its report on rail freight performance for the BIE, Symonds Travers Morgan (1996) cautioned against focusing on charges when assessing rail authority efficiency:

This report focuses on railway input costs (eg cost per hour for train crew, cost per kilometre for track maintenance) rather than costs per unit of output (eg cost per train kilometre or cost per gross tonne kilometre). The latter are generally

inappropriate indicators of relative performance as incompatibilities between them can grossly distort any comparisons. As an example, a gross tonne kilometre across the Blue Mountains clearly represents a greater use of resources than a gross tonne kilometre performed across the Nullarbor. (Symonds Travers Morgan 1996, pp. 1–2)

Also, as noted above, converting rail charges to a common currency provides only an indication of their current impact on the coal industry's international competitiveness, and does not represent a precise measure of the relative efficiency of rail systems.

Freight rates of NSW and Queensland railways have been significantly higher than overseas rates, largely because of governments' use of rail freights to collect implicit royalties from the coal industry. Both the NSW and Queensland Governments have begun to remove royalties and identified monopoly rent from coal freight rates. The impact of these reductions will continue to be reflected in declining prices to 2000 (see Section 7.4).

Furthermore, difficult operating environments and shorter hauls have added to costs and prices per ntk compared with some overseas railways. The broad indication from available studies is that even after adjusting for different operating environments, operating costs of Australian coal rail freight appear to be in the region of 20 to 30 per cent higher than major North American railways. This gap has been closing slowly as reform in Australian railways improves productivity.

The BIE (1995a) found that for 1993–94 average coal revenue per ntk in NSW (5.7 cents) was over three times the average for US Class 1 railways (1.8 cents), while Queensland revenue (4.8 cents) was 2.6 times the US equivalent.

As well as the royalty component, the BIE observed that a good deal of the difference between Australian and US revenues per ntk could be attributed to shorter hauls and different operational conditions and input costs faced by Australian railways. One of the major differences is the much longer average hauls of US coal railways. Easton Business Consultants commented:

Comparisons on a cents per tonne basis therefore tend to be misleading. For example, crewing and rolling stock utilisation costs incurred whilst loading and discharging coal may account for 40 to 50 per cent of such costs on a 90 km haul but only 10 per cent on a 900 km operation. (sub.7, p. 6)

Comparisons of freight rates for similar length hauls for a sample of railings indicated that QR rates (including royalty) were around twice those of various US railways while NSW rates were only 25 per cent above (BIE 1995a). This is the opposite of the raw per ntk revenue data reported above, where average

revenue in NSW was much higher than in Queensland. This disparity partly reflects the much shorter average haul distance in NSW (Table 7.1).

Table 7.1: Average distance from the mine to the port (km)

| <i>Country/region</i> | <i>Average distance from the mine to the port (km)</i> |
|-----------------------|--|
| NSW | 135 |
| Queensland | 250 |
| US | 600 to 1300 |
| South Africa | 580 |
| Canada | 1100 |

Sources: IEA Coal Research 1993, FreightCorp and QR.

Dr Easton (1996) compared prices for hauls of coal over comparable distances in the United States, Queensland and NSW. These data suggest that in 1993, the cost per net tonne kilometre was significantly higher in NSW and Queensland than in the United States. Dr Easton also estimated the difference between revenue and costs for NSW and Queensland coal freight at \$535.7 million in 1993. This was equivalent to 47 per cent of the freight rates charged (Easton 1996).¹

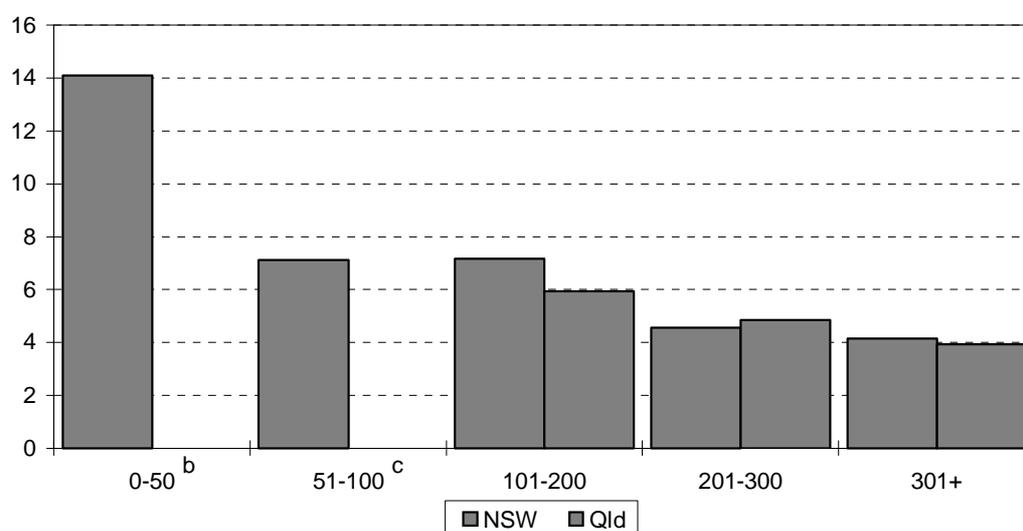
Current freight rates

Data on 85 mines from Barlow Jonker (1997) indicate that average freight rates per ntk are higher in NSW (6.3 cents) than Queensland (4.8 cents), largely reflecting the much shorter average haul (Table 7.2).² For hauls between 100 and 200 km, NSW rates are around 20 per cent higher than Queensland, due to the shorter average haul length in NSW in this range. The average rates for each State for distances over 200 kilometres are very similar (see Figure 7.1). However, there are some wide variations in charges between mines within each range, partly reflecting rail authorities' discriminatory pricing policies.

¹ In estimating costs, Dr Easton assumed that a rate of return on assets of 12.5 per cent was a justified cost. An increase of 1 per cent in that assumed return would reduce the excess profit by around \$12 million.

² The estimated freight rates of Barlow Jonker (1997) and BIE (1995a) differ. This is because the BIE surveyed Australian public service rail providers and standardised input costs whereas the Barlow Jonker estimates are derived from a sample of 85 mines in 1996. The Barlow Jonker estimates therefore reflect actual costs to the mine.

Figure 7.1: **Weighted average freight rates for NSW and Queensland, 1996^a (cntk)**



a Based on rail charges for 85 mines. Weighted average distance for each category similar except for 101–200 km category.

b There are no rail freight hauls between 0–50 km in Queensland.

c For confidentiality reasons, NSW and Queensland have been combined in the 51–100 km category.

Source: Commission estimates derived from Barlow Jonker (1997).

Table 7.2: **Weighted average coal rail charges and average distance carried, 1996^a**

| | <i>cntk</i> | <i>Distance (km)</i> | <i>\$/t</i> |
|-----------------------------|-------------|----------------------|-------------|
| NSW | 6.28 | 112 | 7.03 |
| Queensland | 4.83 | 248 | 11.98 |
| Combined^b | 5.05 | 174 | 8.79 |

a Weighted averages based on tonnes per mine and calculated using 85 mines.

b Weighted average of NSW and Queensland.

Source: Commission estimates derived from Barlow Jonker (1997).

For 1996, Rio Tinto estimated that NSW freight costs per ntk (unadjusted for different average haul lengths) were 40 per cent higher than in Queensland and 2.2 to 2.8 times US better performance. When the monopoly rent is removed, Rio Tinto estimated that the NSW freight rate would be 4.6 cents per ntk, which is still higher than Queensland freight costs of 4 cents per ntk (sub. 22, p. 29). As noted above, different average haulage distances and operating environments mean that such unadjusted price comparisons are not valid measures of relative performance.

Data provided to the Commission by FreightCorp indicated that average coal freight rates per tonne had fallen by around 15 per cent since their peak in 1986–87 and by over 10 per cent since 1992–93. These rates are not adjusted for average haul length, but they indicate improvements in pricing from their monopoly rent inflated levels, particularly in view of the rise in input prices over this period.

Iron ore is the main metalliferous commodity transported by rail in Australia. BHP submitted:

For the year ended 31 May 1997, [coal] rail freight costs accounted for approximately 30 per cent of total production and delivery costs, at rates as high as 7.5 cntk, compared to world's better performance rates of around 2.4. Performance at this level or better is achieved at BHP's Western Australian Iron Ore operations. (sub. 30, p. 19)

However, there are special circumstances surrounding rail freight of iron ore which make direct comparisons of ntk costs misleading. Long hauls over dedicated tracks with favourable terrain, together with low administrative overheads of a single commodity line, generate particularly low freight costs. In addition, iron ore is a more dense mineral than coal and requires fewer wagons to haul a given weight.

7.2.2 Operating costs and productivity

Comparisons of operating efficiency are more reliable guides to performance and the potential to lower prices than are direct price comparisons. This is particularly so in coal freight where the systems being compared have diverse operating environments and prices are distorted by large de facto royalty collections.

There have been two major studies in recent years which provide information on the productivity of Australian coal rail freight compared with that of overseas rail services. The study which focused most on coal was undertaken for Queensland's Joint Advisory Group (JAG) on World's Best Coal Haulage Practice (JAG 1994). The JAG consists of representatives from various government departments, QR and the Queensland coal industry. It undertook a detailed comparison of QR's *coal service operating costs* with those of Burlington Northern (BN), a recognised highly productive US railroad operating in a competitive market. QR reported the findings of the study for 1992–93:

The results of the initial benchmarking review showed that QR's 1992–93 coal operating costs per ntk were approximately 25 per cent higher than the estimated Burlington Northern coal haul operating cost per ntk for the 1992 year. However, of the 25 per cent gap, 7 per cent was considered to be due solely to structural

factors which were out of QR's control (that is fuel/energy prices, length of haul and material equipment costs) and an estimated 8 per cent required QR to incur major capital expenditure (which could not reasonably be expected within the short-medium term). This left a 10 per cent gap capable of being closed by the year 2000. (sub. 12, p. 13)

However, BHP observed the limitations of the JAG benchmarking exercise:

Whilst that was very useful, it gets to the stage where I think a lot of these exercises do, you fall back on structural differences between QR and the benchmark partner that you're looking at, and if you're not very careful you can explain that whole difference away due to structural differences. (trans.p. 196)

Since the original study there have three follow-up studies. These studies were not made available to the Commission. QR is considering a different approach to benchmarking which is based more on comparing particular activities — for example, maintenance — rather than making whole of system comparisons.

The BIE (1995a) compared operating costs of Australian freight railroads with world's best practice costs, after standardising for differences in operating environment and adjusting for different input prices. These comparisons were not with any single railway but rather with estimates of best productivity and cost performance in a range of operating costs. This analysis provided an estimate of the reduction in controllable operating costs to reach achievable world's best practice (WBP). Although these comparisons include non-coal freight, they provide a useful indication of the performance of coal freight divisions. Coal makes up the majority of freight in NSW and Queensland, although it is not as important for most overseas railways.

Standardised operating costs of both the NSW and Queensland rail freight systems were estimated to be about 37 per cent above WBP in 1993–94. This represented additional operating costs of around \$200 million for each system. However, the Australian coal freight businesses are recognised as being more efficient than general freight and hence the gap to WBP would be somewhat less. The gap between the freight operating costs of all the Australian systems examined and WBP had been falling steadily from 52 per cent in 1989–90 to 43 per cent in 1991–92 and 24 per cent in 1993–94 (Symonds Travers and Morgan 1996).

The results of the JAG and BIE studies indicate that provision of coal rail freight in Australia has been somewhat less productive than best practice overseas railways. Together with comments from inquiry participants, they suggest a need for ongoing reform and a performance gap which, while not insignificant, can be reduced substantially.

Participants' views

Participants' comments on the performance of the State rail authorities were limited and tended to support the above view. In general, while participants suggested that rail charges had been grossly excessive, they usually did not differentiate between monopoly profits and poor productivity as causes of these high charges. Those who did comment on productive efficiency suggested that performance was reasonable although important improvements could still be made. In commenting on the JAG analysis of QR's operating costs, BHP stated:

... not surprisingly to us, QR performed reasonably well performance-wise. We've never had a major complaint with their performance, our complaints have been what they have charged for it. (trans., p. 196)

ARCO also commented on the efficiency of QR:

... we know that as a railway it is a fairly efficient railway. It's a modern railway. The haul distance is a good one, on average 250 kilometres from the coast, but unfortunately the way the coal companies see it the operating efficiency doesn't translate into low rail freights. (trans., pp. 229–30)

However, many coal producers have observed that the lack of competition in rail services has been a barrier to making the 20 per cent efficiency jump to better practice levels. Comments on the introduction of rail access in NSW support this view that competition is needed to generate better performance.

FreightCorp indicated the significant reductions that could be achieved in operating costs. For example, it outlined large planned reductions in its workforce from the 4000 it commenced with in 1996:

We've laid out for our workforce, a plan that shows that two years out from now we'll be down to 2500 or less, and the workforce accepted that if we're going to be competitive, it's necessary. (trans., p. 17)

It also indicated that corporatisation and the threat of future competition had already stimulated significant improvements in its productivity and service since the BIE benchmarking studies (sub. DR67).

The Rail Access Corporation (RAC) (sub. 23, p. 6) estimated that up to 30 per cent savings will be achieved in its infrastructure maintenance and upgrading costs as a result of competitive tendering. In 1997–98, rail maintenance costs have fallen by around \$50 million. For the future the RAC had indicated that:

The major coal carrying infrastructure in the Hunter Valley will be competitively tendered in July 1998. Tendering of components of the western coal system (eg. Waterfall to Bomaderry) are currently underway with tendering of all of the coal related network expected to be completed by the end of 1998. Benefits from savings in maintenance and works expenses will flow through to access prices

almost immediately for most mines in the Hunter Valley (Category 1 mines).
(sub. 23, p. 6)

However, in February 1998, the NSW Government announced a moratorium on competitive tendering for RAC maintenance work until mid-1999, in order to provide job security for existing government rail maintenance workers. It has since submitted that:

Benchmarking supervised by the Independent Pricing and Regulatory Tribunal will be introduced to ensure that maintenance costs are, at most, equal to levels which would be achieved by competitive tendering. (sub. DR68, p. 11)

If successful, this approach would mean that coal industry freight rates would fall as originally anticipated by the RAC. However, it is not clear why delays in competitive tendering are needed if maintenance costs can be reduced to competitive levels. Alternatively, if State government subsidies or lower returns from the RAC are to fund continuing inefficiencies in maintenance expenditure, the costs will have been simply transferred from the coal industry to NSW taxpayers.

The performance improvements already reported suggest that delaying the impact of competitive forces by restricting competitive tendering and contracting, and by failing to develop acceptable rail access regimes (see Section 7.5), will be expensive for rail freight users.

7.3 Structure of rail authorities

Through the 1980s and 1990s Commonwealth and State governments have reformed and restructured their business enterprises. Rail services have lagged behind more significant business inputs such as telecommunications, electricity and gas. However, some restructuring of Australia's railways has occurred, generating benefits to pricing and performance of coal rail freight. The pace of change has been gradual and the speed and nature of reforms has varied between States.

Early reforms were concerned primarily with removing government department responsibility for operating railways and establishing independent rail authorities or government corporations. These developments led to establishing separate business units for different services and setting clearer objectives for performance, pricing and community service obligations. The ongoing structural reforms created a more business-oriented focus for rail authorities, led to some improvements in productivity and performance, and established the environment for the introduction of more competition into rail freight. These structural

reforms were necessary for the introduction of greater competition (discussed in Section 7.5).

The NSW and Queensland Governments have taken different approaches to reform of their rail services. While both have corporatised State rail businesses, only NSW has created separate organisations for providing the ‘below track’ rail infrastructure and the ‘above track’ freight-carrying service.

7.3.1 Current structures

New South Wales

In 1996, the government-owned NSW State Rail Authority was separated into four separate businesses. These businesses cover track and related rail infrastructure (Rail Access Corporation, RAC), track and rolling stock maintenance (Railway Services Authority, RSA), provision of freight services (FreightCorp) and provision of passenger services (SRA).

The RAC and FreightCorp are both State-owned corporations with independent boards of directors. Both have the Treasurer as one shareholder, with the Premier being the other shareholder for the RAC and the Minister for Sports filling that role for FreightCorp. The RSA is currently a government business enterprise but corporatisation is planned in the near future. The share holding ministers will be the Treasurer and one other minister (sub. DR68).

The creation of different organisations for the provision and maintenance of rail infrastructure (the RAC) and the carriage of freight (FreightCorp) was of particular significance as it separated the natural monopoly provision of rail track from the potentially contestable freight and passenger services. The separation of the largely business-oriented freight services from the essentially loss-making passenger services was also important as it enabled the senior management and the board of FreightCorp to adopt a strong business focus. In addition, while leaving responsibility for maintenance of rail infrastructure with the RAC, the NSW Government has transferred the existing resources (workforce and equipment) for undertaking maintenance activities into a separate organisation (the RSA). This structure creates the appropriate environment for transparent competitive tendering for maintenance contracts.

Queensland

In Queensland, QR was corporatised on 1 July 1995. QR has four business groups: coal and minerals, freight, city train, and travel train. A separate unit was established within QR to deal with third party access to rail infrastructure. The Queensland Treasurer and the Minister for Transport are the shareholding

Ministers. Although each business is a separate profit centre, they are all answerable to the same board of directors. The Government sets key financial and non-financial performance targets and community service obligations.

Rio Tinto (sub. 22) commented that the corporatisation of QR had brought about some slow change, but much remained to be done. ARCO argued that there are some difficulties with QR's structure due to the lack of independence of the freight division:

At the micro economic level, progress has certainly been made and there is a strong working co-operative relationship between the coal industry and QR's Coal and Minerals Division. From the coal industry's perspective however the Coal and Minerals Division seems to be hamstrung by the current integrated Queensland Railways structure as well as unrealistic financial objectives placed on Coal and Minerals Division from Government. (sub.21, p. 3)

A review of the corporatisation of QR (conducted by the Queensland Government and QR) has recommended that the integrated structure remain but that a separate business unit be established to operate QR's rail infrastructure (including maintenance) and negotiate conditions of access with users. This new group will subsume the functions of the existing access unit. The Queensland Government has decided to implement these changes from July 1998 (Sheldon and Johnson 1997) (see Section 7.3.2).

7.3.2 Structure appropriate for a competitive environment

The evolution of a more commercial focus for State rail authorities and the introduction of competition into rail freight services raise questions of the appropriate structure of rail authorities. In particular, the actual and perceived relationship between the government-owned provider of the monopoly infrastructure service and the government-owned freight operator will be crucial to the emergence of effective competition in rail freight. The Queensland Mining Council (QMC) argued:

The industry structure within which an access regime operates may be a crucial factor influencing the regime's effectiveness. The standard approach is physical separation of the monopoly and contestable elements of a service in the interests of ensuring non-discriminatory treatment by the access provider of all established and prospective access seekers.

This reflects one of the basic presumptions of competition policy — that vertical integration is inherently anti-competitive and in attempting to establish genuine contestability the burden of proof should rest with those who would retain integrated structures.

The coal industry strongly supports a review of rail industry structure in Queensland. The present configuration — a ring-fenced network access unit within

a fully integrated QR — needs to be examined in respect of its implications for effective third party access. (sub.24, pp. 34–35)

As noted above, NSW has separated infrastructure and rail freight and has also created an independent infrastructure maintenance unit. Structural separation improves the transparency of the cost of each element of rail services and hence increases the pressures to improve the efficiency of the rail system. The QMC commented:

Monopoly encourages complacency, inattention to costs and resistance to innovation. To the extent that competition is impeded for want of a structure which better facilitates the entry of third parties, then integration is unequivocally bad for overall costs. (sub. 24, p. 35)

The Queensland Commission of Audit recommended a break-up of QR:

In order to drive efficiency through competition, Queensland Rail's track operations should be separated from rail service operations, which would then be provided by separate commercial providers. (Queensland Commission of Audit 1996, p. 165)

King and Maddock (1996) have argued:

If there are economies of scope then integration may be preferred. However, if an integrated access provider has a significant opportunity to stall access negotiations, separation may offer considerable benefits. (King and Maddock 1996, p.133).

However, there are also potential one-off costs of structural separation, particularly in the initial phase of moving from a fully integrated monopoly rail service. Estimates provided to QR suggest that:

The costs of separation are considerable and have been estimated by a Mercer/Booz-Allen study for Queensland Rail to be in the order of \$30 to \$50 million, not inclusive of major costs associated with disaggregation of information systems. (sub. DR61, p. 2)

In addition, there may be ongoing costs if there are important advantages in combining infrastructure provision and operation with freight operations. For example, a single rail operator may be able to provide a given level of rail services of each product line (for example, freight, urban passenger and country passenger services) more cheaply than a combination of separate rail operators, each producing a single product at the given level of output (economies of scope). Some industry participants commented that the degree of coordination involved in scheduling transport is a source of economies of scope and needs to be considered before implementing structural separation. ARCO indicated that the integrated QR structure worked well operationally and cited possible operational problems in separation:

... the degree of cooperation between the railways on an operational level is very good. ... Certainly we don't need a new structure that creates barriers to cooperation which we presently have. Because railways require a high degree of logistics there needs to be cooperation from the mine site to the port and in between, and the last thing we need is bureaucracy created whose pure function is just to exist. It must have the purpose of ensuring efficiency and the efficient use of infrastructure. (trans., p. 230)

Based on an unpublished report by Mercer Management Consulting and Booz-Allen and Hamilton, the Queensland Government concurred:

The advantage of a vertically integrated structure is that it permits decisions on infrastructure investment and operations to be both technologically and managerially integrated. This has the potential to maximise the efficiency of the railway system as a whole. The major disadvantage of structural separation is the additional contracting and the potential litigation costs associated with the formal contractual arrangements which would need to be in place between a separate track owner and operator(s). (sub. DR61, p. 7)

In addition, QR submitted that structural separation was not necessary because competition can be achieved through mechanisms other than structural separation and that overseas experience does not support the view that structural separation leads to competition. It claimed that there would be other costs such as a reduction in market responsiveness of infrastructure investment and safety concerns (sub. DR66). QR concluded:

Since the costs of separation are significant, the benefits of separation should be established as significant and unequivocal before a policy of mandated separation of ownership can be justified. (sub. DR66, p. 2)

The approach taken by the Queensland Government in maintaining an integrated structure whilst creating arm's-length businesses is referred to as 'ring-fencing'. In discussing structural separation in telecommunications, the Commission argued that ring-fencing would provide only limited benefits (IC 1997c). It considered that structural separation was needed to increase the benefits obtained from competition.

In fact, under a 'pure' ring-fencing approach, the cost of establishing contractual arrangements will be incurred regardless of whether vertical separation is undertaken. This is because contractual arrangements will be required between the two arms of the integrated operator. In addition, contractual arrangements will be required for any new rail operators.

In recognition of the uncertain costs and benefits of structural separation, King and Maddock have argued for a case-by-case assessment:

We clearly disagree with the conclusion of the Hilmer Report that there should be a presumption in favour of vertical separation. While such restructuring may often

be desirable, it can only be evaluated on a case-by-case basis. In particular, separation must be considered within the entire context of the access regime that is being established. From this perspective we have serious concerns about the moves of some state governments in Australia to break up vertically integrated access providers in rail, electricity and gas before considering more fully the access regimes that will apply to those sectors. (King and Maddock 1996, p.134).

Shell Coal Pty Ltd (SCPL) considered that the balance of benefits favours separation in the case of QR:

SCPL is concerned that the benefits envisaged by Hilmer and enshrined in the Competition Principles Act will not be possible while QR itself determines the protocols and access charges for potential competitors in coal haulage. The disaggregation of the NSW State Rail Authority resulted in some inefficiencies but in the case of coal rail freights, such costs have been more than offset by the benefits. (SCPL 1998, p. 3)

The Commission considers that the gains in transparency and eventual effectiveness of introducing competition in rail freight flowing from separating infrastructure and freight provision are likely to outweigh any initial costs and difficulties in managing operational relations with a freight provider now in a separate organisation. The latter problems will arise in any event as new entrants gain a greater share of the freight market. Rio Tinto observed:

With the introduction of competing rail freight companies, there is a need for a comprehensive coordination protocol to ensure the smooth running of the rail system. Issues such as access for loading and unloading facilities, incentives for rail freight companies to maintain up-to-date rolling stock, and use of common facilities need to be addressed. (sub.22, p. 29)

It would not be surprising if there were some initial costs and operational problems in introducing vertical separation. These problems are likely to be largely transitional and, given experience, coordination should be well handled at low cost with modern computing and communications equipment. Many of these costs will exist for the infrastructure provider if there are any new entrants to the freight or passenger services sector. Only if no new entrants emerge would an integrated structure produce the maximum cost savings envisaged by the Queensland Government.

The recently announced QR restructuring loses some of the co-ordination advantages of having infrastructure and freight services in the one organisation, while providing little in the way of greater independence and transparency in the provision of rail infrastructure.

The issue of formal separation of below and above track services should be considered in a public review of the progress in rail reform.

7.4 Removing implicit royalties and monopoly rent

Coal freight has been subject also to specific reform in the pricing area. This reform has addressed the use of coal freight rates as an implicit royalty collection mechanism or as a means of financing losses in other rail freight and passenger services.

The level of coal royalties is determined by State governments. However, the means of collecting royalties may have unintended and undesirable impacts on the efficiency of both rail services and the level of royalty collections. The coal industry has been particularly critical of both the past use of rail freights as a taxation mechanism and of the rate of phasing out of this practice. The QMC observed the deleterious impact of royalty-inflated rail charges in Queensland in the 1980s:

Rail reform has been and will continue to be a critical determinant of coal industry development in Queensland. Rail freight concessions introduced from 1984 provided a crucial measure of relief for the industry when the eighties 'coal boom' failed to materialise. Although freight rates stayed very high, without the concessions that were given, many of the mines commissioned in the late seventies and eighties would have become economically unsustainable.

That said, no new coal mines were then commissioned until after 1989 when significantly lower freight rates were offered to new projects. Investment in Queensland coal assets was simply untenable until rail charges were reduced to something approaching commercial levels. (sub24, p. 3)

State governments charge royalties on the extraction of coal (and other minerals) in order to provide benefits for their communities for the exploitation of their resources. Because of the high prices for black coal in the 1970s and early 1980s the NSW and Queensland Governments used the rail freight system to obtain revenue from coal producers additional to that raised from explicit royalties. These monopoly rents and de facto royalties as they have been referred to in NSW and Queensland, respectively, significantly distorted rail freight pricing and distracted governments from the focus of providing efficient rail freight services. The revenue from these high charges was appropriated by governments into general revenue or was used to allow rail authorities to at least partially fund loss-making services.

The push to improve performance of GBEs over the last decade, together with the declining fortunes of the coal industry, resulted in governments recognising that the collection of royalties through the rail freight system was inefficient, arbitrary and inequitable. The QMC commented on the impact of de facto royalties based on perceived ability to pay:

The effects of this approach were mainly three. First, there was no predicability in the system and no relationship between freight rates and the cost related factors

like distance, volume and efficiency which would normally determine a rail charge. Planning prospective projects was difficult and negotiations with Treasury were protracted and one-sided. (sub.24, p. 24)

The switch to a more commercially oriented approach to rail freight pricing allows the performance of railways to be monitored more closely. The previous lack of transparency was detrimental to assessing performance because it was impossible to untangle inefficiencies in rail provision from high freight prices due to royalties. The absence of a link between charges and underlying cost also stifled development of cost-saving practices. BHP observed the beneficial impact on efficiency of a greater focus on cost-based pricing:

... the Government agreed to identify and separate out the de facto royalty and rail freight components of the rail freight rates, thereby allowing clearer negotiation of the true rail freight component. Based on the achievement of performance linked incentives and a co-operative approach between QR and BHP Coal to improving both current and future practices, potential for improved efficiencies and potential flow on benefits was also agreed. (sub.30, p. 19)

In addition, the removal of royalties from rail freights takes away a potential barrier to efficient freight choices by coal producers. In many cases, even with freight rates including royalties, rail would be the chosen transport mode. In others, government regulations restrict coal to using rail. However, there will be some situations in which the transport choice has been distorted by the implicit royalty and monopoly rent-inflated freight rates. In these cases the removal of royalties from rail will enable mines to choose the most economical form of transport, unaffected by royalty considerations.

Further, competition among coal producers on the domestic market will be enhanced by more efficient operation and pricing of coal rail freight, with ensuing benefits extending far beyond the coal industry. In arguing for removal of monopoly rents and greater rail competition, Pacific Power observed:

In an increasingly competitive national electricity market, all three NSW generators may seek to maximise coal supply contestability through the delivery of coal by rail to increase competition with mines closer to the power stations.

The potential for increased rail delivery will continue to be constrained unless the commercial attractiveness of utilising rail is increased. (subDR55, p. 3)

7.4.1 New South Wales

In addition to explicit coal royalties discussed in Chapter 10, the NSW Government obtains monopoly rent through the rail system in the form of excess access charges for coal freight from selected mines or groups of mines. However, there are also some rail lines where coal freights have not covered the

avoidable costs of the freight service. The NSW Government observed the impact of this policy on pricing:

The ability of mines to pay monopoly rent depends on a number of factors including the quality of the coal, extraction costs, customer contracts and taxation and charging regimes. Within any region, there may be significant differences among the mines on these factors, and therefore in freight rates, haulage costs and thus monopoly rent. Indeed, not all freight hauls contribute to monopoly rent. (sub. 26, p. 17)

These monopoly rents remained within the SRA to help fund other loss-making services, thereby lessening the contribution required from the State budget to finance SRA losses. Hence, the SRA did not need to identify separately the size of monopoly rents.

With the creation of the RAC and FreightCorp, and in preparation for the introduction of competition in rail freight, the monopoly rent component and the losses on hauls not covering avoidable costs have been estimated and incorporated in the RAC's access prices. This leaves FreightCorp free to price on a commercial basis. The monopoly rents, as estimated by the NSW Government, are being phased out over four years to July 2000.

In the interim, the NSW Government will still receive monopoly profits in the form of payments made by the RAC in lieu of company tax and the RAC dividend. However, the Government needs to make greater contributions to the RAC and the SRA now for any loss-making services previously partly financed by monopoly profits on coal freight which had been fully retained in the former SRA.

Apart from identified monopoly rent, FreightCorp has indicated two other possible sources of excessive coal freight charges.

Reduction in the below rail component of freight rates is a factor which FreightCorp sees as being constrained by Rail Access Corporation's (RAC) intention to pursue a significant rate of return on its assets in the Hunter Valley and the absence of urgency in attaining efficient infrastructure maintenance. (sub. DR27, p. 2)

The coal industry has expressed concern that the rate of return used to estimate the maximum commercial price payable for access to rail infrastructure is excessive. A 14 per cent post-tax return on revalued assets is used in the NSW access regime to determine *ceiling access prices* to be charged (within a discriminatory pricing framework). This ceiling rate was set by the NSW Minister for Transport as the Minister responsible for the rail access regime. Any *excess* of *actual* prices for a mine or group of mines in 1996 above this ceiling cost of servicing their operations (incorporating the maximum

14 per cent return), was identified as monopoly rent. This rent is being phased out by 2000. These issues are considered in Section 7.6.

While the 14 per cent *ceiling* return is not an average rate earned on all RAC assets, the scope for price discrimination allowed by such a high ceiling rate gives some cause for concern. To the extent that the ceiling rate is considered excessive, monopoly rents would still be earned even after 2000 on those contracts paying ceiling or close to ceiling prices. Price discrimination is considered further in Section 7.6.

In addition, there are likely to be ongoing inefficiencies created and maintained by the long period of absence of competition in providing rail services. The benchmarking studies cited in Section 7.2 suggest that such implicit monopoly costs have been in the region of 20 per cent or more. Moreover, the delay in competitive tendering of maintenance has delayed the RAC's predicted savings of up to 30 per cent in maintenance and works expenses (sub. 23). In order to realise further savings, FreightCorp argued that access prices should be based on efficient costs, and that they must reflect efficiency both in maintenance practices and in the procurement of network management services (sub. DR67). The NSW Government has announced its intention to benchmark rail maintenance costs in the absence of competitive tendering and contracting out.

7.4.2 Queensland

The Queensland Government also has altered the method of determining coal rail freight rates in recent years. Prior to 1992, rail charges were not based on costs but rather reflected Queensland Treasury's assessment of individual mines' ability to pay additional revenue (in effect, an implicit royalty). Because these assessments varied over time with the coal market environment, mines with similar costs and profitability could be paying very different amounts of implicit royalty depending on when their rail freight contract was established. The QMC indicated the ongoing problems caused by this approach to setting rail prices:

Since 1993, this situation has not been adequately addressed by the corporatisation of QR. Rail freight pricing remains opaque; coal rail costs and profits are concealed; the setting of CSOs is obscure, and there is no mechanism in place for achieving best practice freight rates. (sub.24, p. 24)

In 1992 the negotiation of new or expiring rail freight contracts was passed to QR. Prices were to be set on a commercial basis related to costs of providing the freight service. QR (sub. 34) indicated that all of the pre-1992 contracts are expected to be renegotiated by mid-1998. Some of these have involved early termination of contracts, requiring negotiated payments to the Queensland

Treasury to reflect the early cessation of implicit royalties contained in their rail freight rates. (Further details of the changed royalty arrangements are provided in Chapter 10.)

Because of the absence of a structured reduction of royalty-inflated prices, Queensland does not have the same issues of identifying excess charges as does NSW. Implicit royalties are removed only when rail contracts expire, at which stage they can be viewed as totally disappearing if the freight rates offered by QR are considered commercial. However, this approach results in considerable inequity between mines, with the size of their total royalty payments depending on the expiry date of their freight contracts. BHP observed:

... while agreement has been reached with the Queensland Government to end defacto royalties in the year 2000, the company is at a major competitive disadvantage in the meantime compared to other coal companies in Queensland and overseas companies by paying almost \$1 billion in royalty payments on its Queensland operations. (sub.30, p. 2)

However, with the imminent scheduled expiration or early renegotiation of all pre-1992 rail contracts, the issue of de facto royalties in Queensland has become a largely historical one. In particular, as discussed in Section 7.5, it now provides no basis on which to delay the introduction of third party access to rail infrastructure.

The policies of the NSW and Queensland Governments for ongoing removal of monopoly rents and de facto royalties from rail freights have improved the efficiency of rail pricing and encouraged improved performance by rail authorities. However, the pace of change has been slow, delaying the benefits from more efficient pricing of coal freight.

7.5 Introducing competition into rail freight

The use of rail freight charges to collect revenue is one reason why rail costs for export coal have been excessive. The other key reason for high rail charges is the existence of some degree of inefficiency in State rail authorities. Section 7.3 noted some changes in the organisational structure of rail authorities which have helped to improve performance. This section considers the NSW and Queensland Governments' response to the introduction of a more competitive external environment for rail authorities in order to stimulate further efficiency gains.

As with most economic infrastructure in Australia, rail services have been provided traditionally by governments, because provision by a single enterprise was seen as the most cost-effective and in order to meet social objectives for

these services (for example, uniform provision and subsidised pricing). The competition policy agreement reached by the Commonwealth and State governments in 1995 recognised that only the network infrastructure portion of rail services required monopoly provision and that freight carrying services could be opened up to competition by allowing freight carriers access to rail infrastructure. However, while the network provider was a monopolist, the potential existed for it to appropriate most of the benefits of competition. Hence safeguards were included providing applicants for access to rail infrastructure with certain rights of appeal to the National Competition Council (NCC).

As with the restructuring of their rail authorities, the NSW and Queensland Governments initially adopted different approaches to allowing access to rail infrastructure for coal carriers. NSW developed an access regime which potentially provided access to rail infrastructure for freighting coal while Queensland relied on the *Competition Policy Reform Act*, (s.78) (which does not bring 'government coal-carrying services' under the access arrangements of the Act until November 2000) to delay access to rail infrastructure for third parties wishing to transport coal. However, in April 1998, the Queensland Government indicated that it will no longer rely on the s.78 exemption and will allow competition in coal freight once an acceptable access regime has been developed.

7.5.1 New South Wales

Despite some uncertainty surrounding the right of businesses to seek access to coal rail infrastructure up to November 2000, the NSW Government, in its rail access regime, has not excluded third parties from carrying coal.³ The NSW Government indicated:

Although the intention of the National Competition Policy was to allow for the exclusion of Government coal traffic until November 2000 through establishing a 'moratorium', the NSW Government took the policy decision to use the moratorium period:

- only in respect of coal access prices and not access per se; and then
- to implement a program of phased reductions in coal access prices rather than maintain prices throughout the period. (sub.26, p. 17)

³ The definition of the term 'government coal-carrying service' in s.78 has been subject to dispute. The NCC has accepted arguments that the term should be interpreted narrowly to exclude only access to coal haulage services such as that undertaken by FreightCorp (NCC1997c). This interpretation would allow an independent operator to apply for access to rail track for the purposes of carrying coal. The issue is currently before the Federal Court.

However, the NSW Minerals Council submitted that the NSW Government had consistently used the s.78 exemption to attempt to impose an unsatisfactory rail access regime:

The NSW Government has at all stages of the application to the NCC for declarations and certification sought to use s.78 to impose on the NSW coal industry terms for access that are inconsistent with the Competition Principles Agreement. (sub.DR60, p. 19)

The NSW Minerals Council's argument is given additional credence in view of the need to test the meaning of the s.78 exemption in current Federal Court proceedings relating to its declaration application.

While the coal industry applauded the early introduction of rail access in NSW, it was also concerned about deficiencies with the proposed access regime. Hence, in April 1997 the NSW Minerals Council applied to the NCC to have the Hunter Valley coal service determined as an essential facility and 'declared' for access by third parties. If successful, this application would circumvent the current NSW rail access regime and open the way for direct negotiation of access conditions between freight providers and the RAC, which were not bound by the NSW rail access regime. There would also be recourse to legally binding arbitration by a private arbitrator or the Australian Competition and Consumer Commission (ACCC) if these direct negotiations were not successful. Under the current NSW access regime, the Independent Pricing and Regulatory Tribunal (IPART) is available to applicants (freight carriers) who cannot reach an agreed access price with the RAC (see Box 7.1). However, freight customers such as coal companies do not have any rights of appeal. At present, only rail operators — such as National Rail and FreightCorp — or potential rail operators can appeal to IPART regarding disagreements with the RAC on access conditions. No such appeals have yet been made regarding carriage of coal.

In parallel with the Minerals Council application for declaration, the NSW Government submitted its rail access regime to the NCC for certification in June 1997. This regime sets out the rights and obligations of parties providing or seeking access including coverage, the operation and content of access agreements, dispute resolution, information requirement parameters and pricing principles.

In September 1997, the NCC accepted the Minerals Council's application and recommended to the NSW Premier that the Hunter Valley rail line be declared for access as it met all of the criterion under s.44 of the *Trade Practices Act (1974)*. In particular, the NCC found that the existing NSW rail access regime was not an effective regime, largely because of the uncertainty and lack of transparency in its pricing arrangements.

Box 7.1: Independent Pricing and Regulatory Tribunal (IPART)

The NSW Government Pricing Tribunal was established in July 1992 to regulate the prices of government monopoly services. In 1996, the *Government Pricing Tribunal Act, 1992* was amended and the role of the Tribunal expanded. The Tribunal was renamed IPART. IPART has responsibility for price regulation of government monopolies declared by the NSW Government. It has specific powers to:

- set maximum prices for government monopoly services;
- investigate and report on any matter, with respect to pricing, industry or competition;
- regulate gas pricing and third party access to gas networks;
- register agreements for access to public sector infrastructure assets; and
- arbitrate disputes covering the negotiations of such agreements.

IPART currently regulates electricity, water supply and related services, urban passenger transport services, rural bulk water, waste services and local water authorities. The regulatory activities undertaken by IPART include:

- determining maximum prices, which must be charged by the agencies concerned unless they have the Treasurer's approval to charge lower prices; and
- reviewing and recommending pricing policies for monopoly services.

In addition, schedule 1 of the Act lists a number of government agencies for which IPART has a standing reference. Among these are the State Rail Authority and the Port Corporations. IPART does not have the power to set prices or undertake a review until monopoly services provided by an agency have been declared. Ports Corporations are yet to be declared.

Sources: www.ipart.nsw.gov.au/ and *Independent Pricing and Regulatory Tribunal Act, 1992* formerly *Government Pricing Tribunal Act 1992*.

In November 1997, the NSW Premier rejected the NCC recommendation. The Minerals Council appealed against this decision to the Australian Competition Tribunal. The appeal was heard in April 1998 and adjourned to the Federal Court where the interpretation of s.78 will be determined.⁴

⁴ A Directions Hearing in the Federal Court in early June 1998 decided that a full bench of the Federal Court would hear the case. The case is expected to be heard in late August/early September. It will then be referred back to the Australian Competition Tribunal.

In April 1998, the NCC published its draft recommendation on the application for certification of the NSW rail access regime. The Council found that:

While some issues regarding the phasing out of coal pricing need further clarification, the Council considers that the Regime will meet the CPA [Competition Principles Agreement] after including the proposed changes by the NSW Government subsequent to lodgement. (NCC 1998, p.ii)

The National Rail Corporation (NRC) has also expressed dissatisfaction with long delays in obtaining authorisation from the NSW Government to carry intra-state freight (NRC 1997, p. 6). Conditional authorisation was granted in February 1998, but with the caveats that the NRC's core business would be intermodal capital-to-capital freight and that the Minister for Transport would be informed prior to the finalisation of any contractual arrangements regarding intrastate enterprises.

Hence, despite an initial positive response by the NSW Government to seeking the benefits of competition in coal rail freight, the details of the proposed access arrangements raise questions concerning the extent of the Government's commitment to seeking the full benefits offered by competition in rail freight. Eighteen months after the NSW access regime was introduced, there is still no competition in coal rail freight. The desire to protect revenue and the interests of government rail providers may have limited the extent to which reform initiatives have been translated into action. In the meantime, FreightCorp's competitive position is being strengthened as it necessarily expands capacity to meet growing demand in a currently captive market. FreightCorp has indicated that by the end of 1998 it will have a Hunter Valley fleet capacity of over 90 million tonnes per annum, nearly 40 per cent above the current annualised rate of deliveries.

FreightCorp observed the difficulties faced by potential new entrants:

Basically, FreightCorp believes that competition has been delayed by the continuing uncertainty over the access environment within NSW and that changes are required in the current approach taken to the pricing of access to infrastructure. (sub. DR67, p. 4)

The current NCC application and certification processes might deliver an improved and transparent access framework on which prospective carriers can have confidence to make considerable investment needed to enter the coal freight market. However, it is of some concern that such a long and expensive process is needed for governments to apply competition policies adequately to their own enterprises, especially when such policies offer clear State and national benefits.

The introduction of access to rail infrastructure for coal freight services in NSW has been hampered by the lack of an effective access regime against which new freight carriers can confidently invest and by the protracted negotiations for declaration. This has unnecessarily slowed the achievement of the significant price and productivity benefits from competition in coal rail freight.

Introduction of effective competition in rail freight can be expected to improve the performance and pricing of the government owned freight carrier significantly. FreightCorp (sub. DR67) has pointed to important performance improvements already achieved in its operations as a result of the potential for competition. However, additional pressure on the monopoly provider of rail infrastructure will be indirect. With regard to the cost of NSW coal rail services, Exxon stated:

The recent break-up of the old SRA and the opportunity for the introduction of 3rd party competition on the rail networks in NSW is leading to some improvement in this area. Nevertheless, the coal industry has been disappointed with the Government's corporatised owner of the track infrastructure, the Rail Access Corporation. This organisation still exhibits monopolistic traits which will inhibit cost efficient transport of NSW black coal. ... In contrast, Exxon has been pleased to date with the performance of FreightCorp, the government's corporatised freight haulage operator, as this organisation appears to recognise that with the advent of 3rd party competition, its success is tied to its ability to provide efficient and effective low cost service. (sub.3, p. 10)

It is important that governments set appropriate charters and performance objectives for rail infrastructure providers and monitor their achievement carefully.

Furthermore, the NSW Minerals Council submitted (sub. 25) that a lack of operations protocols was a barrier to entry into rail haulage and delayed the introduction of competition.

It is also difficult for new operators to challenge the monopoly of FreightCorp... because of a lack of Operations Protocols and other information from RAC which they need to compete effectively with FreightCorp. (sub25, p. 36)

Operations protocols are the detailed rules for assigning priorities on the rail network to various rail operators, traffics and trains. These protocols are often informal practices. The Commission considers that it is important that infrastructure providers formalise and publish operational protocols to enable effective competition in rail.

7.5.2 Queensland

Initially the Queensland Government indicated that it would delay the introduction of third party access for coal haulage until November 2000. In the Draft Report the Commission argued for the early introduction of competition in coal rail freight, because implicit royalty revenue was being largely removed as most coal rail contracts were renegotiated. Since the Draft Report, several developments have signalled a somewhat faster introduction of more competition in Queensland coal rail freight.

First, from March 1998, a regulation under the *Queensland Competition Authority Act 1997* (QCA Act) provides for third party access to below track rail services in Queensland. This permits the use of all transport infrastructure owned by QR for the purpose of providing transportation by rail (except for interstate services). QR observed:

The Queensland Government is of the view that the Queensland third party access regime constitutes an effective access regime in accordance with the Competition Principles Agreement. As such, the Queensland Government will soon be submitting the access regime with respect to rail services to the National Competition Council for certification. (sub.DR66, p. 2)

Second, the Queensland Government announced:

... on the 25 April 1998 the removal of the exemption in relation to access to Government coal carrying services on the Queensland rail network. (sub. DR61, p. 6)

An application for certification of the Queensland access regime has been made to the NCC. In view of the NSW experience, this process may involve significant delays unless the Queensland Government is fully committed to achieving the benefits of competition in coal rail freight.

Finally, in April 1998, the Queensland Government signed an agreement with SUDAW Developments Ltd to develop a feasibility study for a privately owned merchant railway from the Surat Basin coal field to a Queensland export coal port.

The combined impact of these reforms will potentially introduce competition within the existing rail network and possibly provide yardstick competition with a new railway.

If the benefits from the lifting of the moratorium on access to coal rail freight are to be realised by new entrants, there needs to be an effective mechanism for operators, other than QR, to gain access to the below track infrastructure. The Queensland Government has established a legislative framework for access in

rail and other industries under the QCA Act (see Box 7.2). However, an access regime for rail is not yet in place.

Box 7.2: Queensland Competition Authority (QCA)

In mid-1997, the Queensland Government passed the *Queensland Competition Authority Act 1997*. Its purpose is to create the QCA as an independent regulatory authority with powers and functions to:

- administer a third party access regime;
- provide a prices oversight regime to ensure that government monopoly businesses do not abuse market power through monopoly pricing; and
- administer a competitive neutrality complaints mechanism.

The areas of responsibility of the QCA of most interest to this inquiry include access to essential infrastructure and prices oversight.

Access to essential infrastructure

The regime set out in the Act is similar to the Commonwealth access regime. The regime provides for:

- a declaration process to determine whether services should be subject to access claims;
- access codes, which provide a means of tailoring the generic regime to specific classes of infrastructure;
- the QCA to require owners of infrastructure-providing services that are declared under the regime to submit to the QCA undertakings for the declared services; and
- a compulsory dispute resolution procedure where the QCA assumes the role of an independent arbitrator.

The Act enables the Minister(s) responsible to establish access codes or undertakings for rail transport infrastructure and port infrastructure. These have yet to be developed.

Prices oversight

The QCA investigates pricing policies where directed to do so by the State Premier and Treasurer. The QCA's recommendations may or may not be accepted by the Premier and Treasurer.

Sources: Sub. 12, sub. 24, sub. 32 and sub. DR61 and *Queensland Competition Authority Act 1997*.

To take full advantage of its changed approach to introducing competition into coal rail freight, the Queensland Government will need to develop an effective access regime rapidly. Any undue delay will make the eventual opening of the

market more difficult. While there remain no competitors for QR's coal freight division, it will have to expand its wagon fleet to service the entire expanding market. Often this involves signing additional tonnages on long-term contracts, as short-term contracts are likely to be particularly expensive in the current monopoly market. Early introduction of access, while the total market is still expanding, would allow a window of opportunity for new competitors to establish themselves.

The approach and progress of the Queensland Government is critical to the early achievement of the efficiency benefits of coal freight reform. The QMC observed:

Whether the opportunities arising from the concept of third party access are realised in regard to coal rail will depend on the level of commitment of the Queensland Government to developing an effective access regime and a supporting rail industry structure. (sub. 24, p. 22)

Queensland has not established a separate access authority like the RAC in NSW, but rather has set up an independent access unit within QR. This unit is responsible for all dealings (operational and pricing) with third party operators seeking to gain access to the rail network in Queensland. It will now be subsumed in the new infrastructure division to be created within QR. This arrangement raises concerns about transparency and fairness as the coal and minerals division of QR will be a competitor for third parties seeking to provide coal freight services. BHP observed:

Despite there being arguments on both sides, there is reason for concern that the retention of an access body within the control of the current service operator, without specific and transparent controls, will not result in an unbiased outcome. (sub. 30, p. 20)

This view was supported by the Queensland Commission of Audit:

Given the incentive that exists for Queensland Rail to discourage competitors from operating on its network, the effectiveness of the regime will be limited unless it is enforced by an independent authority. (Queensland Commission of Audit 1996, p. 162)

As shown by the NSW experience, an access regime will need to be comprehensive, transparent, clearly equitable to all parties and have appropriate appeal mechanisms if it is to generate confidence for potential entrants and end users. The Queensland Commission of Audit argued:

To introduce competitive pressures the very minimum required is a comprehensive third party access regime implemented across the entirety of the Queensland Rail's network. (Queensland Commission of Audit 1996, p. 162)

Early development of an access regime which is detailed and transparent in dealing with pricing and operational matters and has appeal mechanisms easily accessible to freight users is necessary to generate the maximum benefits from the planned introduction of competition into rail freight. This is particularly so in Queensland where the integrated structure of Queensland Rail has created industry concerns about the fair treatment of new entrants into the coal freight market.

Recommendation:

The NSW and Queensland Governments should facilitate the early establishment of comprehensive rail access regimes that can be certified by the National Competition Council as effective.

The introduction of access to rail infrastructure will be of benefit initially only to new mines or expanded tonnages from existing mines. Those mines on current long-term contracts negotiated under the expectation that third party access would not commence until November 2000 may be disadvantaged if the early introduction of competition generates reductions in freight rates for new contracts. While any unforeseen results of contractual negotiations in a commercial environment have to be borne by the parties, the negotiation of coal freight rates in Queensland in recent years have been conducted in the expectation of delayed introduction of competition. Indeed, several participants indicated a belief that the eventual introduction of competition may not occur until well beyond 2000. BHP speculated:

While the National Competition Principles set a framework for the introduction of such competition in other sectors from 1996, coal in Queensland suffers from a moratorium on the introduction of third party operations until 2000, a restriction that will effectively and practically prohibit their introduction, without immediate steps to facilitate that access until well beyond this time. (sub30, p. 20)

These expectations have now been overtaken by a change in Government policy. However, the inherent delays in developing an acceptable access regime and the time required to establish a new freight operation suggest that there would be little new competition before 2000. In that event, the change in the policy framework will have had little adverse impact on holders of existing contracts.

7.6 Price setting for rail access

This section considers the efficient pricing of the use of rail infrastructure by third parties. Because it would not be economic to duplicate the rail network,

this infrastructure is subject to monopoly provision. Hence, pricing rules and procedures need to be developed that generate efficient performance, pricing and investment by rail infrastructure providers.

Through third party access to rail infrastructure, the freight haulage component of coal rail transport is likely to be opened up to competition over the next five years. If supported by appropriate access regimes and pricing this should generate efficient market-driven prices for the freight haulage portion of coal freight costs.

A number of important issues for access pricing are examined below. These matters, which are often quite technical and complex, are relevant to rail services beyond coal freight. The detailed resolution of these issues is beyond the scope of this inquiry. However, a number of salient points can be made regarding pricing in the context of coal freight services.

It is important to recognise that, in examining charges for access to rail infrastructure, the Commission is not considering the appropriate level of State taxation that the coal industry or particular coal mines should pay. The main point to be drawn from the analysis in this chapter and Chapter 10 is that such matters should be decided in the context of royalty policy, not rail pricing policy. The use of excess profits from rail freights to obtain revenue from the coal industry distorts both the pricing and performance of rail services and is often a blunt and arbitrary instrument for collecting implicit royalties. Although such policies are officially ending, there remains concern in the coal industry that access pricing decisions still provide excessive returns from coal freight.

The Commission has not made any recommendations regarding the appropriate method to price rail access and notes that many alternative approaches have been put forward for other infrastructure industries. Some possible pricing approaches include; rate of return regulation, CPI minus X and the United States Interstate Commerce Commission method (sub. 7, sub. DR54 and Easton 1996).

7.6.1 Asset valuation

Asset valuation and rate of return on assets are the building blocks for rate of return pricing. Together they establish the profit component of the total cost that the rail infrastructure provider will aim to recover in prices. Asset values will also directly affect depreciation expense. Setting appropriate asset values and rates of return is part of the process of determining prices which generate efficient use of below track infrastructure and investment in that infrastructure.

The method of valuing assets for pricing access to rail infrastructure has raised considerable participant comment. The main concern of the coal industry is that the use of replacement cost asset values is a means for governments to continue to make excessive returns from coal freight despite their professed policy of competitive pricing. The Queensland Manufacturing Industry Forum argued:

User charges will be overstated if the asset base on which target revenue is calculated is not appropriate. (sub. 2, p. 12)

The QMC concurred:

... QR has adopted a method of asset valuation which is guaranteed to lead to overpricing. (sub. 24, p. 7)

For rail access pricing, NSW currently uses replacement cost and Queensland uses deprival value as the methods of valuing assets. Replacement cost is the cost to an entity if it were to replace the asset with an item providing a similar or equivalent service. Deprival value is the cost to an entity of providing goods and services by using an asset, if it were deprived of that asset. The value to the entity in most cases will be measured by the replacement costs of the service or benefits currently embodied in the asset. Hence, deprival value normally will represent the cost avoided as a result of controlling the asset and the replacement cost represents the amount of cash necessary to obtain an equivalent or identical asset (Steering Committee on National Performance Monitoring of Government Trading Enterprises 1994). Because of the impact of inflation, replacement cost and deprival value approaches usually will generate higher asset values than historical cost, particularly for assets with long lives.

Many participants argued that historical cost was the most appropriate form of asset valuation. The QMC stated:

Replacement cost is said to be (i) preferable to historical cost in accounting for the opportunity costs of capital — which it is not, and (ii) necessary to sustain assets — which it is not. Replacement cost valuation causes an over-recovery of capital costs. (sub. 24, p. 27)

Dr Easton commented:

Replacement cost valuation is not used by the private sector — which government corporations are supposed to emulate — or by the Class 1 North American railroads which QR is supposed to emulate in pursuit of world's best practice. The American Railroad Accounting Principles Board and the Interstate Commerce Commission explicitly rejected replacement cost valuation for use in the regulation of US railroad pricing. (Easton 1996)

And, as Easton Business Consultants, he added:

A prime reason for this preference is that historical costs are valid, accurate and verifiable, and are thus objective and transparent. Values are not dependent on

assessments of relative service potential, which may be highly subjective. (sub. 47, p. 5)

The ACCC, however, has argued in its draft guide to access undertakings:

Before accepting the historical cost approach to asset valuation as part of pricing principles included in an undertaking, the Commission will need to be satisfied that gold plating and over investment is not likely to occur. (ACCC 1996, p. 41)

It stated that it prefers replacement cost when:

... adverse incentives are difficult to address within the historical cost framework or if significant cost reducing technological developments are likely. (ACCC 1996, p. 42)

The Queensland Government has similar concerns:

The method of asset valuation chosen needs to result in an access price which allows for ongoing maintenance and renewal of the asset over time. The use of historical cost may not achieve these ends. (sub. DR61, p. 11)

King (1996) suggested that no one method of asset valuation is to be unambiguously preferred. On balance, however, he argued that historical cost is the most appropriate method of asset valuation for access pricing because it is easy to administer, transparent, less subjective than replacement cost, and provides adequate incentives for operation and investment. Moreover, King and Maddock (1996) have argued that replacement value may create artificially high and inefficient access prices because below track infrastructure is more likely to be upgraded and maintained rather than totally rebuilt.

Whichever asset valuation method is chosen, the most important requirement to avoid systematic over- or under-pricing is to implement the matching rate of return concept. King observed:

The choice of rate-of-return will depend in part on the chosen asset valuation technique. For example, if the valuation technique is based on depreciated historic value then the owner of the asset will need to be compensated for the rate of inflation through a nominal rate of return. If the asset base includes an adjustment for inflation, for example by using replacement cost or inflation adjusted historic cost, then a real rate of return can be used. (King 1996, p. 103)

Participants also criticised the lack of transparency in determining and publishing asset values. The QMC stated:

The mines have no means of verifying that freight rates are genuinely commercial. They are not entitled to know the value of rail assets attributed to their use, the rate of return applied to those assets or the operating cost component charged to them. (sub. 24, p. 26)

The Commission concurs and addresses this issue in the Recommendation in Section 7.6.3 below.

7.6.2 Rate of return

As noted above, for rail access pricing NSW and Queensland use replacement cost and deprival value, respectively, as their asset valuation methodologies for setting prices for access to rail infrastructure. Both of these methods make allowance for inflation and hence a real rate of return is appropriate when determining the amount of profit that should be aimed for in the long run.

QR is subject to a nominal rate of return target on revalued assets. This raised concerns in the industry of over-recovery for inflation in both the rate of return and the value of assets (sub. 24, p. 39). QR has indicated that the capital gain on rail assets is included as earnings in assessing the nominal return earned by QR (sub. DR66, p. 3). If the rate of appreciation of QR assets is equal to general inflation, then the resultant earnings target for railway operations will be the same under a real return objective.

The NSW access regime uses nominal rates of return in setting *ceiling prices* which the RAC can apply for access to rail infrastructure. The ceiling rate of return is 14 per cent nominal post-tax on the replacement value of assets. Many participants commented that this was too high. Rio Tinto argued:

... the 14 per cent (nominal, post tax) defined by the NSW government is a very high rate of return for such a low-risk enterprise with high barriers to entry, and should be considered un-commercial. (sub22, p. 28)

As observed by Easton Business Consultants:

... generation of an overall after-tax return of 14 per cent requires a pre-tax return of 22 per cent. (sub. 7, p. 13)

The application of nominal rates of return to current valued assets in setting prices for access to rail infrastructure will lead to excessive prices.

These returns led to industry concerns that monopoly profits were still being earned by the RAC, because the monopoly rent component of pre-1996 prices, as identified by the NSW Government, was based on excessive rates of return. Easton Business Consultants stated:

... if RAC overvalued infrastructure assets and/or set its target rate of return at too high a level, RAC would be in a position to embody monopoly rent in its charges for access over and above the acknowledged levels. (sub7, p. 13)

Similarly, Camberwell Coal argued:

We think there's potential to include another form of monopoly profit because the rail access regime that has been introduced in NSW has very high rates of return and it's also the replacement value of the capital... (trans.,pp. 62–63)

... I believe there will be an ongoing monopoly profit component still contained in that charge even after the phase out of the identified monopoly profit over the next five years. (trans., p. 63)

FreightCorp expressed the view that:

The NSW Rail Access regime currently sets RAC a target rate of achieving 14 per cent after tax rate of return. This rate of return is substantially above a return commensurate with the inherent risks within RAC's business and informed analyses from a number of independent sources are in agreement that an appropriate return should be less than 10 per cent. Even a return at this level is contingent upon the sharing of volume risk between operators and RAC. In the absence of such risk sharing, the rate of return should be significantly lower still. (sub. DR67, p. 10)

Much of this concern relates to the 14 per cent (post-tax) *ceiling* rate of return limiting the RAC's use of discriminatory pricing for individual mines or groups of mines. This is not the average rate of return that the RAC aims to earn on its whole operation or on coal freight in particular. These rates will be a good deal lower. However, the absence of a publicised average rate of return target on which prices are based creates uncertainty in the minds of coal producers that excessive rates of return are still being earned on coal freight.

In addition, FreightCorp argued:

Operators and their customers require a reasonably accurate assessment of future freight charges to input into the development of business and investment plans. FreightCorp offers its customers price certainty with multiple year price/service packages for the haulage component. The below rail component once received from RAC is then added to the haulage component. Uncertainty over long term access charges could serve as a deterrent to new entrants initially faced with large start-up investments. (sub. DR67, p. 6)

Furthermore, the *average* rates of return applied in other major infrastructure industries such as gas and electricity are prescribed and published. The NSW Minerals Council submitted:

... rates of return used in the gas and electricity regimes (also natural monopolies) are 7.5 and 9.5 per cent (real, before tax) respectively. (sub. 22, p. 28)

The NSW Government indicated that it will allow:

... an independent third party to examine the evidence in relation to the issue of rate of return and provide a view on the appropriate maximum rate of return to business such as that of Rail Access Corporation. (sub. DR68, p. 1)

The transparency of access pricing is discussed further in the next section.

7.6.3 Differential pricing and cross-subsidisation

Many mining companies have complained strongly about the practice adopted by both NSW and Queensland rail authorities of discriminating between mines in setting prices based on the perceived ability to pay. NSW participants were particularly concerned that the maximum rate of return incorporated in the rules for differential pricing of rail access was a mechanism used by the RAC to achieve monopoly profits by stealth on parts of the Hunter Valley system.

The RAC and QR indicated that differential pricing is followed in order to optimise use of the rail network. Hence, it is potentially beneficial to the coal mining industry as a whole.

The extent of price discrimination practised in coal rail freight is difficult to assess because freight rates per ntk can vary for cost-related reasons such as distance of haul, traffic density and special timing requirements.

The RAC recognised some possible problems of differential pricing and argued that it was not in its interests to see these occur:

Operators competing in the same end-markets are naturally concerned that they are treated equally to their competitors and if they have the same requirements (ie. impose the same costs) they should face the same access charges. RAC supports this principle. It is not in RAC's commercial interest to support cannibalisation of traffics, ie. allowing a new entrant to achieve a lower access charge to secure traffic from incumbent operators currently paying higher access charges. This will only dilute RAC's revenues for no material gain. Similarly, it is not in RAC's interests to give incumbent operators an advantage and so frustrate competition and prevent new entrants and potentially new traffic coming to rail. (sub23, p. 9)

In the case of services with high fixed costs such as rail infrastructure, the effective use of price discrimination can produce economically beneficial outcomes. This is achieved by discriminating between users so that those marginally profitable producers (or output) which would be lost if charged higher prices pay less than other users but still make some contribution over the long run avoidable costs attributable to them. Theoretically, efficiency of pricing would be maximised if there was discrimination between all users based on the size of their marginal responsiveness to price changes (demand elasticity). Those with high responsiveness would be charged lower prices while those whose demand for the service is not very responsive to price change would face higher prices.

Both the RAC and QR propose to continue the practice of price discrimination for rail access charges. Some industry participants have also recognised the efficacy of some price discrimination. However, in general the industry is concerned about the use of price discrimination as a means of continuing to

make excessive profits from rail freight and the impact on competition between coal producers.

Both the RAC and QR are aware of these concerns. QR stated:

Whilst flexibility in pricing is required to allow the achievement of commercial outcomes, this needs to be balanced against the need to ensure that such flexibility is not exercised in a manner that inappropriately disadvantages any one end user relative to its competitors. (sub.12, p. 24)

Establishment of pricing principles by independent pricing authorities would provide users with more confidence in the application of discriminatory pricing.

Price discrimination is observed in other capital-intensive industries and occurs in privately-owned overseas railways. If appropriately applied on the basis of relative demand elasticities, price discrimination by rail infrastructure providers could be an efficient practice which would be likely to benefit the coal industry as a whole. However, the information requirements for such an approach are high. In particular, demand elasticity will not be related directly to average profitability. In some cases it may be possible to identify mines that are likely to close if not given favourable (but above avoidable cost) access charges. However, price discrimination between viable mines will be largely arbitrary because those setting access prices will not be able to assess accurately efficient price discrimination.

As with asset valuation and rates of return, the complex issues surrounding price discrimination make transparency and genuinely independent regulation in price setting particularly desirable for a monopoly service. After many years of arbitrarily imposed excessive rail prices, the coal industry is understandably suspicious of the motives of governments in setting access prices. These concerns are given more credence when governments do not appear to be wholeheartedly facilitating the introduction of access to rail infrastructure.

Transparency in price setting is somewhat more complicated in the case of price discrimination because, where charges for individual companies are involved, there may be arguments for somewhat less disclosure than in the more aggregative issues of asset valuation and rates of return. Transparency in pricing and rights of appeal have been requested almost universally by the coal industry. The Commonwealth Department of Primary Industries and Energy commented:

The mechanisms for calculating rail freight rates need to be publicly transparent, fair and equitable. This has not been the case in the past. Transparency is an important factor in assisting companies to determine their cost structure and identify areas where their competitiveness can be improved. Transparency is also

an aid to investors since it creates certainty and separates out the costs of supplying and operating the network. The lack of transparency in pricing reduces user confidence in the service provider and provides the opportunity for excessive charging. To overcome this problem, the price setting process should be independent of government. (sub43, p. 7)

Although the NSW access regime offers recourse to IPART (see Box 7.1) in the case of disputes in negotiations with the RAC, this right is available only to the rail operator or potential rail operators. At present, FreightCorp is the only coal carrier in NSW and it has not raised with IPART any pricing disputes it has had with the RAC, despite considerable industry concern with the high ceiling rates of return for some mines and groups of mines on the Hunter Valley line.

The pricing of coal rail freight by government enterprises in NSW and Queensland is not transparent. A set of principles and practices should be developed in each State which will generate efficient prices and provide the private rail freight and coal industries with confidence in the fairness of pricing.

The Commission considers that industry requests for greater transparency in access pricing are soundly based. More information would be likely to improve the efficiency of the price setting process and give more confidence to potential freight carriers that fair treatment would be provided. This would have flow-on benefits to the efficiency of the provision of rail freight. Independent pricing tribunals which could serve this purpose already exist in both NSW (IPART) and Queensland (QCA). It is crucial that details of the recommendations and decisions of these tribunals regarding access pricing for coal (and other freight) be publicly available.

The NSW Minerals Council voiced concern regarding a potential conflict of interest between the role of an arbitrator and the role of a regulator. It commented:

There was a question there which arose in submissions to the NCC about possible conflict of interest between IPART's regulation and the arbitration role ... although IPART finished up having both roles but there was some distinction made between those two roles and some steps made to help resolve possible conflict of interest problems. (DRtrans., p. 29)

It contended that:

- there should be a regulator, such as suggested here but that the regulator should be independent of the arbitrator
- the parties to a dispute should be able to appoint an arbitrator of their own choosing in accordance with the CPA and not have a predetermined arbitrator imposed on them by the access regime. (subDR60, p. 9)

The Commission considers that while the possibility of conflict of interest exists, the potential conflict can be overcome by clearly defining the functions of arbitration and regulation. Indeed, IPART already separates its arbitration and regulation functions. Moreover, the independence and transparency of the procedures and practices undertaken by IPART and QCA should ensure that such a conflict does not arise. The issues involved in establishing efficient prices for rail access are quite complex. The requisite skills for appropriately arbitrating disputes on access prices are much more likely to reside in government pricing agencies than with commercial arbitrators. However, if both parties agree to an alternative arbitrator, this option should be open to them.

Recommendation:

In New South Wales and Queensland, pricing principles and asset valuations used to determine prices for access to rail infrastructure should be made public. So too should any related recommendations prepared by the NSW Independent Pricing and Regulatory Tribunal and the Queensland Competition Authority.

Freight customers should have a right of appeal to these bodies regarding the application of the principles on a case-by-case basis.

The role of the regulation and arbitration units of IPART and QCA should be clearly defined and delineated.

Parties should be able to use an independent arbitrator of their choice for dispute resolution.

One clearly undesirable form of price discrimination is the cross-subsidising of services which do not cover the costs directly attributable to them. In Australia, many rail passenger charges fail to cover the costs of providing the services. In the past, excessive profits from coal rail freight have financed some of these losses and disguised their size. Governments have recognised that cross-subsidisation is an inappropriate method of financing loss-making services and have instituted reforms for their direct funding.

With the existence of price discrimination in setting access prices, potential exists for low access charges to be granted to passenger services with a commensurately higher proportion of infrastructure costs being allocated to freight haulage. Demand elasticities on which to base price discrimination for a service with significant government financing are problematic, leaving room for discretion in setting access charges. However, granting passenger services

preference over freight services in use of track implies that the passenger services access charge should be higher in such instances.

A number of participants complained of cross-subsidies from coal freight to other freight and passenger services. In its submission, Rio Tinto argued:

The broad rate of return is used to permit profitable parts of the network to cross-subsidise other, less profitable parts of the network. (sub.22, p. 28)

In an integrated rail authority like QR, potential exists for cross-subsidy through allocation of overhead costs of the ‘above track’ operating units between passenger and freight services. While the exact allocation of such costs may be essentially arbitrary, industry suspicions can be alleviated by introducing transparency and regulatory control as recommended in this report.

7.6.4 Contributed assets

In addition to setting freight rates well in excess of costs, in the past the Queensland Government has often required mining companies to pay for the capital required to provide a rail service. QR indicated:

... under the former Treasury pricing policy, mining companies in most instances were also required to fund all of the locomotives, wagons and infrastructure required to provide the capacity for their respective hauls. The funding was usually by way of an up-front contribution which was non-refundable. (sub.12, p. 10)

With the advent of more commercial pricing for rail freight since 1992, the coal industry has argued that depreciation and rate of return on contributed assets should not be included in access prices. Rio Tinto argued:

In many cases, customers of QR have been required to make capital contributions to rolling stock and other infrastructure. This has not been fairly and adequately acknowledged by the government when determining the capital value of their asset. (sub. 22, p. 32)

Ownership of these contributed assets is not relevant to assessing an appropriate price for rail services. Rather the issue is who should receive the return — the rail authority (government) or the contributing company. If the Government holds the view that the contributed assets were simply part of the implicit royalty charged at the time for extraction of the community’s coal assets, then ownership should be seen as residing in the rail authority. If these charges are now considered to have been too high then some form of restitution for those assets still in use would be appropriate. QR has taken the second approach:

QR, although not under any legal obligation, provides recognition to the present owners of mines for which rail asset funding contributions have previously been made by the mining industry. (sub.12, p. 11)

If the contributing company receives a return, this may be achieved through lower freight rates (based on exclusion of those assets from the asset base for calculating costs) or some form of capital rebate. The situation is complicated when the contributed assets are used also to service other customers. Prices charged to these customers should include allowance for the use of contributed assets, but any subsequent restitution to the original asset providers would be complex.

To the extent that lower prices are charged to firms that have contributed assets, it is important to make some adjustment to the value of these assets in determining the State rail authorities' asset base for calculating profits needed to achieve government rate of return objectives. If this is not done, prices for other users will be higher in order to make up for the rebates to firms that contributed assets. If the assets are used totally for the contributing firm's freight, and prices charged fully reflect this contribution, then the assets should be excluded totally from the asset base for aggregate rate of return purposes. If they are used partly to service other freight which is charged fully for their use, then only a partial adjustment to the asset base is appropriate.

While in the past contributed assets appear to have been largely part of Queensland Treasury's revenue-raising objectives in relation to coal rail freight, this approach could also be used by QR in the future as a form of risk management. If coal tonnages were to fall in the future then specialist capital could become redundant or underutilised. User capital contributions (with appropriate removal of capital costs from freight charges) would transfer these risks to users, who may be better placed to assess and manage the risks involved, resulting in lower total freight costs.⁵ In the more competitive coal freight market which is likely to develop after the introduction of access to rail infrastructure, users may have a greater range of pricing options from which to choose.

⁵ At present QR rail contracts are based on take or pay principles with customers continuing to compensate QR for non-discretionary costs in providing required capacity if the contracted tonnage is not railed. This approach transfers a significant amount of risk to users while retaining responsibility for capital spending with QR. This approach to risk management may be more appropriate when individual assets are not dedicated to single users.

8 THE COAL WATERFRONT

Coal ports and associated receipt, storage, blending and loading facilities are critical elements in the coal chain. The efficient operation of the coal waterfront is a significant determinant of the international competitiveness of the Australian black coal industry. Waterfront charges account for about 6 per cent of the free on board price of coal.

In general, Australian coal ports and terminals perform well by international standards in terms of physical throughput and pricing. However, there remains scope for improvement. In particular, concerns have been raised about possibly excessive rates of return earned by some government port authorities on coal port assets. The calculation of such charges should be transparent and independent of the assets' capacity to provide monopoly revenue. Making the ports corporations in New South Wales and Queensland subject to prices oversight would impose discipline on governments not to use them to generate excessive returns.

8.1 Introduction

The performance of the waterfront has important implications for the overall competitiveness of the Australian black coal industry. On average, waterfront charges represent about 6 per cent of total free on board (fob) costs for export coal.

Ports and terminals not only have direct cost effects. They are linked to rail infrastructure and mines in what is termed a coal chain and the performance of ports and terminals affects the other components in the chain. The Queensland Government submitted:

... the scheduling and loading of ships tends to drive other activities in the [coal] transport chain. (sub. 32, p. 38)

Work by the Bureau of Industry Economics (BIE 1995b), together with information from participants, suggests that charges and performance at most Australian coal ports are broadly competitive with overseas ports. However, comparative international port charges have moved independently of relative productivity levels due to significant variations in exchange rates in recent years.

The highly negative sentiments expressed by participants about the pricing of coal rail freight services have been largely absent in their discussion of ports. However, several submissions identified potential for more effective pricing and removal of perceived excess returns to governments at certain facilities. On the performance front, the recent long queues and high demurrage costs at the port of Newcastle attracted significant comment from participants. As many as 40 vessels queued off Newcastle during a period of unforeseen demand in 1997 (ICR 1998b, p. 10). The queue still stood at 20 vessels in February 1998 but has now been reduced further to more normal levels. The need for further improvement in the coordination of mine-rail-port linkages was also raised.

After a brief outline of Australian coal ports, this chapter presents evidence on the charges and performance of ports. It also suggests changes that might further enhance the performance of those ports.

8.2 Australian coal ports

The coal industry in Australia is serviced by six ports and nine terminals. NSW is serviced by two ports containing three terminals and Queensland by four ports containing six terminals. The coal port at Newcastle has two terminals, as do the ports at Gladstone and Hay Point in Queensland. Newcastle Port Authority has indicated that a further terminal with a capacity of 28 million tonnes a year (mtpa) may be established within that port by an independent operator (sub. 16, p. 2).

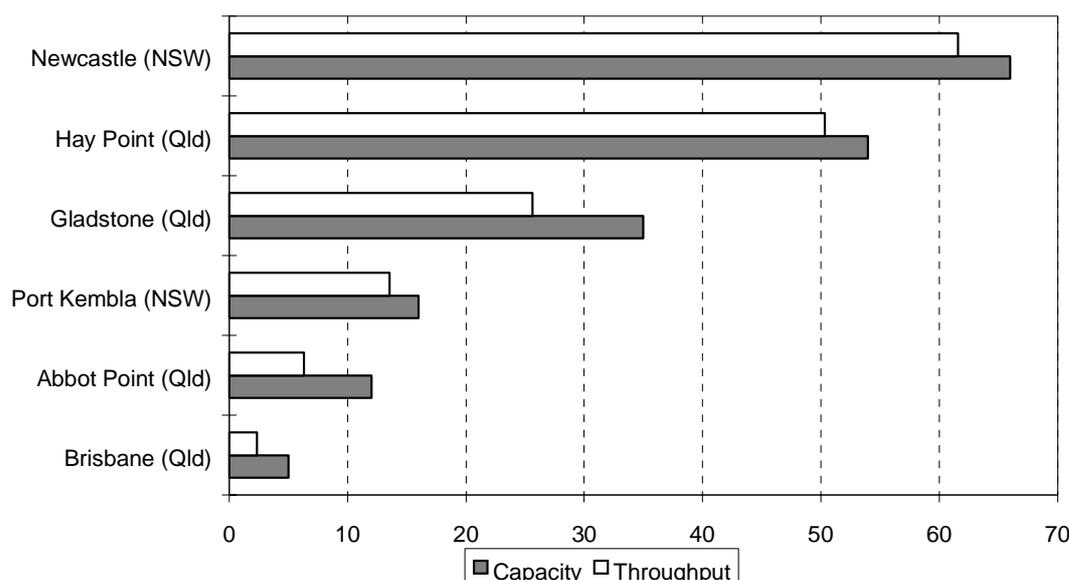
All coal ports in Australia are government-owned. However, as indicated in Table 8.1, the ownership and operators of the coal loading terminals vary considerably.

Australian coal terminals are not unique in having various ownership and management structures. For example, the newly constructed Los Angeles Export Terminal (LAXT) has 37 shareholder companies, from widely varying backgrounds, in a closely held private corporation (LAXT, p. 2). The coal terminal at Richards Bay in South Africa is also privately owned (the shareholders having interests in mining or energy) as is the Kaltim Prima facility in Indonesia. By contrast, Westshore Terminals at Roberts Bank in British Columbia is owned by holders of units in a publicly tradeable income fund.

8.2.1 Capacity

As Australia is the world's largest exporter of coal, its coal loading facilities are some of the largest in the world, although not all are large by international standards. Figure 8.1 presents the nameplate capacity and throughput of each of Australia's six coal ports for 1997, when more than 80 per cent of export throughput was handled by Newcastle, Hay Point and Gladstone.

Figure 8.1: **Coal port capacity and throughput, 1997^a (Mt)**



a Hay Point includes the Dalrymple Bay Coal Terminal and the CQCA Coal Terminal at Hay Point, Gladstone includes the R.G. Tanna and Barney Point loaders and Newcastle includes the Kooragang and Carrington terminals.

Sources: Australian Coal Report (1997, pp. 145–51), sub. 32, p. 46 and ICR (1998a, p. 20).

The throughput of coal terminals does not always correspond with their capacity. This is not surprising given somewhat large and unpredictable changes in the level of coal shipments — both in the short and long term — and the lumpy nature of new investment. For example, the coal terminals at Abbot Point and Port Kembla have considerable excess capacity. The former reflects a significant initial over-estimate of long-term throughput while the latter reflects stagnant output in Port Kembla's feeder coalfields. By comparison, in its 1997 operating mode, the coal terminal in the Port of Newcastle was not able to meet foreign demand for Hunter Valley coal.

Given the export nature of the Australian black coal industry, the location and development of coal loading ports mirrors the development of coal mining regions in Australia. The longest established mining regions have the longest

established coal ports and terminals. Furthermore, incremental changes in ports correspond with developments in mining. For example, the terminals at Hay Point, Dalrymple Bay and Gladstone have emerged as large terminals as the Bowen Basin has risen to prominence.

Large physical distances influence the number of ports in Queensland relative to NSW. In Queensland's Bowen Basin, mining occurs over a distance of about 500 km, from Collinsville in the north to Moura in the south. By comparison, while much of the coal mining in NSW occurs a significant distance inland from its ports, it is not dispersed over such a distance north and south. In addition, the industry in NSW, while continuing to develop as an export industry, first went through a phase of being tied closely to contiguous domestic electricity generation plants.

8.2.2 Competition among Australian coal ports

The Commission discussed competition between Australian ports in *Port Authority Services and Activities* (IC 1993, p. 67). Some of that discussion centred on competition between bulk cargo ports.

In general, there is very limited opportunity for competition between coal ports (although there are some ports at which two coal terminals are potential competitors). There is no viable choice of ports unless the total cost of shipping through alternate coal chains is roughly the same. Where transport distances to alternative ports are not similar, there would usually be a significant difference in the cost of using one coal chain as distinct from another. The expense of transporting coal to an alternative port is generally prohibitive and this cost differential will tend to determine shipment through a particular port.

In some cases there is competition between certain ports at the mine development stage, when mines have a choice of linking up with alternative coal chains. For example, in the Central Bowen Basin a new mine or an existing mine expanding production has a choice between the ports of Gladstone, Hay Point or Dalrymple Bay. It also may choose to ship its product partly through one coal port and the balance through another. Having made this initial decision, the mine effectively will be locked into that arrangement for the term of the contract.

In addition, there is potential indirect competition among ports. Each port is a critical link in the mine to customer transport chain. The coal chains of countries and regions are competing with each other to improve their industry's competitiveness, with consequential implications for market share and new investment. This form of competition has become more important as coal prices have fallen and profit margins tightened or evaporated for many marginal

mines. The Queensland Ports Corporation observed the need for ports to help keep their customer mines competitive:

So it becomes quite competitive at that point and we're competing against developments in other coal ports in Queensland, in coal ports in New South Wales, in coal ports in other parts of the world. (DRtrans., p. 3)

If a coal port fails to perform efficiently, it reduces the efficiency of the coal chain overall, in turn lessening the ability of the industry to compete in international markets. For example, inefficiency within a coal terminal might cause higher congestion costs relative to competing coal chains. As a consequence, coal demand might be diverted to another source.

The Ports Corporation of Queensland also raised the prospect of benchmark competition between ports:

... there exists competition between infrastructure business managers to improve the performance of the assets they manage. This could perhaps be best demonstrated in the case of bulk port operators if all terminals throughout Australia stated the total cost per tonne of using the port. (sub.DR64, p. 2)

8.3 Coal waterfront cost comparisons

There have been a number of recent studies comparing coal waterfront charges, both between Australian ports and between Australian and international ports. The BIE published a study of waterfront charges and productivity in 1995, which showed that the Australian coal waterfront generally performed on a par with world standards. Price information provided by participants in this inquiry indicated that this competitiveness has been largely maintained. Large recent movements in the value of the \$A will have had a significant influence on international price comparisons.

The following sections report the results of available studies of waterfront charges and comments on limitations in using such comparisons.

8.3.1 Difficulties with productivity and price comparisons

Chapter 7 (Sections 7.2.1 and 7.2.2) noted some caveats to the interpretation of international comparisons of productivity and prices of rail services. Similar arguments apply for ports. Any significant differences in operating environments between ports will cause differences in productivity and charges, which are not related to performance. Hence, appropriate adjustments need to be made to allow for varying operating conditions before making such comparisons for performance assessment purposes.

For example, the Australian port of Abbot Point is relatively small and requires two tugs to berth coal carriers. Hence, it will have towage costs relatively higher than a port that only requires a single tug. Scale is also important. The port of Richards Bay in South Africa is far larger than most international coal ports. As it can accommodate larger vessels, it can spread the costs of towage over a larger tonnage, thereby reducing average cost. However, such differences are not as serious for benchmarking ports as they are for rail because the operating environments of different coal ports are generally not as diverse as those of coal rail systems.

The need to convert prices to a common currency adds a further complication when making international comparisons of coal port charges. Comparisons of prices demonstrate the impact of ports on the competitive position of the coal industries of different regions or countries. But international comparisons require conversion of port charges to a single currency and exchange rates are unlikely to capture adequately all of the differences in the relative input prices for the waterfront in each country. Hence, although in recent years coal handling charges at many Australian ports have been similar to those at ports in Canada, South Africa and the United States, this in itself does not demonstrate their relative productivity or management performance.

Fluctuations in the exchange rate between Australia and other countries can alter the competitive position of our ports on the basis of a simple charges comparison. For example, from June 1997 to June 1998 the Australian dollar depreciated by close to 20 per cent against the US dollar and by a similar amount against the Canadian dollar. Such a depreciation reduces Australian port charges relative to those in the United States and Canada without any change in productivity. Conversely, the comparative position of Australian ports has deteriorated significantly against Indonesian ports due to the effect of the more than 60 per cent depreciation of the Indonesian rupiah against the Australian dollar in the past twelve months.

Charging policies also affect comparisons. The Ports Corporation of Queensland pointed out:

The difficulty in comparing the performance and charges at each terminal is that these are often determined differently at each terminal. In some cases only particular users are aware of the price they pay. Therefore, it is difficult to obtain a straight comparison. (sub. 9, p. 4)

The components included in charges also may vary between ports. For example, the port of Hampton Roads in the United States does not charge users for dredging (BIE 1995b, p. 99).

8.3.2 Coal waterfront productivity and charges

This section reports information from the BIE, Barlow Jonker and from inquiry participants.

The Bureau of Industry Economics

In its 1995 report *International Benchmarking — Waterfront*, the BIE compared estimates of charges, as well as discussing the timeliness of services and the level of productivity on the coal waterfront. The BIE research reported individual charges for all the coal ports in Australia except the Port of Brisbane.

Total coal waterfront charges were aggregated into three groups: terminal charges, ancillary charges and port authority and government charges. The composition of each group is shown in Table 8.2.

Table 8.2: Coal port pricing categories

| <i>Terminal charges</i> | <i>Ancillary charges</i> | <i>Port Authority and government charges</i> |
|--------------------------------|--------------------------|--|
| Stevedoring | Pilotage | Conservancy ^a |
| Up-front capital contributions | Towage | Tonnage |
| | Mooring | Berth hire |
| | | Wharfage |

a A charge to cover the cost of providing navigational aids in and about a port.

Source: BIE (1995b, p. 97).

Total waterfront charges at the Australian coal ports were found to be competitive by international standards. The average across all the Australian ports was \$A4.31 per tonne. The average for the three international ports in the comparison was a little more than \$A5.00 per tonne. Figure 8.2 presents total waterfront charges for all the ports in the BIE study.

As noted above, the BIE report also discussed waterfront productivity for coal (BIE 1995b, pp. 101–109). This research showed that Australia not only had relatively low charges for waterfront services, but partial productivity measures also indicated that Australia's coal waterfront was performing competitively. The BIE stated:

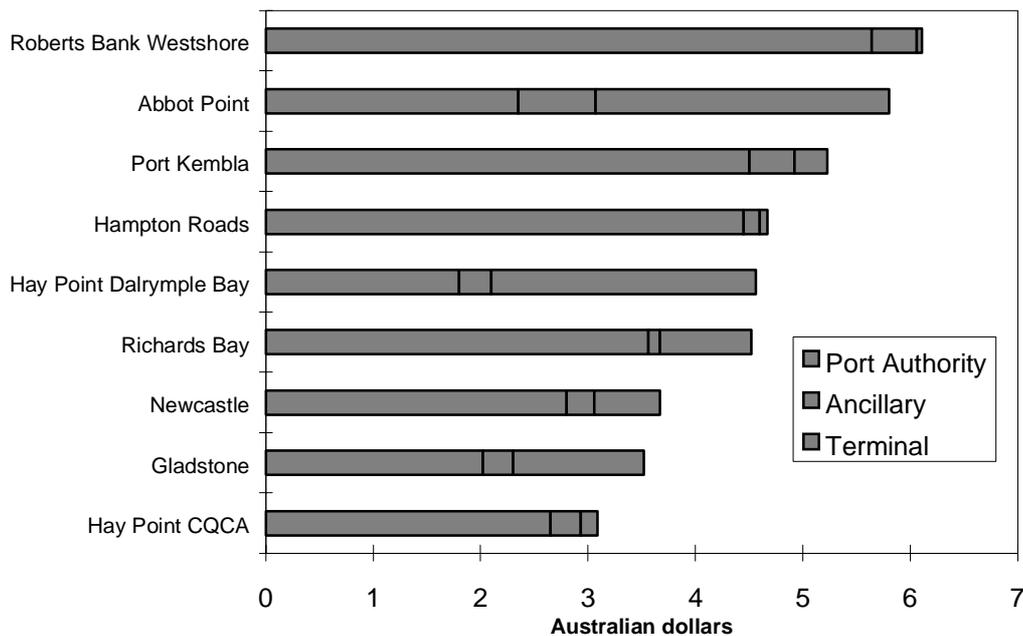
... the lower terminal charges are supported by high labour productivity and capital utilisation in the coal terminals. (BIE 1995b, p. 109)

The BIE reported that labour productivity in Australia was particularly high when compared with coal terminals in South Africa and North America. This observation appears to be in accord with the general experience at Australia's

bulk handling terminals, although it contrasts with labour productivity at container terminals (BIE 1995b, p. 109). Box 8.1 discusses some of the factors influencing the performance of the coal waterfront labour force.

The physical performance of Australia's coal waterfront is broadly competitive with coal loading facilities in other countries.

Figure 8.2: **Waterfront charges, by category of charge and port,^a 1994**



a Reproduced from BIE 1995b, p. 176. Based on a 120 000 tonnes vessel with a cargo exchange of 114 000 tonnes.

Source: BIE (1995b, p. 176).

While the BIE report indicated that Australian coal ports were competitive on the basis of price, and had relatively high labour productivity and capital utilisation, it was less positive regarding timeliness and reliability of waterfront services. The BIE commented that the limited information available raised questions regarding the timeliness and reliability of services, noting that:

Of the scant information collected, Richards Bay significantly outperformed Australian ports in terms of timeliness with smaller average delays. (BIE 1995b, p. 101)

Some of the implications of waterfront timeliness and reliability are discussed in greater detail in Section 8.5.1.

Box 8.1: The coal waterfront labour force

The BIE observed relatively poor performance of container handling on the Australian waterfront (1995b, p. xiii). The same research observed that the performance of the coal waterfront appeared to provide an exception to this overwhelmingly negative story (BIE 1995b, p. 102). A number of factors seem to be driving the superior performance of the coal waterfront, including:

- different union coverage from that in Australia's container terminals;
- different work arrangements than those in Australia's container terminals; and
- a closer relationship between bulk terminals and their customers.

The Australian container terminal industry is characterised by total coverage of a single union, the Maritime Union of Australia (MUA). In contrast, information provided to the Commission by BHP shows that union coverage varies on the coal waterfront. For example, union coverage at the ports of Hay Point and Abbot Point in Queensland is provided predominantly by the Construction, Forestry and Mining Employees Union (CFMEU). At the port of Gladstone, both the Australian Workers Union and the CFMEU are the dominant unions, although five unions have coverage. The Port Kembla coal terminal has exclusive CFMEU coverage under an enterprise agreement. The coal terminal at Kooragang has MUA coverage and the Carrington terminal has Transport Workers Union coverage.

It appears that coal terminal operators have been able to develop workplace arrangements tailored more closely to their own, and their workforce's needs. For example, although the Port of Gladstone operates its workforce under the coverage of a number of unions, it enjoys considerable flexibility in how they are utilised. It submitted:

... during a particularly busy coal shiploading period, additional labour can be supplied from our Quarry/Land reclamation operations to guarantee continuity of shiploading operations. (sub. 10, p. 8)

In contrast, Port Kembla coal terminal adopts a slightly different approach, utilising teams in the work environment as the core of its business strategy (sub. 45, p. 4).

The third distinguishing characteristic between bulk ports and container ports appears to be the close relationship between customers and the facility. In all coal terminals the terminal operators know their customers first hand. This leads to a close understanding of the customers' needs by the terminal operators, unlike in the container business where the extensive use of shipping agents and stevedoring firms means that the customer may be several times removed from contact with the service provider.

Barlow Jonker

In 1997, Barlow Jonker reported costs of coal production for Australian mines. From this information the Commission estimated average port charges. The Barlow Jonker cost data include:

... the costs of coal handling and ship loading, harbour dues and wharfage, and an allowance for superintendence. (Barlow Jonker 1997, p. 81)

The costs reported by Barlow Jonker were prepared from information supplied by individual ports. However, it is not clear whether each port's figure is based on the same cost elements. As such, the average may be biased up or down depending on whether individual port authorities have included the full cost of waterfront services. Estimates calculated from Barlow Jonker data should not be compared with the estimates calculated by the BIE.

On the basis of the data reported by Barlow Jonker, in 1996, the average total cost for Australian mines was \$51 per tonne of coal fob, of which around \$3 or just under six per cent represented port charges. Compared with the share of transport costs attributable to rail freight, this share is small. These estimates are averages only. For example, at 1997 coal prices the share of port charges would have averaged a little under five per cent for coking coal and around six per cent for thermal coal.

Information from participants

Limited information on waterfront charges was submitted by participants, and much of it was confidential.

On balance, the information confirmed the conclusion of the BIE report, that Australian coal waterfront charges were broadly competitive with major international coal ports, although certain individual ports were significantly more expensive and there remained scope for improvement.

Information supplied by Queensland Ports Corporation indicated that, at the ports for which data were provided, between 15 and 20 per cent of total charges per tonne of coal were not user-based charges (sub. 9, p. 5). Such charges include Commonwealth and State government charges, towage, pilotage and tonnage charges. As well as this impost, among user-based charges, both the Abbot Point and Dalrymple Bay coal terminals levy *special harbour dues* of more than \$2.00 per tonne. In contrast, the R.G. Tanna terminal at Gladstone levies a special harbour due of \$0.23 per tonne.

Rio Tinto indicated that charges at some Australian coal ports were on a par with those of international ports but that, on average, Australian port charges were slightly higher. Rio Tinto submitted:

In terms of cost per tonne PWCS is one of the least cost coal ports in the country at \$3.65 per tonne. The average price in Australia is \$4.13 per tonne. The PWCS price also compares favourably with indicative port costs from international competitors: for example: Indonesia \$3.98, USA \$3.90, South Africa \$3.85. (sub. 22, p. 30)

However, Rio Tinto did not include demurrage in the figure reported for Port Waratah Coal Services (PWCS). In the presence of a queue at PWCS, the Rio Tinto figure understates the total cost of waterfront services there.

While it considered that coal handling charges at Australian facilities are generally high, BHP observed that at certain ports they are particularly high — notably at Port Kembla. It submitted:

Charges at Port Kembla of approximately \$4.70 per tonne (\$4.10 with recent relief) are high, when compared with what are already high coal handling costs at comparable Australian ports. Loading charges at Newcastle are approximately \$2.90 per tonne and around \$3.20 per tonne (plus a capital component of around \$0.85 a tonne) [users have an option of a per tonne payment or up front capital contribution] at the state Government-owned Dalrymple Bay terminal in Queensland. Costs at the adjacent BHP Coal operated Hay Point terminal are significantly lower. (sub. 30, p. 25)

As the bases for the various estimates of coal waterfront charges are not explained in submissions, the Commission is not able to comment on differences between various reported figures. Nonetheless, while participants' information varies, it raises a number of potential issues in public policy. These are examined next.

8.4 Pricing issues

Although comparisons of charges are of interest in assessing Australia's competitive position, examining the method of price determination — setting the level and the structure of prices — is of more relevance to assessing the performance of Australia's coal ports.

8.4.1 Rate of return on assets and special harbour dues

An important issue for participants is the appropriateness of the rate of return that governments earn on their ports infrastructure used for exporting coal. Rio Tinto argued that the return to the Queensland Government from certain coal ports is excessive:

With the charges levied by PCQ [Ports Corporation of Queensland] on the users of DBCT [Dalrymple Bay Coal Terminal], the government has made a return on its

investment of 46 per cent per annum. This covers all its investments at the port and includes the expenditure on the stage 3 expansion. Given an asset base of around \$500 million and with 32 million tonnes per year throughput, the capital charge should be around \$1.70 per tonne. The current Special Harbour Due is [\$2.43] per tonne. ...

There have also been significant capital contributions by some of the users which currently attract a reduced rate on some of their tonnage. For the allocated tonnage of these users, the capital charge should be around \$1.20 per tonne. (sub. 22, p. 34)

The Queensland Government argued that the return it generates on government owned ports was justified. It stated:

As part of the corporatisation process, [Government owned port corporation] assets were valued in accordance with the Queensland Government's Asset Valuation Guidelines, which are based on the 'deprival value' methodology. In addition, port GOCs [Government Owned Corporations] strive to achieve long run rates of return on these assets consistent with the weighted average cost of capital for the port. Short term targets are agreed between shareholding Ministers and boards as part of the annual SCI [statement of corporate intent] negotiation process and port performance is monitored against these targets. Consequently, underlying assumptions relating to asset values and rate of return targets will have an impact on port charges negotiated as part of User Agreements. (sub. 32, pp. 47–48)

The target rates of return for Queensland's port GOCs are not published. However, as port assets are revalued to current prices, such rates of return should be real rates and not nominal. The application of nominal rates of return to revalued assets would provide governments with benefits from inflation unless capital gains are included in port authority income (as is done by Queensland Rail — see Section 7.6.2).

The target rates of return for such government assets should be published in the interests of transparency to demonstrate that economically sound pricing principles are being applied. This would not undermine the relationship between the Queensland Government and the port GOCs.

The Ports Corporation of Queensland expressed concern about publishing target rates of return:

This is a matter for decision by our shareholders the State Government. From the perspective of commercial negotiation, it is not normal to place this type of information in the hands of the other party to the negotiations. (subDR58, p. 3)

However, the Commission considers that because of their high degree of market power, government-owned ports corporations and rail infrastructure providers face circumstances very different from those found in markets where competition is strong. In this situation, it is appropriate that governments

publish the target rates of return underlying their pricing policy. This would not disadvantage ports in negotiations as they have no non-government competitors who could take advantage of this information.

Recommendation:

The Queensland Government should publish the target rates of return for its port corporations' assets.

The existence of special harbour dues at certain ports in Queensland was also questioned by participants. The facilities at Abbot Point and Dalrymple Bay in Queensland were funded partly by private users and partly by the Government. Users of these ports are levied a special harbour due of \$2.71 and \$2.43 per tonne, respectively. Ports Corporation of Queensland indicated that the majority of the special harbour dues collected at DBCT are paid to Queensland Treasury Corporation as a return on the Government's investment (sub. 9).

This special harbour due represents 46 per cent of the charges at Abbot Point Terminal and nearly 48 per cent at Dalrymple Bay. BHP suggested that the levying of special harbour dues makes it difficult for users to have confidence in the calculation of the overall level of charges (sub. 30, p. 22). Rio Tinto (sub. 22) went further, suggesting that these charges have been used by the Queensland Government essentially for raising revenue through excessive profits from a natural monopoly:

In commercial terms the port [the common user coal port at Hay Point, including Dalrymple Bay Coal Terminal] is a natural monopoly for while other ports do exist, they are further away and would cause higher freight charges to make use of them. The State government has been using the port monopoly to raise revenue far above the cost of supplying the service. (sub. 22, p. 34)

The Ports Corporation of Queensland observed the very different outcome of the Government's investments at Dalrymple Bay and Abbot Point:

It turned out that the Dalrymple Bay Coal Terminal was ... unusually profitable. But the Abbot Point investment ... has probably only broken even (DRtrans., p. 5)

The Ports Corporation of Queensland indicated that the special harbour dues issue was now one of only historical interest and that future pricing arrangements would be substantially different (sub. DR58). The agreements for DBCT and Abbot Point expire during 1998–99. The Ports Corporation envisages that renegotiation will not require Government involvement and it expects that special harbour dues will cease. In their attitudes to both rail and port charges for coal, governments have recognised the far more competitive market and lower returns now faced by Australian coal producers. In this

environment, attempts to extract significant monopoly rent from government-owned infrastructure would lead to significant falls in throughput and lower returns to infrastructure providers.

With the creation of the Queensland Competition Authority (QCA) as an independent regulatory body in July 1997, the Queensland Government has put in place a mechanism designed to address port authority pricing issues. The QCA could consider the details of port GOC asset valuations, in addition to target and actual rates of return.

The QCA can recommend to the Queensland Government changes in the pricing practices of government corporations where they have been declared (see Box 7.2). Port pricing arrangements would be within the price surveillance ambit of the QCA should they be declared by the Queensland Government. Declaration of port GOCs by the Queensland Government would place more discipline on port authority pricing decisions.

The Ports Corporation of Queensland has expressed concern that the involvement of the QCA in port pricing may mitigate against fruitful negotiations:

We believe that the negotiating process has value in that as we work through the various issues with our clients, we're looking at where benefit can be obtained and, in fact, we come to a low cost situation.

...We talked with the people we're negotiating with, along the line that we didn't want to go through the process of negotiation, simply to get to the stage where having agreed that what was a fair and reasonable thing, that the proponents then went off to QCA and said, "Well this is the start point, we now want it better". We felt that that was not a reasonable position to be in. (DRtrans., p. 15)

The Commission sees the main role of independent pricing tribunals in port pricing to be the recommending of appropriate pricing principles (including rates of return and asset valuations) and where necessary reviewing their application to particular circumstances. Accordingly, if port authorities apply the agreed principles appropriately, there should be no benefit to clients making frivolous appeals to the QCA. In this environment, the negotiation process between port authorities and their clients can still produce important efficiency benefits.

In addition to the issues concerning Queensland ports, it was suggested by BHP (sub. 30, pp. 22–26) that the operating lease for the site, plant and equipment at the Port Kembla Coal Terminal — payable to the Port Kembla Port Corporation — generates an excessively high return to the NSW Government. Reflecting the difficult competitive position of many coal mines using Port Kembla, the NSW Government has reduced the per tonne charges for the use of

port facilities from \$2 to \$1.30, effectively reducing its rate of return by one third. These reductions (backdated to December 1997) are to be passed on completely to the mining industry. In addition, IPART will hold an inquiry into the lease arrangements and examine productivity changes in the coal industry in July 1999.

Although the NSW Government publishes rates of return for Port Corporations, the arguments regarding calculation of the appropriate rate of return on government assets apply equally to ports in NSW as they do to Queensland port GOCs.

While the NSW ports corporations are standing reference agencies under the provisions of the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW) (see Box 7.1), they have not been declared as monopolies, and, hence do not fall within the prices surveillance ambit of the NSW Independent Pricing and Regulation Tribunal (IPART). Thus, IPART does not have the authority to conduct a review of, or set maximum prices for, the services of NSW ports corporations. The Commission considers that NSW ports corporations would have stronger incentives to adopt appropriate and transparent pricing strategies if they were subject to review by IPART.

Recommendation:

The New South Wales and Queensland Governments should bring their port corporations within the prices oversight jurisdiction of the Independent Pricing and Regulatory Tribunal and the Queensland Competition Authority, respectively.

8.4.2 Pricing practices

As well as issues associated with rates of return and special harbour dues, this inquiry raises issues about the use of price to create the correct signals for the efficient use of coal loading facilities.

There are a number of reasons why prices for coal waterfront services at particular ports should vary, including to:

- allocate scarce capacity (for example during peak periods);
- improve efficiency in the coal chain; and
- reflect different levels of costs imposed by user requirements.

The difficulties of the PWCS pricing system during the period of long queues in 1997 is a striking example of where price could be used to help allocate

capacity more efficiently. Because of the common user conditions of its operating lease, PWCS does not use price signals to allocate capacity, operating rather on the basis of loading ships in the order that they join the queue. Particularly when there is an ongoing capacity shortage, this system encourages vessels to hurry to the port in order to obtain an earlier place in the queue. Furthermore, the increase in transactions on the spot market may serve to exacerbate the queuing problem. As miners sell marginal tonnages on the spot market, in addition to their contracted tonnages, greater numbers of vessels are required.

In 1997 this system contributed to significant delays and costs. Physical queuing gave rise to high demurrage (ship detainment) charges on coal producers, effectively increasing total charges for mining companies from an apparently competitive \$2.80 per tonne to around \$5 per tonne.

Rationing demand by using prices could have changed the incentives to race vessels to the port. For example, vessels wishing to obtain expeditious turnaround, by reserving a date for loading, should be able to pay to achieve that goal. An alternative approach is that adopted by LAXT. Rather than using prices to allocate capacity, LAXT requires users to nominate arrival details and reserve a window of time for a given vessel significantly in advance of its arrival (LAXT, p. 23). This system avoids the ship queuing problem, while putting in place strong incentives for vessels to meet their allocated window. However, this approach will involve some (usually unknown) cost in terms of loss of flexibility.

As another matter of principle, waterfront charges should reflect the underlying cost of providing a given level of service. Where the cost of providing waterfront services varies, the charge levied also should vary where the cost differences are important and can be readily identified and charged for. For example, under the present system of pricing at the port of Gladstone, no distinction is made between producers that require coal blending services and those that do not. Unless the coal handling facilities incur no further cost in providing blending services, the levying of the same charge on all users is effectively a cross-subsidy from those which do not blend (or blend at the mine) to those which do.

However, the incremental cost of blending will vary according to the design of the facility. For example, at the R.G. Tanna facility in Gladstone, each mine has a dedicated stockpile area and reclaiming is achieved by underground feeders. The cost of blending may be relatively small as all it requires is another bulldozer and operator. Nonetheless, in facilities where the cost is significant, there should be a method of charging which takes into account the cost of providing the service.

PWCS also does not charge for standard blending services — non-standard blending services are quoted case by case. Blending is not the only cause of cost differences between users of coal loading facilities. The cost of loading vessels of various types and loads will differ and should be reflected in the charges. Neither PWCS nor Queensland Port Authorities applies discounts for volume, although the latter has indicated that these are likely to be introduced at Abbot Point where there is significant excess capacity (DRtrans., p. 15). Such increased flexibility in pricing demonstrates the benefits of the commercialisation of government business enterprises over the last decade.

Finally, efficient prices provide correct signals throughout the entire operation — from allocating capacity, to decisions on when to expand. In its submission, with reference to its own experience, PWCS described the merits of user pays charging regimes:

PWCS believes there is merit in investigating a user pays regime for PWCS services for the following reasons:

... the possibility of a competitive terminal being established to export Hunter Valley coal would mean in all likelihood that a common charge could not be sustained;

... the impost of cost reflective charges for the different services provided may serve as a driver for more efficient behaviour by PWCS and customers alike;

... will serve to eliminate the current cross-subsidisation that is a characteristic of a common charge approach;

... differential charges (possibly consisting of an access charge and variable operating charge) could support the adoption of an economically sensible capacity allocation scheme (discussed above);

... differential pricing has the potential to better inform future investment decisions to be made by PWCS. (sub. 42, p. 4)

Rio Tinto also observed the deleterious effect of the common charge at PWCS:

There is a single charge for each tonne of coal shipped through the terminals, regardless of the level of service provided. Differential charges reflecting the level of service would almost certainly lead to changes which would improve the efficiency of the terminals. (sub.DR65, p. 6)

While the common user lease requirements are directed at preventing the coal industry owners of PWCT from using their market power in coal handling against new coal mines, they have the undesirable effect of apparently restricting legitimate and desirable pricing practices from being used.

There is potential for terminal operators to make greater use of variable pricing to generate improved performance and, where appropriate, ration demand.

8.5 Other issues

As well as the obvious concerns about productivity and pricing levels and practices, there are two other reasons why coal waterfront performance is important. First, it was noted by a number of participants that the long queues of vessels waiting off the coal terminals at Newcastle during 1997 had a negative spillover to the rest of the coal industry. This was seen as taking the form of damage to Australia's reputation as a reliable coal supplier or of reduced competitive discipline on other Australian port facilities. Second, coal waterfront facilities are but one element in the coal chain from mine to port. As such, any underperformance of the waterfront may drive underperformance of the coal chain overall.

8.5.1 The effect of sub-optimal performance at PWCS

As a result of faster than expected growth in demand and inefficiencies in using existing capacity, long queues of coal vessels formed off the port of Newcastle in 1997. Demurrage payments of well over \$100 million in 1997 are the visible manifestation of this sub-optimal performance. In addition, the inability of suppliers to meet demand for coal represents income forgone by the industry. Powercoal (trans., p. 29) noted that the inability to get its product to the international market can cause mining companies to reassess their expansion plans. In addition, buyers could change their short and long-run supply plans, reducing the growth of the coal industry that otherwise might have occurred.

A number of participants (for example, Exxon, sub. 3 and DPIE, sub. 43) also observed the adverse impact on the reputation of the Australian coal industry of the large numbers of vessels laying off the port of Newcastle during 1997 and early 1998. Another more subtle spillover may have been generated by the bottleneck at the port of Newcastle. Assuming that there is some indirect competition between ports, as discussed in Section 8.2.2, if a major port in Australia performs at world's best practice it disciplines other competing ports to improve their performance. Conversely, when there are problems with the performance of a significant port, the discipline imposed by this competition is relaxed. Although each port may view itself as competing only with the next closest port — or perhaps all Australian ports — the industry, overall, is competing in an international market.

The queue of coal ships at Newcastle, although fluctuating, has now returned to more normal levels at which little demurrage is payable. This largely reflects greater efficiency by PWCS in the use of its existing capacity, together with some improvement in the coordination in the coal chain. Although throughput continues to grow, there may have been some potential coal shipments which

did not occur because sellers and/or buyers changed their plans as a result of the long queues and high demurrage costs at PWCS. The very long queues of ships at Newcastle turned out to be a relatively short-term – albeit very expensive – phenomenon.

The capacity shortages at PWCS in 1997 had a negative impact on the Australian coal industry, particularly in the Hunter Valley. A number of matters relating to these shortages have implications for improved operation of Australian coal ports.

The need to weigh the costs of excess capacity against the problems of capacity shortage observed recently at PWCS implies a delicate balance in planning capacity expansion. The NSW Minerals Council commented:

... the board of PWCS agonised long and hard seven years ago and they do it all the time, about when to add capacity, because they've always been conscious of the problem of too much investment, getting too far ahead of the throughput of a loader. It can only come back and add to costs, and in a fine margin business of course that's not desirable. (trans., p. 81)

Such investment decisions are an ongoing part of all capital-intensive industries. The decision to add capacity at the wrong time would impose significant costs on the industry. For this reason, some level of queuing can be efficient. The terminal operator has to balance the potential costs of queuing against the inefficiency cost of excess capacity. In addition, many coal terminal assets have long lives and hence, before investing, operators will need to be confident that observed demand growth will be maintained for a considerable period.

Unless significant excess capacity is maintained constantly, unforeseen expansion in demand growth would usually be expected to cause short-term queuing problems depending on the time taken to expand capacity. In addition, at Newcastle vessel arrivals vary significantly during the year, so there will be queues at certain times unless excess capacity is created to cope with short-term peak throughputs. As capacity expansion can generally only be made in discrete lumps, there are also likely to be medium-term variations in queue length as capacity is excessive immediately after new investment has been bedded down, but becomes tighter as throughput increases.

Hence some degree of queuing can be seen as desirable, varying in both the short and medium terms. The Ports Corporation of Queensland argued that:

... the cost of demurrage is an integral part of measuring the efficiency of the port. This does not mean that no demurrage is the aim. Having regard to the capital costs of the port and the desire for increased throughput of tonnage over the asset base, a \$0.20 to \$0.30 demurrage charge per tonne may deliver the best overall costs to port users. (sub. DR58, p. 4)

The capacity problems at PWCS were exacerbated by significant delays due to appeals by objectors under the planning approval process imposed by the NSW Government. Without these delays the new berth and extended conveyor (which will increase nameplate capacity to 75 million tonnes) may have been in place before the end of 1997 and hence cut short the excessive queues.

Rio Tinto commented on the general role of the government in infrastructure planning:

The role of State Governments, port authorities and rail authorities is, in the case of private industry investment to:

... ensure that the legislative framework for statutory approvals and appeals is conducive to allowing properly planned projects to proceed in a timely manner; especially by ensuring that the guidelines for Environmental Impact Studies and other pre-construction approvals are sufficiently specific to allow all of the issues to be resolved during, not after the planning phase, and provide input and advice to the planning process where government services interface with the proposed expansion. (sub. 22, p. 35)

Although the right of appeal to courts by an objector to the PWCS expansion represents the workings of a democratic society, the process seems to have been unduly long in this instance. In order to bring about a resolution of the problem, a new Act of the NSW Parliament (*Kooragang Coal Terminal (Special Provisions) Act 1997 (NSW)*) was passed, validating the Minister's development consent. The third berth at Kooragang will not be in place until September 1998 and commissioning will add further time before the facility is fully productive.

The Commission considers it important that those who believe themselves adversely affected by infrastructure developments have adequate opportunities to appeal or seek compensation. However, the interests of appellants need to be considered within a general framework of the costs and benefits of such projects.

Despite long queues during 1997, reported throughput was somewhat less than the facility's nameplate capacity (66 mtpa). For example, Powercoal observed:

We see the Port of Newcastle with a nameplate capacity of 66 million tonnes, achieving throughputs less than that, somewhere between 60 and 62 million tonnes per annum. (trans., p. 22)

This outcome in the face of significant excess demand, suggests that there was room for improvement in the management and operation of the facility. This would partly reflect the bedding down of earlier capacity expansions completed in August 1996. The NSW Minerals Council (sub. DR60) has indicated that PWCS operated well below its capacity for the first half of 1997, but has since

improved performance significantly to consistently achieve its nameplate throughput over the last year.

However, a report by the Port Capacity Utilisation Group expressed the view that the Port of Newcastle in its present form has the capacity to ship even greater tonnages. The Group suggested that:

... combined receivals capacity at PWCS is no less than 88 Mt/yr and the ship loading capacity a yet unidentified figure in excess of this number. So, theoretically, with better systems and presumably a minimal capital expenditure, Newcastle can load out an additional 30 Mt/yr. (ICR 1997b, p. 12)

If correct, this view indicates that ongoing improvements in port management and coal chain coordination are available to users of PWCS.

The absence of any mechanism to allocate scarce capacity once it became obvious that underlying throughput demand was well in excess of achieved capacity also accentuated the queuing problem. The common user lease conditions applying to PWCS requiring a common charge to all users are seen by management as preventing variable pricing to allocate demand. By providing the scarce capacity to those firms willing to pay the most for it, pricing mechanisms would have allocated available throughput more efficiently and reduced the need for wasteful queuing. There would have been a significant profit transfer from coal producers to PWCS, but this would have been preferable to the transfer and wasted resources involved in the large demurrage bill associated with long queues of vessels.

Finally it has been argued that the present ownership and management structure of PWCS may inhibit timely decision-making and response to changing circumstances. Powercoal commented:

... sometimes if you sit back and look from outside in, you could be drawn to the conclusion that the whole coal chain, PWCS scenario, is somewhat like an old co-operative. Plenty of shareholders, but no real leadership, and I think we're currently seeing the need for the coal chain to be brought under the control of one management system. There are plenty of consultative bodies around and everybody's making their best endeavours. But nobody has authority to make a decision. You can only go forward once you can make a decision, and we Australians are not known for consensus, so therefore, I fail to see how we're really going to get the port up to where it should be, while ever we have this current structure. (trans., p. 30)

While it is generally not the role of governments to consider appropriate ownership structures of private sector organisations, PWCS does have long-term access to scarce berths at the Port of Newcastle on which it has now made significant capital investment. Furthermore, poor performance by one port operator can have spillover impacts on the rest of the Australian industry.

However, the Commission received no response from participants to its Draft Report request for comments on this issue. Different ownership models for terminal operators are outlined in Section 8.5.2.

8.5.2 The port in the coal chain

It is recognised that an efficient coal chain — the combination of mining practices, rail and port facilities — is important to optimising the efficiency of the coal industry. This is particularly relevant to the Australian experience, as by international standards the majority of Australia’s high quality coal resources are relatively close to export facilities. Given efficient mining practices, rail links and waterfront facilities, the Australian export coal industry has a potentially large competitive advantage over rival producers such as those in western Canada and much of the United States. If the Australian industry does not maximise the efficiency of its coal chains, it may lose some of this advantage.

Although the available evidence about the performance of the waterfront component of the Australian coal chain is quite positive, there remains scope to improve the performance of at least some of Australia’s coal waterfront facilities, specifically their relationship with other elements in the coal chain.

One question is whether the current ownership models of terminal operators is the most appropriate for achieving optimal performance. For example, although Australia has a number of coal terminals owned and operated by private consortia of coal mining companies, it has no facility that is operated as a discrete profit centre such as a publicly listed company. By contrast, the Westshore coal terminal at Roberts Bank in British Columbia is owned by a publicly tradeable income fund. Its imperative is to generate a competitive return on investors’ funds, and this makes for an approach to its operation radically different from that of any facility in Australia. As its customers operate in a highly competitive market, there are unlikely to be significant rents available for appropriation by Westshore. The background and some of the unique characteristics of Westshore terminal are presented in Box 8.2.

A second model that offers a useful method of thinking about optimising the performance of waterfront facilities is the ‘line balance’ model. This model shares a lot in common with the ‘just in time’ production methods used in other industries such as the automotive industry.

Box 8.2: Westshore Terminals' approach to the coal chain

Westshore Terminals began operations as part of Kaiser Resources' coal mining interests in Canada. It originally serviced one mine, supplying six to seven million metric tonnes per annum (mtpa) to the Japanese market for metallurgical coal. After a number of changes in ownership, coinciding with the mixed fortunes of Canada's coal industry, Westshore Terminals is a profit-making operation, independent of coal miners and rail transport providers.

In order to maximise its profits, Westshore Terminals needs to know that each other element in the chain from mine to port has the incentive to operate efficiently. For example, an inefficient mine that takes overly long to load out trains delays the loading of the coal at the terminal. Similarly, a rail system that operates inefficiently imposes a cost on the terminal.

In the Westshore Terminal coal chain, where one element creates an inefficient burden on another element, the system is designed to direct the incidence of that cost to the cause of the inefficiency. For example, demurrage charges are shared with the mines according to agreed guidelines.

This was not always the case. As in the case of PWCS, demurrage used to be borne 100 per cent by the mine until the issue was addressed in negotiations aimed at improving overall coal chain performance. With the demurrage charge being shared, each individual element has a strong incentive not to bring about demurrage.

The existence of rail detainment charges reinforces these incentives. The three elements in the coal chain have negotiated agreed cycle times for completion of each step in the chain. Where any element in the coal chain exceeds its cycle time, a detainment fee is charged. For example, in a round trip of approximately 100 hours from mine to port, there may be an allowance of four hours to load, five hours to unload and the balance to haul from mine to port. Should the mine, rail or port fail to meet the cycle time, they are required to make payments to the other elements in the chain.

Westshore Terminals describes its place in a competitive coal chain in the following terms:

Above all, however, Westshore remains committed to play a key role in the competitive success of the coal chain on the West Coast of North America by providing efficient unload and load operations, special blending requirements and constant dialogue with our customers on improvements in all aspects of the coal chain.

The underlying basis for such a model is that systems operate more cost efficiently when the peaks and troughs are removed and the system produces only as demand requires, with a minimum of inventory. The Queensland Government observed the relevance of such an approach to the coal chain:

Infrastructure utilisation can be improved by smoothing out the peaks and troughs of demand. In this regard, balancing of the infrastructure requirements and costs of links in the transport chain ie mine stockpile costs, rail costs, terminal stockpile costs, terminal and port costs, requires ongoing fine tuning. (sub.32, p. 42)

An example of where such a line balance model is applied is the Cyprus Amax Cumberland mine in Pennsylvania. The history and approach of this mine is described in Box 8.3.

The approaches taken by Westshore Terminals and Cumberland mine represent only two methods whereby the performance of individual elements is enhanced by focussing on the close relationship between a port and the other elements in a coal chain.

The coal terminals at the ports of Newcastle and Gladstone are involved with well established coal chains terminating at those facilities. The Hunter Valley Coal Chain (HVCC) has evolved over time, with the input of mines, FreightCorp, PWCS and the Newcastle Ports Corporation (sub. 27, p. 15). The potential for such co-operation to generate better performance is demonstrated by the recent improved capacity utilisation at PWCS. The coal loading facilities at the port of Gladstone also seem to have a well established coal chain, as do most of Australia's other facilities.

However, the success of the approaches at Westshore Terminals and Cumberland mine does not seem to have been replicated in Australia. There remains scope for improvement. For example, the Rail Access Corporation acknowledged that there was room to further improve the HVCC:

The RAC recognises that its investment strategy must be aligned with those of the other stakeholders to ensure that capital is spent on projects that provide the best overall economic benefit to the coal chain and the lowest life cycle cost, irrespective of whether the investment is made in rail infrastructure, rolling stock or port facilities. Historically, industry participants have tended to optimise only their own parts of the coal chain, many times to the cost of other participants and overall efficiency. (sub. 23, p. 14)

The NSW Minerals Council (sub. DR 60) indicated that greater co-ordination between various parts of the coal chain played a major role in the improved throughput from existing PWCS facilities observed in 1998. This improved cooperative effort was stimulated by the pressures created by the long delays faced by coal ships in 1997. Similarly, there may be scope for improving the efficiency of Queensland coal chains. The pressure created by falling coal prices is likely to generate renewed efforts by all members of the coal chain to obtain these co-ordination benefits.

Box 8.3: Cumberland mine's *line balance* approach

Cumberland mine commenced operations in August 1977. It was owned by United States Steel and operated on the basis of a cost plus contract, supplying thermal coal to Ontario Hydro. Its employees were, and remain, members of the United Mine Workers of America. In what Cumberland describes as “a significant emotional event”, the mine was forced on to the spot thermal coal market in 1990, when the cost plus contract was lost. The mine reduced operations to 3 or 4 days a week and its future was unsure.

In June 1993, the mine was purchased by Cyprus Amax with a view to improving its performance substantially. A new and updated longwall mining unit was purchased late in 1994. Another major change occurred in the way management thought about the overall operation from the coal face, 17 miles to the load out facility at Cumberland harbour. This led to the development of the *line balance* model central to the present approach of mine management.

Under the *line balance* model, every stage in the coal chain from the coal face to the port is balanced as an integrated single system. For example, it does not increase the efficiency of the coal chain, overall, to add rail capacity if the mine capacity is not adequate to match it. Similarly, there is no advantage from installing larger slope belts in the mine if the preparation plant cannot cope with that much coal.

Under the *line balance* approach, the overriding consideration is the total cost of the system, not the cost of elements within the system. As the operation evolves over time, the capacity of each element is augmented in such a way that the overall efficiency is achieved at the least total cost.

Cumberland mine reports that this approach has been central to the improved performance of the mine. Total cost has been reduced and output has doubled from 3.2 mtpa in 1993 to 6.3 mtpa in 1997.

In the cases of Westshore Terminals and Cumberland mine, the respective coal chains have experienced external shocks; through changes of ownership and market pressures. In each case the individual components in the coal chain have been required to take into account the efficiency of the system overall. Had each individual element not been able to meet its respective challenge, the entire coal chain would not function efficiently.

It is important to realise that the coordination of the coal chain is largely in the industry's hands. However, governments must also ensure that their rail and port authorities are responsive to industry needs. In particular, these authorities need to price flexibly so as to encourage improved coal chain performance.

9 GOVERNMENT REGULATION AND SAFETY

Underground coal mining is hazardous. The sector's fatality rate is about six times the Australian industry average. However, the low injury record of some mines indicates that accidents are preventable if hazards are managed effectively. The rate of fatal injury in the open cut coal mining sector is slightly higher than the Australian average.

The coal industry is one of the few industries subject to industry-specific occupational health and safety (OHS) legislation. In contrast to the OHS legislation applying to other industries, the coal legislation specifies how particular hazards are to be controlled, rather than placing general duties of care on workplace parties.

Participants raised a number of problems with the current legislative approach. These included that it contributed to apathy, diminished workplace parties' responsibility for safety and imposed significant costs on companies and regulators.

To improve safety outcomes in the coal industry, workplace parties need to bear more responsibility for safety. This could be achieved by incorporating duty of care principles in coal mining legislation, requiring employers to develop mine safety management plans and vigorously enforcing workplace parties' responsibilities. While there is a role for regulation of serious hazards, existing regulations should be redrafted along performance lines, and specific procedures for controlling hazards should be incorporated in mine safety management plans. Given the lesser hazards in the open cut sector, it would be appropriate to regulate it under OHS legislation applying to other industries or metalliferous mining.

The Joint Coal Board should be abolished and its functions taken over by the NSW Department of Mineral Resources, the NSW WorkCover Authority and other public and private providers as appropriate.

It may be appropriate for local government rates levied on coal mines to be higher than those for other businesses. However, rates should be not be inflated to include a quasi-royalty component.

9.1 Introduction

Government regulation of the coal industry is principally concerned with safety. This chapter begins by outlining the Australian coal industry's safety record (Section 9.2). It then identifies the legislation governing safety and the government agencies which administer that legislation (Section 9.3). The next section contrasts the approach to regulating safety in the coal industry with the approach applied to the rest of Australian industry (Section 9.4).

Participants in this inquiry raised a number of problems with the regulation of safety in the coal industry, and these concerns are outlined in Section 9.5. The Commission then outlines a number of principles to guide the reform of safety legislation to address these concerns (Section 9.6).

The remainder of the chapter is concerned with other aspects of regulation of the coal industry, namely the Joint Coal Board in NSW (Section 9.7), and charges levied by local governments (Section 9.8).

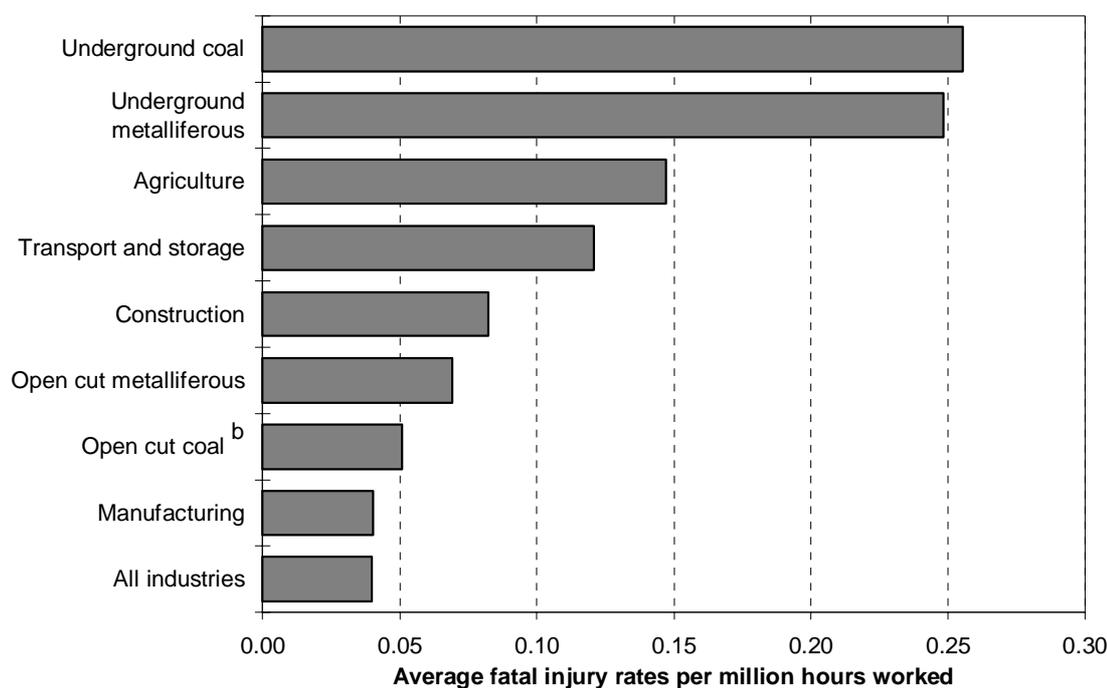
9.2 The Australian black coal industry's safety record

Underground coal mining is a hazardous industry, and the industry's fatality rate indicates serious deficiencies in the management of these hazards. The average rate of fatal injury in the underground coal industry is about six times the average rate applying across all Australian industries in recent years (see Figure 9.1).

In contrast, the rate of fatal injury in the open cut coal mining sector is only slightly above the all industry average. Coal mining has a fatality rate similar to that of metalliferous mining, but a higher lost time injury rate. However, the comparison is sensitive to the specific years chosen (see Figures 9.1 and 9.2).¹

¹ Minerals Council of Australia (1998) data show that over the period 1987–88 to 1996–97, the average fatality rate of metalliferous mining was higher than for coal mining, both in the open cut and underground coal sectors. However, this estimate was based on a simple average of fatal injury frequency rates in each year, when a weighted average taking into account changes in the number of hours worked would be more statistically accurate. The average fatality rates reported in Figure 9.1 were calculated using a weighted average and were limited to those years for which data on the number of fatalities and number of hours worked were available (namely, 1992–93 to 1996–97).

Figure 9.1: **Average fatal injury frequency rates, selected Australian industries^a**



a Average fatal injury frequency rates for coal and metalliferous mining are for the years 1992–93 to 1996–97. Fatality rates for the other industries were for the years 1991–92, 1993–94 and 1994–95. These were the only years for which complete published data were available.

b Open cut coal figures include Victorian brown coal.

Sources: Minerals Council of Australia (various), Worksafe Australia (various) and IC (1995b).

Table 9.1: **Lost time in Queensland coal mines, 1996–97**

| | <i>Source of lost time as a percentage of total time worked</i> | | | | | <i>Total lost time</i> |
|--------------------------------------|---|-----------------|-----------------|--------------------|--------------|------------------------|
| | <i>Sickness</i> | <i>Disputes</i> | <i>Injuries</i> | <i>Absenteeism</i> | <i>Other</i> | |
| <i>Open cut mines^a</i> | | | | | | |
| Best Practice | 0.13 | 0 | 0 | 0.08 | 0 | 1.52 |
| Worst Practice | 6.55 | 9.01 | 0.92 | 10.63 | 2.53 | 14.92 |
| Industry Average | 2.05 | 1.66 | 0.28 | 0.84 | 0.13 | 4.97 |
| <i>Underground mines^b</i> | | | | | | |
| Best Practice | 0.54 | 0.60 | 0.06 | 0.11 | 0 | 2.05 |
| Worst Practice | 4.68 | 5.57 | 2.27 | 8.94 | 2.76 | 15.96 |
| Industry Average | 2.86 | 2.62 | 1.02 | 1.64 | 0.41 | 8.67 |

a Open cut mines include only those with over 100 employees.

b Underground mines include only those with over 50 employees.

Source: QCB and reproduced by the Queensland Government in sub. 32.

There is substantial variation in safety performance within the coal industry (see Table 9.1). Given that, in general, coal mines face similar risks, this diversity in performance indicates that some mines have been much more successful than others in controlling the hazards they face. The low injury record of some mines indicates that accidents are preventable if hazards are managed effectively.

The coal industry's progress in improving safety is mixed. On the positive side, the industry has reduced significantly the rate of lost time due to injury over the period 1987–88 to 1996–97 (see Figure 9.2). On the negative side, the industry's fatality rate has remained high (see Figure 9.3). On all indicators, underground coal mining has a worse safety record than open cut coal mining.

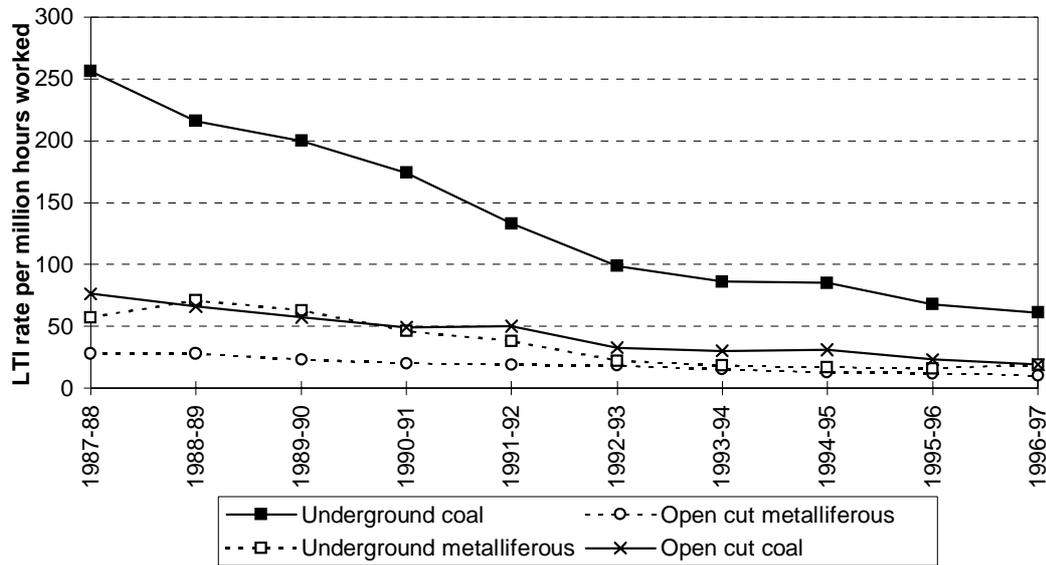
International data, although not strictly comparable, provide a broad indication of the performance of Australian mines relative to their overseas counterparts. In terms of fatalities, Australian underground coal mines have a similar fatality rate to those in the United States, and Australian open cut coal mines have a lower fatality rate than those in the United States (Minerals Council of Australia 1998).² However, coal mines in the United States have significantly lower lost time injury rates than Australian coal mines, although the performance gap has narrowed over the period 1991–1997. BHP provided evidence that its Australian coal mines had a worse injury rate than its metalliferous and overseas coal mines, including those in Indonesia (see Table 9.2).

Workplace accidents impose costs on companies. Table 9.1 indicates that injuries account for about 6 per cent (0.28/4.97) of lost time in the open cut sector, and around 12 per cent (1.02/8.67) of lost time in the underground sector. If the worst-performing mines reduced their lost time due to injuries to the average level there would be significant improvements in productivity.

BHP provided evidence that workers' compensation for its Queensland coal operations cost the company \$4.6 million in 1996–97. In addition, BHP estimated that the overtime cost of replacing workers on compensation across the whole BHP Coal Division was \$4.7 million in 1996–97.

² This comparison is based on the period 1987–88 to 1996–97 for Australian coal mines, and the period 1991 to 1997 for US coal mines.

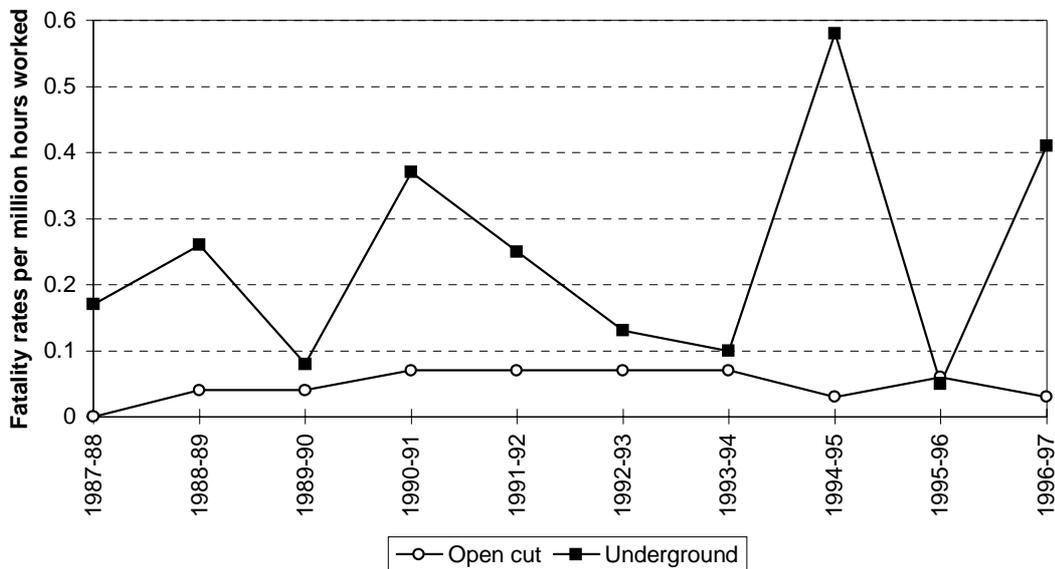
Figure 9.2: **Lost time injury frequency rates for coal and metalliferous mining^a, 1987–88 to 1996–97**



a Lost time injury frequency rate is the number of lost time occupational injuries per million hours worked.

Source: Minerals Council of Australia (1998).

Figure 9.3: **Fatal injury frequency rate, underground and open cut coal mining^a**



a Fatality rate is the number of fatalities per million hours worked.

Source: Minerals Council of Australia (1998).

Table 9.2: **Comparative safety performance at BHP operations^a**

| <i>Operation</i> | <i>12 month lost time injury frequency rate^b</i> | <i>12 month lost time injury severity rate^c</i> |
|--|---|--|
| BHP Coal Collieries NSW (Aust.) | 36.0 | 1053 |
| BHP Coal Qld Operations (Aust.) | 12.7 | 300 |
| BHP Iron Ore — Mt Newman (Aust.) | 11.2 | 271 |
| BHP Iron Ore — Yarrie (Aust.) ^d | 7.6 | 73 |
| BHP World Minerals San Juan (US) | 6.8 | 58 |
| BHP Steel (global) | 5.8 | 189 |
| BHP Iron Ore — Yandie (Aust.) ^d | 3.9 | 370 |
| BHP World Minerals Navajo (US) | 3.7 | 26 |
| BHP Copper (global) | 3.5 | 136 |
| BHP World Minerals La Plata (US) | 2.6 | 38 |
| BHP Coal Indonesia | 0.6 | 7 |

a Injury rates are for the twelve months to August 1997.

b Lost time injury frequency rate is the number of lost time injuries per million hours worked.

c Lost time injury severity rate is the days lost per million employee hours worked. This measure takes into account the severity or number of days lost per injury.

d Contract operations.

Source: BHP, sub. 30.

9.3 The regulation of safety in the coal industry

The coal industry is one of the few industries in Australia subject to industry-specific occupational health and safety (OHS) legislation, and then only in some States. The only other industries with specific OHS legislation are the mining industry, the offshore petroleum industry and the Commonwealth public sector.

In South Australia and Tasmania, the coal industry is covered by the OHS legislation applying to all other industries and mining legislation. In Western Australia, the coal industry is subject to the OHS legislation applying to the mining industry. In Victoria, open cut coal mining is subject to the general OHS legislation. Only in NSW and Queensland is coal subject to coal specific OHS legislation.

The main piece of legislation governing OHS in NSW coal mines is the *Coal Mines Regulation Act 1982* (NSW) (see Box 9.1). NSW coal mines are also subject to the *Occupational Health and Safety Act 1983* (NSW) which governs

OHS in most NSW businesses. Open cut and underground metalliferous mines in NSW are regulated by the *Mines Inspection Act 1901*.

Box 9.1: The NSW Coal Mines Regulation Act 1982

Matters covered by the *Coal Mines Regulation Act 1982* (NSW) include the following:

- the operation of mines — ranging from notification of operations, methods or systems of working mines, to the closure of mines;
- the administration governing the industry such as the appointment, qualifications and functions of departmental inspectors and the functions of the Coal Mining Qualifications Board;
- hours of work for mine employees;
- the role of managers (and under-managers, deputies and examiners) and duties of owners;
- rules under which employees should conduct themselves;
- safety inspections and reports;
- mine safety precautions and requirements;
- the operational conditions under which equipment such as boilers and pressure vessels are to be used;
- necessary qualifications, appointment prerequisites and duties of a range of mine personnel (for example, certificates of competence, mine mechanical engineers, colliery fitters and mine surveyors);
- election and necessary qualifications of district check and electrical inspectors (including how these elections are to be conducted);
- the first aid requirements, sanitary conveniences, bath and change house accommodation and protective equipment;
- coal mine vehicle and transport requirements and the operation of belt conveyors;
- the declaration of coal preparation plants; and
- the care of horses, appointment of horsekeepers and veterinary inspections of horses in underground mines.

Sources: *Coal Mines Regulation Act 1982* (NSW) and amendments.

Coal mines in Queensland are regulated under the *Coal Mining Act 1925* (Qld). In contrast to NSW, Queensland coal mines are exempt from the principal OHS statute for all other industries in Queensland, the *Workplace Health and Safety Act 1995* (Qld). Open cut and underground metalliferous mines in Queensland are regulated by the *Mines Regulation Act 1964*.

The coal legislation in Queensland and NSW covers open cut and underground coal mines. There are separate regulations for some hazards, although there is a tendency for similar regulations to be developed for both types of mines. Examples of this in NSW include:

- the *Coal Mines Regulation (CMR) (Fire Control — Underground Mines) Regulation 1984* and the *CMR (Fire Control — Open Cut Mines) Regulation 1984*;
- the *CMR (Electrical — Underground Mines) Regulation 1984* and the *CMR (Electrical — Open Cut Mines) Regulation 1984*; and
- the *CMR (Airborne Dust — Underground Mines) Regulation 1984*, the *CMR (Flammable Dust — Underground Mines) Regulation 1984* and the *CMR (Airborne Dust — Open Cut Mines) Regulation 1984*.

The coal industry is also one of the few Australian industries with a specialist OHS inspectorate. In NSW, there is a coal inspectorate located in the Department of Mineral Resources. The OHS inspectorate for virtually all industries other than mining is the NSW WorkCover Authority. The coal inspectorate is responsible for securing compliance with both the *Coal Mines Regulation Act 1982* (NSW) and also the *Occupational Health and Safety Act 1983* (NSW) (as regards the coal industry). In Queensland, the coal inspectorate is located in the Department of Minerals and Resources, whereas the inspectorate for almost all other industries (except mining) is located in the Department of Training and Industrial Relations.

9.4 How coal mining OHS legislation compares with other OHS legislation

The OHS legislation applying to the coal industry is very different from the general OHS legislation that applies to other Australian industries. The general OHS legislation was overhauled in the 1980s to replace provisions that specified how particular hazards should be controlled with duties of care on workplace parties. The new legislative approach made workplace parties responsible for safety according to their degree of control over hazards and activities in the workplace.³

This approach reflected the view that there were severe practical limits on the extent to which safety could be improved by rules set by external agencies. Ultimately, the best results would be achieved by workplace parties working

³ For a more detailed description of OHS legislation applying to other industries, see IC (1995b).

together to identify the hazards in their jobs, and the measures that could be implemented to make work safe. While many prescriptive regulations remain, governments are recasting these in terms of the *performance* standards to be met, rather than prescribing the specific ways of controlling hazards. Other regulations are being recast in terms of the *processes* which companies should adopt to assess and control hazards, rather than the specific content of those controls.

In contrast, the coal mining legislation specifies how particular hazards are to be controlled (see Box 9.2) and contains detailed requirements for other aspects of mine operations, such as showering facilities (see Box 9.3). The Queensland Government described the *Coal Mining Act 1925* (Qld) as “highly prescriptive and complex” (sub. 32, p. 35).

While generally prescriptive, the coal mining legislation also contains some self regulation provisions. For example, the NSW Act does not prescribe how the rooves of underground roadways are to be supported. Instead it requires managers of underground mines to make rules for the support of the roof and sides of workplaces and roadways (s.102).

To keep up with new hazards that are revealed through disasters or created by new technology, the legislation must be amended regularly. For example, the *Coal Mines Regulations Act 1982* (NSW) has been subject to at least 43 amendments. Following the 1994 Moura explosion, in which eleven miners died, the Queensland legislation was amended to require mines to prepare safety management plans, to appoint ventilation officers, and to specify procedures for the sealing of mines. Nevertheless, prescriptive legislation inevitably cannot specify procedures to cover all hazards in all mines.

In contrast to the general OHS legislation applying to other industries, the coal mining legislation specifies management arrangements to apply at mines. The Acts set out management and safety positions (such as examiner of an open cut mine, first aid officer), the duties and the training and experience requirements of people in these positions. In NSW, there are fifteen compulsory statutory positions for underground mines, and nine such positions for open cut mines. In Queensland, there are seven compulsory statutory positions for underground mines, and four such positions for open cut mines. The Acts state that some activities can be performed only by people in these statutory positions. Further information about the duties, training and experience requirements of statutory officers is provided in Appendix J.

Box 9.2: Examples of prescriptive requirements in NSW coal mining legislation: explosives

The following examples contrast the approach to regulating hazards in open cut mining in the NSW coal and metalliferous industries, without seeking to assess the suitability of each approach. The comparison illustrates how the coal legislation prescribes specific procedures, whereas the metalliferous legislation specifies outcomes or more general requirements, leaving the detail of procedures to be developed at individual mines.

Explosives

The Coal Mines Regulation (*Explosives and Shotfiring — Open cut Mines*) has 61 provisions governing explosives, compared with six such provisions in the *Mines Inspection General Rule 1994* governing open cut metalliferous mining. Examples of these provisions include:

Open cut metalliferous mining:

A person carrying out blasting operations at a mine must take such precautions as are necessary to prevent any person or structure being adversely affected by the blasting. (s.28(1))

The manager must ensure that adequate written records of receipts and issues of explosives are maintained at the mine. (s.26(4))

Open cut coal mining:

Where a round of shots is to be fired, the detonators shall be connected in series (except where approved by an inspector) and, as far as possible, additional wire shall not be used for connecting detonator lead wires to each other. (s.43(1))

No person shall fire any shot unless the person has posted sentries or taken adequate precautions against the inadvertent entry of persons into the danger zone by the erection of fences conspicuously marked with the words “danger” and “shotfiring” together with the date and the shotfirer’s initials. (s.44(a))

No person shall fire a shot or round of shots unless the person has sounded for a minimum of two minutes’ duration, the siren provided pursuant to clause 36, and the person fires the shot or round of shots at the end of that time. (s.45)

Every shotfirer shall at the end of the shotfirer’s shift, enter in a book kept at the mine for the purpose the following particulars: (a) the amount of explosives, detonating cord, detonators and relays issued to the shotfirer; (b) if free flowing explosives were used, the total quantity and type of free flowing explosive used in every round; (c) the amount of explosives, detonating cord, detonators and relays returned by the shotfirer to the explosive store; (d) the result of all examinations made by the shotfirer. (s. 42)

The coal legislation also involves the inspectorate in the management of safety at individual mines. For example, the Queensland legislation requires managers to notify the inspectorate about how they intend to seal part of a mine, and states that the sealing must not go ahead unless the inspectorate has notified the manager in writing that he or she is satisfied that the arrangements comply with appropriate standards and good mining practice (*Coal Mining Legislation Amendment Regulation 1996*, Part 2, s.3.1C). In addition, the inspectorate also must be notified of certain events, such as the installation of pressure vessels, alterations to showering facilities (see Box 9.3), and the absence of a Manager from the mine and the arrangements as to who will be assuming the Manager's responsibilities.

The legislation also states that certain equipment must be certified by the inspectorate before it can be used in mines. For example, s.27 of the *Coal Mines Regulation (Electrical — Underground Mines) Regulation 1984* (NSW) states that certain electrical apparatus must be approved before it can be used in underground mines. Similarly, s.20 of the *Coal Mines Regulation (Electrical — Open Cut Mines) Regulation 1984* (NSW) states that certain electrical apparatus cannot be used unless it is approved. No such requirement applies to NSW open cut metalliferous mines. Instead, managers are required to "ensure that all equipment and machinery at the mine is designed, used, maintained, repaired and replaced so as to protect the health and safety of persons at the mine" (*Mines Inspection General Rule 1994*, s.45).

Penalties for breaches of the coal mining legislation are low compared with penalties applying to other industries. Maximum penalties are \$10 000 under the NSW coal legislation, \$1000 under the current Queensland legislation and \$375 000 under the draft Queensland Bill (see Box 9.6). This compares with maximum penalties under the general OHS legislation in NSW and Queensland of \$825 000 and \$300 000, respectively.

It is also understood that the Queensland and NSW Minerals Departments rarely prosecute companies that do not meet their safety responsibilities. However, it is difficult to verify this as neither State publicly releases its enforcement record. The annual reports of inspectorates indicate that inspectorates adopt an advisory approach to dealing with serious safety breaches. For example, the Annual Report of the NSW Department of Minerals and Resources lists the actions taken by the Department in relation to mining fatalities that occurred in 1996–97. These actions included requiring the mine where the fatality occurred to review safety systems, distributing information about the fatal occurrence throughout the industry to avoid similar occurrences at other mines, and establishing judicial inquiries and coronial inquests. While mines were required to improve processes, in no case were they prosecuted. This contrasts with the

enforcement record of the NSW WorkCover Authority which conducted 473 prosecutions in 1996–97.

Box 9.3: Examples of prescriptive requirements in Queensland coal mining legislation: showering facilities

The regulation of showering facilities and change rooms illustrates the complexity of coal mining regulations, even for relatively minor hazards such as sanitation. Excerpts from the *General Rules for Underground Coal Mines (Qld), Part 52 — Health and Sanitation*, are given below:

Plans and specifications of all bath houses and change houses shall be submitted to the Chief Inspector before the commencement of construction. No extensions of or structural addition to an existing bath house or change house shall be made unless the plans and specifications thereof have been approved by the Chief Inspector. (s.52.3)

The bath house building shall be constructed of suitable material and shall have a floor of impervious material that is graded and drained to allow water to be carried away from the building. (s.52.5)

The floor space in every change room, exclusive of any floor space in the portion thereof in which showers are installed, shall not be less than 1 square metre for each person employed underground in the largest shift at the mine. (s.52.6)

Showers and washing basins shall be provided at the rate of not less than one shower for every five persons and one basin for every 20 persons in the largest shift employed underground at the mine. (s.52.8)

The floors of the bath houses and change houses, the cabinets, and the inside walls up to a height of 2 metres shall be thoroughly cleansed at least once in every period of 10 days or more often if necessary to ensure that it is maintained in a clean and sanitary condition. (s.52.11)

A responsible adult person or persons appointed by the manager shall once at least in every day on which workmen are employed at the mine inspect all the bath houses and change houses. The person or persons so appointed shall without delay make a full and accurate report in a book kept at the mine stating the result of such inspection and specifying the measures taken to remedy any defect disclosed during the inspection. (s.52.13)

In summary, the coal legislation reflects a very different approach to the regulation of safety than that applying to other Australian industries. The coal legislation prescribes how particular hazards are to be controlled and how mines are to be managed to ensure safety. It also involves the inspectorates in the management of mine safety. In contrast, the OHS legislation applying to other Australian industries specifies responsibilities, leaving individual enterprises to

work out the management structure and detailed operating procedures necessary to ensure safety, subject to meeting the requirements of specific regulations.

9.5 Problems with the current approach

In the Second Reading Speech of the *Coal Mines Regulation Bill* (NSW), the Minister for Industrial Relations said the purpose of the Bill was to

... provide all the elements necessary to achieve a safe working environment, and for an inspectorate with sufficient powers to enforce safe mining methods and practices. Provisions are being made for a competent management responsible for its actions and the members of the work force to have responsibilities to care for their own safety. (11 March 1982)

However, companies highlighted a number of problems with the current approach to regulating OHS in the coal mining industry. They argued that the current approach is not always conducive to good safety outcomes, and can impose high compliance costs on companies, reducing international competitiveness, without commensurate improvements in safety. The poor safety record of the industry, outlined in Section 9.2, gives credence to the companies' view.

Adverse effects of the current approach to safety

The first reason why the current approach may not be conducive to good safety is because inevitably it is not possible to develop prescriptive requirements to cover hazards at all mines, in all circumstances. The Queensland Mining Council observed that prescriptive legislation led workplace parties to assume mistakenly that "all risk will be adequately covered by general prescriptive legislative requirements" (sub. 24, p. 14).

Second, prescriptive legislative requirements may contribute to apathy on the part of miners and mine managers. The Queensland Mining Council said:

The present highly prescriptive regime is an impediment to improvement. The Queensland *Coal Mining Act 1925* is outdated and inflexible and helps to perpetuate dangerous attitudes to safety on the part of managers (compliance with the Act is all that is needed) and employees (safety is a management issue). (sub. 24, p. 9)

A number of studies have found an apathetic approach to safety in the coal mining industry:

- the Warden's Inquiry (1996) into the Moura accident found that there was a "singular lack of concern from those in positions of authority" to update their knowledge about spontaneous combustion; and

- the NSW Review of Mine Safety (see Box 9.5) found that it was common for mineworkers to indicate that they had never experienced a mock evacuation of their site (ACIL 1997a). A stakeholder surveyed for the Review stated that “for most, the last time they had self-rescuer training was at their induction 15 years ago. There is little refresher training” (p. 37).

Hopkins (1988) has argued that rather than reflecting apathy, breaches of safety rules by coal miners reflect:

... attempts to assert an alternative code of safety, a code arising out of the miners' own experience. They are an attempt to assert the primacy of the miners' own skills and to resist the implicit process of deskilling which detailed governmental regulation of safety involves. (p.333)

The overhaul of OHS legislation applying to other Australian industries sought to counter apathy and a failure to work safely by involving workplace parties in the control of hazards at work. This reflected the view that workers would not ‘own’ and implement safe operating procedures unless they were involved in their design. The prescriptiveness of coal industry legislation limits the scope for workers and managers to design procedures suited to their circumstances, and in this way may contribute to apathy and the violation of safety rules.

The third reason why prescriptive legislation may not be conducive to safety relates to the ability of mining companies to import successful safety practices from other parts of their operations. As mentioned in Chapter 1, the largest coal mining companies have interests in other industries, such as metalliferous mining and construction. While hazards vary between industries, the approaches to managing safety can be common (ie delineating responsibilities, involving workplace parties, and integrating safety into the way work is done). Reflecting this, companies are implementing safety programs across all of their operations, and moving managers between operations in different industries. Thiess Contractors, which has received highly commended awards in the annual Minerals Council of Australia MINEX safety awards for the last three years, commented:

A primary reason that Thiess has been successful in managing health and safety in the mining industry is directly related to our ability to cross pollinate management practices within our broad range of disciplines. It is recognised that the industry's isolationist approach to health and safety management supported by Government's separate mining legislation, has had a negative effect for ongoing improvement. Although it is appreciated that the industry has some unique hazards, so too have many other industries. It is also appreciated that regulation and codes of practice differ from industry to industry, however management practices largely remain the same...

... Thiess manages occupational health and safety throughout all of its disciplines using a singular occupational health and safety system. All supervisory staff receive the same occupational health and safety management training. It is suggested that a unilateral approach to planning, implementation and training has brought many benefits to Thiess which could produce the same benefits to all industry stakeholders. (sub. 15, p. 13)

The legislation contributes to the coal mining industry's isolationist approach to health and safety management (identified by Thiess) by erecting barriers to mobility of management personnel and impeding cross-industry initiatives. For example, legislative requirements that site managers of underground coal mines have at least two years' experience in underground coal mining, and site managers of open cut coal mines have at least one year of experience at open cut coal mines, can prevent managers from other industries moving into the coal industry, bringing with them the insights from successful safety practices in other industries (see Chapter 6 and Appendix J). Camberwell Coal said:

Statutory qualifications limit a company's ability to hire into supervisory positions persons from outside the coal industry, as to qualify for a statutory qualification you need to have a minimum of two years experience in the industry.

This system entrenches a coal industry culture and restricts companies' ability to hire the most appropriate person for the job. Organisational structures are also restricted by the need to employ persons in statutory roles. (sub.13, p. 12)

Statutory positions also perpetuate the view that safety is the responsibility of particular individuals, rather than developing a culture in which safety is everyone's responsibility.

The involvement of the inspectorate in mine safety decisions may diminish workplace parties' responsibility for safety. While the inspectorate's involvement is beneficial if it leads to an extra level of scrutiny, it is not conducive to safety if workplace parties come to rely on the assessment of the inspectorate, rather than rigorously assessing hazards themselves. This is because it is unrealistic to expect an inspector to be familiar with all of the aspects of a mine that bear on how work should be performed safely at that mine, such as the skills of the workforce and the way work is done at that mine.

Approvals by the inspectorate may also perpetuate a static approach to safety management, by ensuring that arrangements are safe when they are scrutinised by the inspectorate, rather than a dynamic approach, whereby arrangements are reviewed regularly to take account of factors that are changing at mines.

Effects of the current approach on costs and competitiveness

The current approach to regulating safety also imposes significant costs on companies and regulators without commensurate improvements in safety. The

compliance costs of a prescriptive regulatory approach were illustrated to the Commission during a visit to BHP's Elouera mine in Wollongong (see Box 9.4).

Box 9.4: Compliance costs at BHP's Elouera mine

The Elouera mine is an old mine, where mining is confined to a relatively small section of the mine. There are large areas of the mine which were worked decades ago and which no longer need to be used. BHP keeps these areas open to improve ventilation in the worked areas of the mine.

Under the requirements of the *Coal Mines Regulation Act 1982* (NSW) all roadways must be inspected every week [*Coal Mines Regulation (Managers and Officials — Underground Mines) Regulation 1984*, s.63 (1) (d)]. This is to guard against unstable roofs, rock falls etc, which could prove fatal to miners walking along these roads. However, this hazard is not relevant in the old sections of the Elouera mine, as miners do not use these walkways.

In the absence of this legislative requirement, BHP estimated that it would check the roadways about every four weeks to ensure that there was no deterioration of the roadways which could affect ventilation and other services if roadways were to collapse. Given that there are around 52 kilometres of roadways in the old section of the mine, the legislative requirement to check all roadways weekly is costing BHP an extra \$165 000 annually.

Source: BHP.

Legislative provisions prescribing staffing, training and experience requirements (ie statutory positions) inflate costs by inhibiting the introduction of modern human resource management practices, thereby reducing the international competitiveness of the Australian coal industry. Companies said that statutory position requirements:

- inhibited the introduction of team work, perpetuating traditional hierarchical models of work;
- impeded the flexible deployment of labour; and
- perpetuated the unproductive demarcation of work.

These effects are discussed more fully in Chapters 5 and 6.

A number of coal companies, including Camberwell Coal, Exxon and Rio Tinto argued that legislative requirements developed for the hazards of the underground coal industry were being imposed inappropriately on the open cut coal mining sector. For example, Exxon said:

The Coal Mines Regulation Act has been largely based on the early history of the underground coal industry in Australia. Open Cut operations are consequently burdened with some overly prescriptive regulations relative to the inherent risks.

For example, personnel criteria involving minimum qualifications, experience levels, number of required management personnel, etc. are much more restrictive than those for open cut operations in the metalliferous industry. The qualifications for statutory positions in the coal industry (both underground and open cut) and the onerous process for obtaining a certificate of competency create barriers to hiring capable and qualified persons from metal mining or other general industries for equivalent employment opportunities in the coal industry.

As a second example, standard mining equipment (haul trucks for example) must undergo expensive electrical and mechanical upgrades from the factory model versions to meet required coal industry-specifications. This same equipment is purchased “off the shelf” by the metalliferous mining and other general industries where the inherent risks are essentially similar. (sub3, p. 11)

Rio Tinto said:

There is no statistical or other evidentiary support for the view that open cut coal mining is inherently more dangerous than any other open cut mining activity. This suggests that open cut coal safety requires no legislative treatment beyond that applying to other open cut mining activity. The specific hazards of underground coal mining mean it cannot be regarded in the same way. ... It follows from those distinctions that:

- regulation of open cut coal mine occupational health and safety should be brought into the mainstream of mining occupational health and safety regulation as soon as practicable;
- the regulatory arrangements should distinguish clearly between the needs and circumstances of open cut and underground mining. (subDR65, p. 5)

Prescriptive requirements and approval mechanisms also can lift capital costs. Companies such as Powercoal and Exxon said that the machinery they used was manufactured now mostly in the United States. Yet, for historical reasons, the Australian inspectorates have adopted United Kingdom standards as the basis for approving equipment. As a result, equipment often requires costly modification before it can be used in Australia, even though it has been approved and is used safely in the United States. Companies also said that equipment approved for use in Queensland was not approved for use in NSW, and that approval criteria were revised, preventing the commissioning of equipment. Powercoal said:

The underground coal industry has to use machines which are approved by the inspector of the Department. Sadly, I have witnessed in the last 3 months, something like \$3 million worth of new machines, five in number, sitting idle either at the manufacturing plant or at our mine sites because the Department have changed their standards, changed their rules or changed their opinion from the time

the machine was ordered to the time the machine was manufactured. And we have been struggling ever since to get those machines approved. (trans.p. 26)

In response to the Draft Report, the Queensland Government advised that its Coal Inspectorate recognises Australian Standards, and if none are available, then British standards are generally used. In relation to recognition of equipment approvals between States, the Queensland Government advised that both States use the same scheme to certify electrical equipment used in explosion risk zones. However:

... requirements of different State mining legislation sometimes prevents equipment being used interchangeably in both States. This situation will probably improve with the introduction of the new coal legislation in Queensland. (sub. DR 61, pp. 13–14)

9.6 Alternative regulatory approaches

An alternative to the current regulatory approach would be to make the coal industry subject to the OHS legislation applying to other industries, and to abolish the existing coal mining Acts. This alternative approach would have two main advantages. The first is that it would ensure that the coal industry would gain from advances in OHS legislation. In this regard it is significant that in relation to other industries, NSW moved from a prescriptive legislative approach to one based on duty of care over 15 years ago. Queensland introduced duty of care legislation three years ago. These principles have still not been incorporated in coal mining legislation.

The second benefit would be that it would ensure that common national standards applied across all Australian industries, providing equity in treatment to workers and simplicity in compliance to companies. Many of the hazards in the coal industry (for example noise, manual handling, hazardous substances) are common to other industries.

Thiess Contractors supported the mainstreaming of coal mining safety legislation:

A preferable position would be to amalgamate the mining legislation with the occupational health and safety legislation. The question must be raised as to why 90 per cent of Australia's industries can be successfully managed with occupational health and safety legislation, why not mining? (sub15, p. 13)

However, the Queensland Minerals Council saw such an approach as only a long-term goal:

The Mining Council supports the incorporation of coal within mainstream health and safety legislation as a long term goal. In the short to medium term the industry needs to keep its own separate legislation and inspectorate in order to:

- sensibly stage the process of major change for all participants — regulators, managers and employees;
- provide for a level of continuing prescription in regard to catastrophic accident risks unique to underground coal mining;
- build and preserve a skilled coal mining inspectorate. (sub24, p. 9)

The Commission considers that there would be significant resistance among workplace parties to regulating underground coal mining under the general OHS Acts applying to other industries. This reflects the industry's catastrophic hazards, poor safety record, and history and familiarity with operating under a prescriptive legislative environment. While the Commission supports mainstreaming as a longer-term goal, and notes that other hazardous industries are regulated under general OHS legislation (for example the petrochemical industry), it supports a process of phased change for the underground coal sector.

However, these considerations are less compelling for the open cut coal sector. While open cut coal mining involves the management of serious hazards (for example, large mobile plant and blasting), it does not face the unique catastrophic hazards of underground coal mining (such as methane build-up). The open cut coal sector also has a substantially better safety record than the underground sector. There is less resistance among industry parties to the option of mainstreaming open cut coal mining, as indicated by comments made by participants in this inquiry and consideration of this option by tripartite working groups (Mine Safety Review 1998). In addition, there is evidence that regulating open cut coal mining under the same legislation as underground coal mining has led to the imposition of inappropriate regulatory requirements (see Section 9.5).

The Commission considers that the process of regulatory reform in open cut coal mining would be assisted by legislating for the open cut sector separately from the underground sector. Separate consideration of the two sectors would reduce the likelihood of requirements developed for the underground sector being imposed inappropriately on the open cut sector. It is also likely to enable a faster rate of change in the open cut sector than may be possible if the underground and open cut sectors were considered together.

The open cut coal sector could be regulated under the legislation governing OHS for most other industries or the legislation applying to metalliferous mining. However, determining which would be the more appropriate legislation is beyond the scope of this inquiry.

In the following section the Commission outlines principles to guide the reform process in underground and open cut coal mining.

Mine safety management plans

The Commission considers the first principle that should guide the reform process, in both underground and open cut coal mining, is that workplace parties should bear more responsibility for safety. This is a key to improving safety. The current regulatory approach undermines this principle by:

- over-prescribing how hazards should be controlled, shifting responsibility from the mine level to the industry/government level; and
- over-involvement of the inspectorate in the control of hazards, leading to a diminishing of responsibility by workplace parties.

Incorporating duty of care principles in the legislation governing the coal industry would be a first step in encouraging workplace parties to assume more responsibility for safety. The duty of care of employers should be drafted broadly to recognise organisational responsibility as well as the responsibility of individual managers. In practice, most serious accidents involve systemic failure, and it is inappropriate to put responsibility on one individual, even the mine manager, who operates within constraints and incentives set by owners and Boards. The focus on individuals and the limited liability of owners are significant weaknesses of current legislation (Hopkins forthcoming).

The Commission also considers that there should be a legislative requirement for black coal mining companies to develop mine safety management plans, in consultation with their employees. This would encourage companies to assume more responsibility for safety, and is an intrinsic part of companies meeting their duty of care.

A requirement to develop mine safety management plans would mean that managers and workers at mines would need to identify the hazards of their jobs, and develop operating procedures to control them. These procedures would include how particular work is to be done, and workers would need to be trained in these procedures. The safety management plan also would address the broader training that workers need to assess and respond to non-routine events.

For some hazards, management probably would need to call on outside expertise to assist in the hazard identification and control process. While workers would be well placed to assess day-to-day safety issues, they may not have the knowledge and expertise to identify potentially catastrophic risks, such as the geological conditions that might lead to gas outbursts.

Appropriate supervision and training is a key part of working safely. Safety management plans and site operating procedures would need to specify supervisory and staffing arrangements, and the training or competence of people whose actions affect safety.

Obviously a key part of a safety management plan approach is implementation of the control measures determined. Mines would need to audit processes to ensure that safety procedures were being implemented.

One of the aims of a safety management plan approach would be to integrate safety considerations into everything that occurred at a mine. For example, when new equipment was commissioned, workers would be trained in the safe use of that equipment, and safe operating procedures would be reassessed to see if they needed to be modified in light of the new equipment.

Safety management plans would need to be amended as circumstances changed or knowledge evolved. For example, mines would re-examine their plans and procedures in the light of findings from government investigations of fatal and serious accidents, or 'near misses' that occurred at their own or other mines. Continual improvement should be a feature of plans and mines would need to develop ways of updating safe operating procedures in the light of insights from others, including their workforce.

Employee involvement in the development of safety management plans is important to ensure that the plan is informed by workers' knowledge of hazards and the way in which work is done, and to increase the likelihood that procedures, once developed, are implemented. The provision of information about safety is also a basic right of workers. Rio Tinto emphasised:

... the need to establish mechanisms which enable non-managerial employees to be consulted about mine-based safety issues and to have concerns about aspects of safety management dealt with through those procedures. (subDR65, p. 7)

The Commission endorses this view. In addition, it considers that site health and safety representatives should be elected by workers at the mine, rather than nominated through the union, to avoid potential conflict between safety and industrial objectives (see Chapter 6).

There has been some debate as to whether mine safety management plans should be approved by the inspectorate, and whether mines should be required to submit a safety plan before being granted approval to commence mining (Mine Safety Review 1998). In the offshore petroleum industry, companies are required to have their 'safety case' or plan approved by government.

The Commission considers the dangers of this approach are that it:

- may diminish companies' responsibility for safety, as approval of plans would inevitably mean that inspectorates would have to share in the responsibility for assessing hazards;
- may encourage firms to consider safety at a point of time (when their plan was being assessed by the inspectorate), rather than constantly reviewing safety procedures in the face of changing circumstances; and
- would impose a large burden on the inspectorate.

It is also doubtful whether it would be feasible for inspectorates to assess plans. The NSW Minerals Council said:

It comes to a level of detail. For an inspector to approve one of these things [safety management plan], they would have to be as immersed in the plan and know as much about how the mine operates as the mine operator. Now it's physically impossible for them to do that. I mean, there is a real distinction in the amount of information, knowledge and expertise that an inspector has, to be able to give that stamp of approval. (DRtrans., p. 38)

Nevertheless, it is understandable that mines may want to draw on the expertise of the inspectorate in developing their plans. For example, mines may want advice on the processes used for plan development and hazard identification, and the general approaches being applied in the industry to hazard control. The Commission considers that inspectorates could offer this advice, while being careful that their advice is not seen as providing approval of plans or diminishing workplace parties' responsibility for safety.

In summary, the advantages of a safety management plan approach would be that:

- it would encourage workplace parties to assume more responsibility for safety;
- procedures would be tailored to site hazards, such as those created by the particular geology of that mine, encouraging a more active approach to safety and minimising compliance costs;
- workers would be involved in the development of safe operating procedures, ensuring that the procedures are workable, and maximising the likelihood that they are implemented;
- safety would be integrated into all processes at the mine; and
- site operating procedures could be changed as circumstances changed or as experience revealed better ways of working.

The Commission recognises that progress along these lines is occurring, but notes the finding of the NSW Review of Mine Safety that only a few NSW sites had adopted comprehensive risk management approaches in 1996 (see Box 9.5).

Box 9.5: NSW Review of Mine Safety

The NSW Government called for a Review of Mine Safety in 1996 following concern about the unacceptable number of fatalities in the NSW metalliferous and coal mining industries. The Review made 44 recommendations, mainly concerning what the industry should do to improve its safety record, either at an industry or enterprise level.

The Review recommended that there be an immediate tripartite re-examination of legislative options. It supported the introduction of mine safety management plans:

The Review believes that the mine safety management plan approach has much to recommend it, particularly as it is aimed at the full identification and management of all core risks. A Mine Safety Management Plan approach could provide the structure for currently disparate risk assessment and management activities. (p. 75)

The Review commented on the extent to which these plans were being adopted by the industry:

There are a range of proprietarial safety management systems in the industry at present. In essence, they all appear to involve the core elements of identification of hazards and assessment of risk; devising of plans and procedures to manage the risks; and auditing/examination of how effectively the safety management system has been put into effect. The Review sought to test how, and to what degree these systems were actually being put into place in NSW, and whether or not real safety gains had been observed.

Larger operators in both the coal and metalliferous sectors in NSW appear to have invested considerable effort over the past few years to introduce risk assessments and to develop and implement risk management plans at their mine sites. In the coal sector the Inspectorate, and in particular the Chief Inspector of Coal Mines, was seen as having been a driving force in encouraging companies to take on a risk management approach. (pp. 32–33)

However, very few sites have adopted the comprehensive major risk management approach envisaged in the Warden's Court Report [on the Moura accident]. (p. 75)

The Review made a number of findings and recommendations on the NSW coal inspectorate. These included:

- inspectorate policies and procedures on investigation and enforcement be developed and published;
- the Department introduce a more systematic approach to the setting of priorities among Inspectorate activities; and
- all inspectors conduct both announced and unannounced mine site visits, and that there be a requirement for sufficient unannounced visits to create a perception of a significant likelihood of an unannounced visit at any time.

Source: ACIL Economics and Policy (1997a), Secretariat to the Review.

Support for mines in developing safety management plans

In developing mine safety management plans, mines could draw on advice and information from a range of sources. This could include codes of practice and guidance notes developed by the mining industry and the inspectorates, and incident reports prepared by inspectorates. In relation to some hazards, firms may choose to adopt completely the procedures in the industry's code of practice. The Commission notes that the coal industry has developed a training program and a competence standard for staff responsible for developing mine safety management plans.

As discussed above, inspectorates could provide advice to individual mines, although it would be important that this role did not compromise their enforcement role, or diminish a company's responsibility for safety. To ensure this, the provision or acceptance of advice should not provide immunity from prosecution.

In the past, there has been some debate about whether small mines would be capable of implementing a safety management approach. The Commission notes that small mines must grapple with other complex issues such as optimal mine design, geological and engineering problems, financial structuring, and marketing and legal issues. In these areas, when mines lack adequate in-house expertise, they purchase expert advice from contractors. The Commission can see no reason why mines could not adopt a similar approach to safety, or make use of codes of practice or guidance notes developed by the industry and the inspectorate.

Prescriptive requirements in legislation and regulation

The Commission considers there is still a role for regulation of serious hazards under a duty of care regime. However, existing regulatory prescription should be reformed. In this regard, the Commission supports the findings of the NSW Review of Mine Safety that:

- the current regulations provide little incentive for companies to take greater responsibility for determining and implementing mine safety management plans;
- the present level of prescription as regards minor hazards is excessive and may result in considerable unnecessary and misdirected effort; and
- given the hazards of underground mining, certain minimum outcomes in relation to the management of serious risks should continue to be prescribed.

As a first step, regulations should be reviewed and rationalised by:

- removing detailed provisions prescribing the management of minor hazards, such as the health and sanitation regulations (see Box 9.3); and
- removing obsolete regulations, such as the *Coal Mines Regulation (Pit Horses — Underground Mines) Regulation 1984*.

Second, the regulation of major hazards should be redrafted along performance or management process lines, as is occurring with regulations applying to general industry. Rather than prescribing the detailed procedures for managing major hazards in legislation and regulation, such procedures should be incorporated in mine safety management plans, where they can be tailored to the circumstances of particular mines, and workplace parties can participate in their development. As stated by the NSW Minerals Council:

If you follow the type of mine safety management plan that is outlined in that Systec document, in effect it would contain a lot of the prescription that currently occurs in underground mining. It would include things like management structure, it would include specific rules and requirements relating to the control of risk, it would form the basis for the inspectorate's inspection process. I think if you use that model at the end of the day there wouldn't be an enormous amount left to prescribe in regulation. (DRtrans., p. 36)

Codes of practice and guidance notes would provide workers and the inspectorate with a benchmark for assessing the adequacy of procedures being implemented at individual mines. Companies would have to show that their procedures were at least as safe as those in codes or guidance notes. Much existing regulatory prescription of serious hazards could be recategorised as codes of practice, providing companies with one possible model for managing hazards. However, the changes proposed by the Commission would provide companies with the flexibility to adopt alternative procedures, if these could be demonstrated to provide an equivalent level of protection.

Third, prescriptive requirements in legislation and regulation relating to management positions (for example, deputy) should be abolished, and the need for other statutory positions (for example, cap/oil lamp officer) reassessed. While supervision, staffing and training are key components of safe operating systems, these arrangements are more appropriately determined at a site level, in the context of the overall safety management plan, than through centrally prescribed regulation.

Commenting on the draft Queensland Coal Mining Bill (see Box 9.6) which reduces the number of statutory positions to one for open cut coal mining and three for underground coal mining, the Queensland Mining Council remarked:

The coal industry disagrees with some aspects of the draft Act, principally in respect of its requirement for continuing with a number of defined management positions for which statutory certification will be required. ... Conversely, the

Mining Council argues that the requirement to retain certain traditional 'management' positions will limit the scope for mines to determine safety management arrangements which best suit their particular operations and in this way negate some aspects of the new legislative regime. (sub24, p. 10)

The Commission notes that the coal mining industry has developed industry-wide competences for many positions and tasks at coal mines (see Chapter 6). Like codes of practice, these competences could guide decisions at the site level, while providing a benchmark for gauging the adequacy of training and staffing arrangements at sites. However, sites would have the flexibility to implement alternative training arrangements provided that these met their safety responsibilities. The abolition of statutory positions would mean that all the legislative provisions designed to support these, such as the Coal Mining Qualifications Board, certificates of competence and requirements to notify the inspectorate of changes in management arrangements, could be abolished.

Box 9.6: Review of the Queensland Coal Mining Act, 1925

The review of the *Coal Mining Act 1925* (Qld) commenced in 1991, but was suspended during the inquiry into the Moura explosion. The Queensland Government had advised that it expected the draft Coal Mining Bill to be released by June 1998 (sub. 32, p. 35). However, this timing has been affected by the Queensland election. The key features of the draft Bill are:

- the incorporation of duty of care principles;
- the adoption of workplace consultative arrangements similar to those provided in the Workplace Health and Safety Act 1995;
- provision for mines to prepare safety management plans that implement controls appropriate to the conditions at the particular location; and
- the incorporation of existing State and national standards on hazards common across all industries such as noise and hazardous substances (sub.32, pp. 34–35).

Sources: Queensland Government, sub. 32 and Queensland Mining Council, sub. 24.

Fourth, governments, the coal industry and certifying agencies should review the certification of equipment, drawing on approaches used in other industries for ensuring that equipment is appropriately scrutinised prior to being deployed in hazardous situations. There is no doubt that equipment should be evaluated comprehensively before it is used in mines. The Queensland Government advised that the four coal industry fatalities that occurred in 1996–97 involved some aspect of equipment design or operation. However, participants' views raise questions whether the current approach is the most cost effective. One option that should be considered is whether more responsibility could be

assumed by companies in assessing equipment, as part of companies' overall duty of care. As a minimum, Australian inspectorates should recognise the standards set by another State in relation to coal mining equipment. The review should also consider the process of developing Australian standards rather than adopting overseas standards, weighing up the benefits to safety against the costs of modifying equipment that has been manufactured to meet overseas standards.

Fifth, regulations should be subject to regular review, with workplace parties involved, to ensure that they remain appropriate to modern mining practice.

Enforcement

The key principle guiding the Commission's approach is that better safety outcomes depend on workplace parties assuming more responsibility for safety. This underlies the Commission's proposal that there should be less reliance on legislative prescription, and greater emphasis on the development of safety procedures at site level, through mine safety management plans.

However, the benefits of this approach will be realised only if workplace parties do, in fact, take greater responsibility for safety and comprehensively assess and control the hazards of their work. In this regard, there is a role for government in providing companies with the *incentive* to manage safety. Governments can provide this incentive by enforcing vigorously workplace parties' legal responsibilities and by imposing large penalties on parties (principally employers) who fail to meet their responsibilities.

This approach would require a change in the role of the inspectorate. To provide a strong incentive for workplace parties to meet their responsibilities, and to provide adequate assurances to workers that less legislative prescription did not mean less safety, the inspectorate would need to give a higher priority to *deterrence* in enforcement.

This should involve random audits of mines to determine that:

- mine safety management plans have been developed;
- the procedures in plans represent an appropriate response to the hazards of the mine; and
- the procedures are being implemented on the ground.

Inspectorates would need to adopt a range of enforcement responses depending on the severity of any dereliction of responsibility. This would range from issuing notices requiring certain things to be rectified in a given period, in the case of minor breaches, to stopping production and/or prosecuting employers, in the case of major breaches. Inspectorates should take action against employers

who fail to control serious hazards — irrespective of whether this has already caused an accident.

The Commission considers that the inspectorate's enforcement activities should focus on those hazards that have the potential to cause serious injury or fatality. This reflects the fact that the industry has made less progress in reducing fatal injuries, and that companies may lack sufficient incentives to address low probability, but catastrophic accidents in the absence of government requirements to do so (see Box 9.7).

As part of creating a credible deterrence, the inspectorate should issue an enforcement policy and publish in its annual report details about actions taken against companies in respect of significant dereliction of the duty of care, including the names of offending companies. The Commission also considers that the maximum penalties applying to the coal industry should be brought into line with those applying to other industries under general OHS legislation. The greater emphasis on deterrence proposed by the Commission contrasts with the advisory approach currently adopted by the inspectorate. Inspectorates may need to review their structure to avoid any perception of conflict between their advisory and enforcement roles.

Box 9.7: Incentives for companies to invest in safety

The IC (1995b) found that companies may lack the financial incentives to invest in safety in the absence of government requirements to do so.

The IC estimated the cost of workplace injuries of different severity and the distribution of these costs between employers, injured workers and the community. The IC found that employers bear a large share of the costs of minor workplace injuries, but a small share of the costs of serious injuries such as fatalities and permanent disabilities. This research indicated that employers had strong incentives to reduce the incidence of minor injuries, but lacked the incentive to make the larger investments necessary to curb serious injuries.

While this finding was based on costs across all industries, it may explain why the coal industry has made more progress in curbing minor injuries than in reducing the incidence of fatal injuries. The research highlights why there is a need for government regulation to ensure good safety outcomes.

The process of reform

Recent reviews and reforms by governments have lent support for a legislative approach based around the duty of care and the development of mine safety management plans. In 1996, the Queensland Government introduced

amendments requiring mines to develop safety management plans, as recommended by the Moura inquiry. The Government has also reviewed its legislation and prepared a draft bill which includes duty of care principles (see Box 9.6).

The Review of Mine Safety in NSW recommended that coal operators be required to prepare mine safety management plans to identify and manage all serious risks (see Box 9.5). The NSW Government has said that it is moving towards “duty of care regulation supported by enforcement” (sub. 26, p. 14). It is currently reviewing coal mining legislation, and plans to circulate a draft bill in the year 2000 (Mine Safety Review 1998). Tripartite discussions are also being held to consolidate the regulations under the *Coal Mines Regulation Act 1982*. At present there are 35 regulations. These will be consolidated into three — a general regulation covering all coal mines, a specific regulation for open cut coal mines, and a specific regulation for underground coal mines. This process is due for completion around the end of 1998.

The reform principles that the Commission has outlined above reflect those underlying general OHS legislation, and are consistent with a longer-term goal of mainstreaming the regulation of OHS in the coal industry. The Commission considers that this goal would be advanced by involving those with expertise in the development and implementation of duty of care legislation in other industries, in the process of reforming coal mining legislation. This would help to ensure, for example, that the employer’s duty of care was appropriately framed to reflect organisational responsibility, and that legislative defences did not diminish this responsibility inappropriately.

Recommendation:

Workplace parties (principally employers) should be legally responsible for mine safety through their duty of care.

Underground coal mines should be regulated separately from the open cut coal sector, which should be covered by OHS legislation governing metalliferous mining or the general legislation governing OHS in other industries.

Under the regulatory approach proposed by the Commission:

- companies would be required to develop and periodically review mine safety management plans in consultation with their employees. These plans would identify all safety risks at a mine and contain procedures for the management of these risks;

- mines would be guided in developing safety management plans by codes of practice, guidance notes and advice from safety consultants and coal inspectorates;
- existing regulatory requirements would be reviewed and rationalised to remove obsolete regulations and detailed provisions prescribing the management of minor hazards;
- regulations prescribing the management of serious hazards would be redrafted along performance or management system lines, and existing regulatory prescription would be recategorised as codes of practice;
- regulations prescribing management positions would be abolished and the need for regulations prescribing other safety positions would be reassessed;
- there would be vigorous enforcement with an emphasis on deterrence, so that workplace parties had the incentive to comprehensively assess and control the hazards of their work;
- inspectorates would conduct random audits of mines to ensure that mine safety management plans addressed mining hazards and had been implemented;
- coal inspectorates would issue an enforcement policy and publish details in their annual reports about actions taken against companies in respect of significant derelictions of their duty of care; and
- maximum penalties applying to the coal industry would be brought into line with those applying to other industries.

9.7 The Joint Coal Board

The Joint Coal Board (JCB) was established under legislation enacted by both the Commonwealth and NSW Governments in 1946. Its main function was to regulate the industry and ensure the maintenance of coal supplies in NSW. The JCB has been subject to several reviews over the last decade. Its four core businesses are:

- to manage an occupational health service that delivers health assessments, injury management, work environment monitoring (including dust monitoring) and health education to the NSW coal industry;
- to maintain a fully funded workers' compensation insurance scheme for people working in the NSW coal mining industry;
- to provide an information service on production, employment and accident data; and

- (until July 1998) to conduct an international coal technology training program, funded by the United Nations and AUSAID, on the utilisation of coal in an environmentally sustainable manner (JCB 1997).

The NSW Government stated:

The Commonwealth has advised that it will be withdrawing from the Joint Coal Board. The NSW Government is currently considering how the functions of the Joint Coal Board will be performed after this takes place. (sub.DR68, p. 2)

Many participants considered it was time to review further the functions of the JCB, with some calling for its abolition.

9.7.1 Assessment of JCB functions

Dust monitoring

The JCB has a statutory power to monitor dust in coal mines. The JCB stated that its monitoring role is “independent of individual coal companies, and allows the industry access to data from consistent testing across the entire NSW coalfield” (sub. DR59, p. 1). In addition, mine managers have a duty to sample the dust levels in their mine in accordance with the *Coal Mine Regulations Act 1982*.

The JCB warned against coal companies having sole responsibility both to sample and monitor dust levels:

[The JCB’s first submission] was intended to highlight the problems that the US industry is experiencing as a result of operators having responsibility for both sampling and monitoring. There is an obvious potential for conflict of interest. ...

Along with the apparent fraudulent sampling that occurs in the US is a persisting level of pneumoconiosis. Current “black lung” prevalence in NSW is approaching zero. Appendix B shows the decrease in prevalence of pneumoconiosis in NSW over the past 25 years, along with figures for the US industry over a corresponding period. The Board still asserts that where dust sampling and monitoring responsibility are separate (for example, NSW) the potential for conflict of interest is reduced, and the danger of a distant future externality such as chest disease appearing is minimised. The Board is an unbiased monitor of dust levels across the entire NSW industry, and the Board strongly believes that this role is fundamental to maintaining a disease-free workforce. (sub.DR59, p. 2)

However, Mr Rod Ruston, a member of the JCB, disagreed that the coal industry would engage in fraudulent sampling:

When talking about dust sampling, the [JCB’s first] submission virtually makes an accusation that Australian mine operators will cheat or be biased if they are given the opportunity to undertake the sampling themselves.

The health and safety of our workforce is a critical issue for all mine operators and the accusations made in the submission are totally unacceptable. As operators, the coal mining companies would ensure the sampling undertaken was properly representative of the working conditions of the employees.

... Consequently, there are ample alternatives to the Joint Coal Board monopoly on the dust sampling which will at least maintain the current standard and probably enhance it. (sub. 36, pp. 1–2)

The Commission considers that a similar approach should be adopted to the management of dust as to other occupational health and safety hazards (see Section 9.6). Employers should be legally responsible for managing the risk posed by dust and complying with any regulatory requirements, and they should detail how this risk will be managed in their mine safety management plans. Coal inspectorates should audit mines randomly to ensure that they are managing all risks, including dust. Inspectorates may wish to consider whether the long latency of dust-related illnesses warrants additional enforcement strategies such as regular monitoring of dust levels. The Commission considers that this function could be assumed by coal inspectorates.

Workers' compensation insurance

The JCB has a legislated monopoly over the provision of workers' compensation insurance in the NSW coal mining industry. Its insurance arm operates as Coal Mines Insurance (CMI). Even though it is a monopoly provider, many participants considered that it provides competitive insurance rates.

The JCB stated that its premiums were lower than coal companies would be able to obtain under the NSW WorkCover scheme:

The premium rates set by CMI compare well with those likely for coal enterprises under WorkCover in NSW (the alternative insurer, unless an enterprise self insures). Two reviews of CMI have been commissioned by the NSW Minerals Council over the past two and a half years. Both reports concluded that there would be no financial advantage in mines transferring their insurance cover from CMI to WorkCover or becoming self-insurers. Despite charging rates which are approximately half the rate Work Cover would charge the scheme administered by CMI is fully funded — that is, the premiums collected are sufficient to cover the cost of claims incurred. (sub.44, p. 1)

The JCB's monopoly over workers' compensation insurance prevents coal mining companies in NSW from selecting their workers' compensation insurer.

The NSW Minerals Council argued that Coal Mines Insurance should be separated from the JCB and compete in the open market:

The NSW Minerals Council believes that Coal Mines Insurance should be separated from the JCB (that is, corporatised). Coal Mines Insurance is regarded as a competitive insurer which offers an efficient service to clients. It should, therefore, be well equipped to offer workers' compensation insurance to non-coal employers. However, the Council also believes that it is also appropriate to end the Coal Mines Insurance monopoly on New South Wales coal industry workers' compensation by providing coal companies with the option to self insure or to insure through another insurer. (sub.25, p. 40)

There is merit in this view.

Other functions

As well as the pre-employment medical checks provided for those about to enter the industry, the JCB is contracted to provide a more rigorous assessment for members of the NSW Mines Rescue Service. The average waiting time for a standard assessment at a JCB office was about two days in 1995–96 (JCB 1997).

The JCB provides occupational health and rehabilitation services in competition with a wide range of public and private providers. The need for the JCB to do so is not clear.

The JCB said that the purpose of its free health assessments is “to collect epidemiological data on the health of mineworkers” (sub. DR59, p. 3). The Commission considers that responsibility for this function could be assumed by the coal mining inspectorate, with assessments contracted out to appropriate providers. That way the results of such assessments could inform the other functions of inspectorates such as the provision of advice, enforcement and code of practice development. The inspectorate could also balance the priority and resources of this function against its other health and safety initiatives.

The JCB's responsibility for collating coal-related statistics also could be transferred to the Department.

In the draft report, the Commission suggested that the international coal training program could be coordinated by the NSW Department of Mineral Resources. However, the JCB said:

Australia is a donor country to the United Nations. Unfortunately, no donor country's government can be the recipient of funding from the United Nations. This of course includes State governments. Any appointed subcontractors for the program have to be independent statutory entities or private sector companies. The Board, unlike the NSW Department of Mineral Resources, is an independent statutory entity, and as such is able to coordinate the program. (sub.DR59, p. 3)

AUSAID, which provided funding for the program, advised that the program ended on 30 June 1998. The United Nations is designing a new program.

However, it has not been decided whether the program will include a coal training element. Providers of the new program will be selected by international public tender. Therefore, international training is no longer a function of the JCB, and there are considerable uncertainties as to whether the JCB would be funded to deliver such a program in the future.

9.7.2 The future of the JCB

Against this background, the Commission sees no need for continuation of the JCB. Its existence tends to reinforce the perception that the coal industry is ‘special’. In the interests of creating a more efficient industry, this perception must change. Abolition of the JCB, with its functions transferred to the NSW Department of Mineral Resources, WorkCover and other public and private providers as appropriate, would help to facilitate the mainstreaming of the coal industry.

Recommendation:

The Joint Coal Board should be abolished and its functions taken over by the NSW Department of Mineral Resources, WorkCover and other public and private providers as appropriate.

If it were decided to retain the workers’ compensation role of the JCB, Coal Mines Insurance should be corporatised and required to compete for business against other insurance options.

9.8 Local governments

Local governments affect the coal industry in a variety of ways—including planning and land use regulations and the levy of rates.

In terms of planning, in many cases local government faces conflicting objectives of coal companies and local residents. Local governments must balance the desires of coal companies to use their resources most effectively with the possible environmental concerns of local residents (such as increased dust and noise associated with the mining and transport of coal). Typically, problems arise when coal mining encroaches on developed areas, or in areas where there is little history of coal mining. In Wollongong, for example, problems have arisen due to the trucking of coal in suburban areas and the need to find space for coal waste.

In terms of local government charges, several coal companies in the Hunter Valley noted that local governments levy relatively high rates on coal mines, while the companies perceived that they received little in return. Camberwell Coal noted the following points:

- council rates are very high, particularly in the Singleton Shire;
- Camberwell expected to pay about \$74 000 in rates in 1997 to Singleton Shire (4 cents per tonne) but received little in return; and
- the coal mining rate in Singleton is 5.23 times the average of all other rates in the shire. (sub. 13, p. 4)

However in response to the draft report, the Association of Mine Related Councils argued that while mine rates may appear to be high, the rates rarely cover the commitments arising from coal developments:

The Association argues that there is a massive imbalance in the distribution of costs borne by councils and the benefits derived by State and Federal Governments which needs to be redressed to counter the high net cost of coal development at the local level.

What the [Camberwell] mine does not appear to appreciate is that its very existence creates infrastructure maintenance and social service costs for the council. Roads and amenities need to be maintained, usually at a much increased rate because of the extraordinary additional damage and use by the mining companies, community services which would not have been required if there were not an influx of miners into the community need to be provided. (subDR57, pp. 1–2)

The Commission acknowledges that it may well be appropriate for coal mining rates to be higher than those for other businesses, if the coal industry imposes disproportionate costs on local government services. At the same time, local governments need to be aware of the indirect benefits to their revenue which may stem from coal mining activity. For example, other businesses attracted to shires to provide services to coal mining companies and their employees may be a source of additional local government revenue.

It would be inappropriate for local council rates to be inflated to include a quasi-royalty component. This is because the ad hoc levying of royalties by different layers of government or infrastructure providers (ie rail authorities) could undermine industry competitiveness and reduce investment in the coal industry. Royalties are discussed in the next chapter.

10 ROYALTY ARRANGEMENTS

Mining companies pay State governments for the use of black coal resources through royalties. In NSW, royalties are levied as a dollar amount per tonne of production (specific royalties), and in Queensland as a percentage of the value of production (ad valorem royalties). State governments are phasing out the collection of royalties through rail freight rates.

Current royalty systems have the advantage of being easy to administer. Ad valorem royalties have the additional advantage of varying with price and therefore partly responding to changes in the value of coal resources. In principle, a resource rent royalty would be superior on efficiency grounds, as a company's royalty liability would depend on the value of its resource, and would vary with changes in mining costs and coal prices. A key issue is the complexity and cost of administering and complying with a resource rent royalty.

A number of participants elaborated on the difficulties of administering a resource rent royalty in the black coal industry. Nevertheless there are strong arguments for making royalties more responsive to market conditions. In NSW, the replacement of specific royalties with ad valorem royalties would allow royalty levels to move with world prices, better reflect the value of coal resources, and encourage the exploitation of low grade coals.

10.1 Current royalty arrangements in NSW and Queensland

In Australia, most minerals are owned by State and Territory governments. Miners pay State governments for the use of black coal resources through royalties. In NSW, royalties are levied as a dollar amount per tonne of production (called a *specific* royalty), and in Queensland royalties are levied as a percentage of the value of production (called an *ad valorem* royalty).

The term royalty is used to describe both royalties paid direct to State Treasuries and royalties collected through rail authorities and remitted to State governments.

The Commission estimates that in 1996–97 the NSW and Queensland Governments collected a total of \$636 million in royalties, equivalent to

2.8 per cent of their own revenue or 1.8 per cent of their total revenue — a relatively small share of State budgets (see Table 10.1).

Table 10.1: Black coal royalties in NSW and Queensland, 1996–97^a

| | | <i>NSW</i> | <i>Queensland</i> | <i>Total^b</i> |
|---|-------|------------|-------------------|--------------------------|
| Royalties | (\$m) | 233.5 | 402.0 | 635.5 |
| Royalties as a percentage of States' own revenue | (%) | 1.6 | 4.7 | 2.8 |
| Royalties as a percentage of States' total revenue ^c | (%) | 1.0 | 2.9 | 1.8 |

a Royalties includes royalties paid direct to State Treasuries and royalties collected through rail authorities and remitted to governments. This estimate excludes monopoly rents collected by the NSW RAC.

b Comprises NSW and Queensland.

c States' total revenue comprises States' own revenue plus Commonwealth contributions.

Source: Commission estimates.

10.1.1 Royalty arrangements in Queensland

Since 1994, the Queensland Government has been phasing out the collection of royalties through the rail system and phasing in a new, higher royalty rate of 7 per cent, levied on the mine gate value of production. The new royalty rate applies to mines that have renegotiated their rail contracts, and to new mines and mine expansions.

Mines on old rail contracts pay a lower royalty rate (4–5 per cent), but are subject also to royalties built into their rail charges. By 2000, the new arrangements will be fully implemented and all mines will be subject to a 7 per cent royalty and commercially negotiated rail freight rates. Further information about the phasing in of the new royalty arrangements is provided in Box 10.1.

10.1.2 Royalty arrangements in New South Wales

In NSW, royalties are levied at the rate of \$1.70 per tonne on all coal production, plus an additional \$0.50 per tonne super royalty on open cut mines.

The NSW Government is phasing out the collection of monopoly rents in rail charges, but has not announced any offsetting increases in the specific royalty rate. The monopoly rent component in NSW rail access charges is collected by the Rail Access Corporation (RAC). This monopoly rent amounted to \$1.20 per tonne in 1996–97 and is to be phased out over four years. It will be eliminated totally by 1 July 2000. Further discussion of monopoly rents in access charges in NSW is provided in Chapter 7.

Box 10.1: Phasing in of new royalty arrangements in Queensland

Prior to 1992, rail freight rates were determined by direct negotiation between Queensland Treasury and coal companies and included an implicit royalty component. Queensland Rail (QR) said: “The level of the freight rate set by Treasury was usually based on the mine’s ability to pay. In many instances this resulted in freight rates being significantly in excess of the costs of haulage” (sub.12, p. 10).

Following the commercialisation of QR in 1991, QR adopted a policy of setting freight rates in new rail contracts solely on the basis of the cost of providing rail transport services to coal mines. This meant that *new* rail contracts no longer included a royalty component. To partially offset this loss of revenue, the Queensland Government announced a new royalty regime in 1993, which was phased in from January 1994.

Under the new royalty regime, new mines and mine expansions are subject to a royalty of 7 per cent levied on the value of mine production, and existing mines become subject to this royalty rate when their present rail contracts expire. Mines with rail contracts expiring after the year 2000 are given the opportunity to renegotiate these contracts in 2000, at which time they become subject to the new royalty arrangements. An exception was provided for cases where premature termination gave rise to mutual benefit. This is the year in which the exemption for ‘government coal-carrying services’ under s.78 of the *Competition Policy Reform Act* expires (see Chapter 7). Until rail contracts expire or are renegotiated, mines are subject to the lower export coal royalty regime in existence before 1994, which was 5 per cent for open cut mines and 4 per cent for underground mines, and freight rates that include a royalty component.

In 1995–96, the amount of royalty revenue collected through old Treasury-negotiated rail contracts and remitted by QR to Government was \$235 million, or \$3.05 per tonne of coal railed (QR 1996). The Queensland Government has recently given these mines an opportunity to renegotiate their rail contracts along commercial lines. Mines that take up this offer are subject to a special royalty until 2000.

In addition, there are a small number of mines that negotiated lower commercial freight rates with QR in 1992 and 1993 prior to the introduction of the new, higher royalty rate. These mines are subject to a Resource Utilisation Charge until 2000.

The new royalty regime also includes arrangements to tax coal for the domestic and export markets equally. The royalty on domestic coal is being increased from 5 cents per tonne in 1994 to 7 per cent by 2000.

Sources: QR, sub. 12 and Queensland Government, sub. 32.

In March 1997, the NSW Government introduced new arrangements for levying royalties on coal reject. The royalty rate is no more than 50 per cent of that applying to other coal, with each case being assessed individually. The other change in NSW that has affected royalty collections has been the compulsory purchase by the Government of some private coal titles (see Box 10.2).

Box 10.2: Purchase of private coal titles by the NSW Government

In most cases, coal is owned by State governments regardless of who owns the land on the surface. However, in NSW some land granted prior to 1884 included rights over coal. Royalties for coal mined from this land accrued to private landholders rather than the State. By the end of the 1970s, about 30 per cent of coal production involved the mining of private coal and in some areas, such as the Upper Hunter, private ownership approached 100 per cent.

In 1981, the NSW Government introduced the *Coal Acquisition Act*, to revoke private landowners' title over coal and to pay compensation. This policy was reversed in 1990, when the Government introduced the *Coal Ownership (Restitution) Act* which provided former private coal owners the opportunity to have their title restored.

In a report to the NSW Government in 1996, the Coal Restitution Taskforce estimated that the Government would lose more than \$300 million in coal royalty if private owners' titles were restored. Based on the recommendations of the Taskforce, the Government introduced the *Coal Acquisition Amendment Act 1997* to enable the re-acquisition of a small number of private coal titles and to clarify the Minister's power to refuse applications for the restoration of former private coal titles.

Currently companies with open cut operations mining privately-owned coal are not liable to pay the \$0.50 per tonne super royalty. The acquisition of private coal titles will remove this anomaly.

Source: NSW Government, sub. 26.

10.2 Criteria for assessing royalty systems

A number of criteria can be used to assess royalty systems. A desirable royalty system is one which:

- *promotes economic efficiency* — by not distorting companies' production decisions;
- ensures an *equitable distribution* of the rents from exploiting mineral resources between the community and the miner;

- is *stable* — maximising the information available for companies when making investment decisions, increasing the likelihood that investments will be soundly based, and avoiding the costs associated with sovereign risk;
- *varies with the value of the resource* — the value of a resource may vary over time as prices and costs change. A royalty system that reflects this ensures an equitable distribution of rents over time and distributes risk between miners and the community; and
- is *easy to administer* — reducing administrative costs for governments and compliance costs for companies.

Governments often value a royalty system that provides a predictable stream of government revenue to fund recurrent expenditure. However, as royalties are payments for depleting Australia's mineral capital, they should be used to retire public debt or for purposes for which governments would otherwise be prepared to borrow (for example to add to the nation's infrastructure), rather than being used to finance government current consumption expenditure. Therefore, the predictability or 'smoothness' of revenue flows should not be a criterion in assessing royalty systems.

10.3 Alternative royalty collection methods

This section considers three different methods of collecting royalties.

The first method relates the royalty to the economic rent of an activity, where economic rent is defined as any profit in excess of the profit which would induce a company to undertake the activity (ie super-normal profit).¹ Thus economic rent is the difference between the revenue obtained from the sale of coal and the costs (for example, labour and capital) incurred in earning that revenue — where costs are defined as opportunity costs (ie minimum expenditures necessary to attract inputs such as labour and capital into coal mining).

When an economic rent-based royalty is levied periodically as a fixed proportion of economic rent it is referred to as a resource rent tax. Alternatively, in principle, a royalty based on economic rent could be collected by auctioning the right to exploit the coal deposit, or by some combination of auction and periodic assessment.

¹ See IC (1991b) for a more comprehensive discussion of rent-based royalties.

The Commonwealth Government introduced rent-based royalties for new offshore petroleum projects in 1984, and extended them to Bass Strait petroleum production from July 1991.

Economic rent-based royalties differ in many important respects from royalties which are based on accounting profits, although they are often referred to synonymously. In NSW, profit-based royalties apply to certain mining operations at Broken Hill (line of lode mines).²

The other two methods of collecting royalties are based on mine output. One relates to the value of production (an ad valorem royalty) and the other to quantity (a specific royalty).

10.4 Evaluation of alternative royalty systems

The previous sections have outlined alternative royalty regimes and criteria for assessing them. This section uses those criteria to evaluate the alternative approaches to levying royalties.

10.4.1 Periodically calculated rent-based royalties

A periodically (for example, annually) calculated rent-based royalty system would have the advantage of being:

- efficient;
- equitable;
- sensitive to the changing value of the resource; and
- stable.

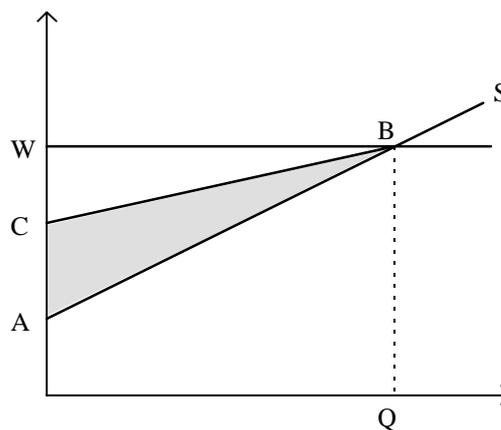
Rent-based royalties would not reduce the level of coal production, and would not distort the combination of inputs used, the timing of resource extraction, or the decision to invest in the coal industry rather than elsewhere (ABARE 1990). In principle, on efficiency grounds, rent-based royalties would be superior to output-based royalties (see Box 10.3). The NSW Government noted:

² The main difference between a rent-based royalty and a royalty based on profit is the treatment of capital. Under a rent-based royalty, interest payments and capital depreciation would not be allowable deductions. The cost of capital — whether interest payments or equity — is already included in the return on capital which must be met before royalties become payable. Capital items are depreciated at 100 per cent in the year in which they are incurred, and therefore, ongoing deductions for depreciation expenses are not allowed. In contrast, interest payments and depreciation expenses are allowable deductions for calculating profits for accounting or tax purposes.

The RRR [resource rent royalty] has the considerable advantage that it can have a close to neutral effect on investment in the industry. Properly calculated, it should not prevent new investment, even in marginal mines, and should not close mines prematurely. (sub. 26, p. 23)

Periodically calculated rent-based royalties would enable an equitable distribution between the community and the project owner of the rents from exploiting mineral resources. This is because the amount of royalty paid by miners would vary according to the economic value of their mineral deposit. The economic value of a deposit would vary over time as coal prices and extraction costs changed, and would vary between mines, depending on, among other things, the geological characteristics of mines. Periodically calculated rent-based royalties would reflect these differences in the value of mineral deposits, both over time and between mines.

Box 10.3: The neutrality of rent-based royalties



In the above figure, W is the world price and AS is the supply schedule. Consequently, it is viable to mine Q units of ore and the deposit would earn $\$WAB$ economic rent. If royalties were levied as a percentage of rent ($\$CA/WA$), the mine would continue to produce Q units and pay royalty of $\$ACB$. The rent-based royalty is neutral because the cut-off grade (Q) is unchanged by the imposition of the royalty. This contrasts with the output royalty in Box 10.4.

Source: IC (1991b).

Sovereign risk associated with royalty charges is usually a factor taken into consideration by mining companies. However, as rent-based royalty systems would be sensitive to the changing value of the mineral resource, they are likely to be less prone to ad hoc change than other royalty systems. Companies' royalty liability would change with movements in prices and costs under a rent-

based royalty system, but the basis on which it was calculated would be stable. This would provide companies with greater certainty in making investment decisions. This advantage is unlikely to apply to royalty systems that are not responsive to changes in capacity to pay (in particular, specific royalties). Such systems are more likely to come under pressure for ad hoc adjustment as world prices and mine profitability fluctuate.

In practice, the main disadvantages of periodically calculated rent-based royalties are the difficulty of regularly calculating economic rent for each mine and the complexity and cost for companies of complying with such a royalty. Issues raised in a Working Party report to the NSW Government (1989) included:

- calculating the threshold rate of return that companies are allowed to achieve before they are liable to pay royalties;
- setting the royalty rate — striking a balance between giving companies the incentive to contain costs, and adequately compensating the community for the use of black coal resources;
- calculating allowable deductions — deductions for resource rent purposes are different from those applicable to company taxation, particularly in terms of the treatment of capital items; and
- identifying the entity paying royalties — the royalty liability applies to the project, not the company owning the mine. Nevertheless, some joint head office expenses are incurred because of the project (for example project finance, accounting and legal costs). Some costs are also shared between projects. For example, two mines may share the same washery. Therefore governments need to set guidelines for the attribution of joint costs.

The Queensland Government said that the disadvantages of a resource rent royalty included:

- high administration and compliance costs;
- revenue instability for governments; and
- sovereign risk created by changes in royalty systems, particularly in the context of Queensland being part way through phasing-in new royalty/freight arrangements.

In relation to the first point, the Queensland Government said:

For the Queensland coal industry, the information requirements of a resource rent royalty would be substantial. There are currently 44 coal mining projects in operation in Queensland with several more projects in the development stage. To further complicate matters, various consortia of companies own many of these projects with head offices in other States. Supplying and verifying cost data would be a large administrative burden on both industry and government. In particular, it

would be administratively difficult and costly to determine relevant assessable profit (particularly due to cost allocation issues in many instances) and verify costs for vertically integrated enterprises. In addition, the royalty system may be open to manipulation by producers to reduce the royalty payable through creative accounting and by changing the timing of expenditures. (subDR61, p. 17)

The Queensland Government noted that the administrative costs of implementing a resource rent royalty in the offshore petroleum industry were less as there are currently only eight operators paying royalties. It also noted that the data requirements of the royalty would be seen as “an intrusion into confidential commercial matters of industry” (sub. DR61, p. 17).

On the second point, the revenue instability of a resource rent royalty, the Queensland Government said that the stability of revenue under an ad valorem royalty system enhanced its ability to plan regarding its expenditure and that any changes to this revenue source could “seriously jeopardise the services provided to the people of Queensland” (sub. DR61, p. 18). However, as noted in Section 10.2, royalties should not be used to finance government current consumption.

On the third point, the Commission acknowledges that the introduction of a new royalty system would be an instance of sovereign risk, but considers that a resource rent royalty, once implemented, is likely to be more stable than output-based royalties.

The NSW Minerals Council was concerned with the sovereign risk and competitive neutrality effects of introducing a resource rent royalty (sub. DR60, p. 12).

10.4.2 Rent-based royalties realised through auction

An alternative to levying royalties on periodically calculated rents would be to auction rights to explore and mine, and to realise an expected future stream of rents in a once-off bid at auction. If those who bid at the auction were well informed about current and future production costs and coal prices, such an approach would:

- be easy to administer;
- promote economic efficiency; and
- be equitable.

In these circumstances there would be no need for governments to calculate economic rents annually — companies would estimate this once in assessing how much to bid for a resource. Such an auction would promote economic

efficiency as companies' future production decisions would be unaffected by their initial bid.

However, in practice, the main disadvantage of this approach is that companies would be uncertain about the current and future value of mineral deposits for which they were bidding. This risk and uncertainty would be reflected in lower bids at auction and, therefore, lower royalty revenue.

Uncertainty also has implications for the equity and stability of the royalty system. Incomplete information about the value of deposits would mean that in some cases the community would get a low return on its asset, while in other cases companies would pay far in excess of the value of the deposit. This inequity would generate pressures for changes in the royalty regime after the auction. For example, in cases where the resource proved to be far more valuable than the initial bid, there would be pressure for governments to impose additional royalties during the project's life. If governments succumbed to this pressure, instability in the royalty regime would be another factor increasing project risk.

10.4.3 Ad valorem royalties

Ad valorem royalties have the advantage of being easy to administer as governments need information only about the value of mine output. This information requirement is much less onerous for governments and companies than that required to calculate periodic rent-based royalties.

While ad valorem royalties are inferior to rent-based royalties on efficiency and equity grounds, they are preferable to specific royalties, as the amount of royalty collected adjusts to changes in coal prices over time, and therefore partly reflects changes in economic rents. For example, when prices are high, the level of royalty per unit of output increases under an ad valorem system, but is unchanged under a specific royalty system.

Furthermore, ad valorem royalties vary according to the value of different types of coal at any point in time. For example, the royalty per tonne of low value thermal coal is less than the royalty per tonne of high value coking coal.

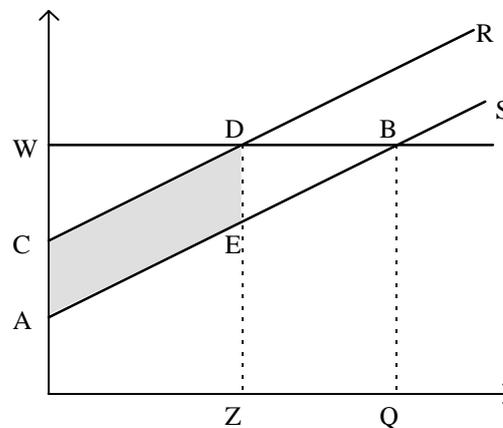
In practice, the main disadvantage of ad valorem royalties is that they take no account of differences between mines in the cost of exploitation. For a given coal price, mines with favourable geology pay the same royalty per unit of output as mines with difficult geology, even though the former are more valuable mineral deposits (given their lower costs of extraction) and, therefore, should yield a higher return to the community. This failure to account for cost

differences between mines can lead to ad hoc arrangements, such as the NSW Government's decision to impose a super royalty on coal from open cut mines.

Ad valorem royalties can also:

- induce companies to produce a lower than optimal level of mine output;
- discourage the development of marginally efficient mines; and
- induce companies to cease mining before the economic benefits of mining a deposit are exhausted (see Box 10.4).

Box 10.4: The effect of specific and ad valorem royalties on mining output



In the figure above, W is the world price at which the mineral can be sold and AS is the supply schedule. Consequently, it is viable to mine Q units of ore and the deposit would earn \$WAB economic rent. The imposition of a specific or ad valorem royalty (\$AC per unit) would increase costs as represented by the schedule CR. It would then be viable to mine only until the Zth unit of ore. The deposit now generates less economic rent (\$WAED) of which the government receives \$CAED as royalty.

Source: IC (1991b).

10.4.4 Specific royalties

Specific royalties are also easy to administer as the only information requirement is the level of mine output.

In terms of the criteria outlined in Section 10.2, specific royalties are inferior to both rent-based and ad valorem royalties because, in addition to having all of the disadvantages of ad valorem royalties, they take no account of differences in the value of various types of coal (for example thermal versus coking) or of

changes in coal prices over time. This can lead to ad hoc arrangements such as the NSW Government's decision to set royalty rates for coal reject on a case-by-case basis.

10.5 Royalties collected through rail freights

As outlined in Section 10.1, the Queensland and NSW Governments are phasing out the collection of royalties through rail freights. The Commission welcomes this reform.

The past practice of setting different freight rates for mines on the basis of perceived capacity to pay rather than haulage costs was a very imperfect way of implementing a rent-based royalty. This is because freight rates were set at a point in time under long-term contracts and were not adjusted in a predictable way according to changes in the economic value of mines (although ad hoc adjustments did occur).

In addition, while companies' capacity to pay influenced the *level* of freight rates, rates were set on a per tonne basis, and raised costs for every unit of production. In this regard, royalties embodied in freight rates were a form of specific royalty, and had similar adverse effects on the level of mining output.

Finally, incorporating royalties in rail freights reduced the efficiency of the rail transport system and distorted companies' transport choices (see Chapter 7).

While the Commission welcomes the phasing out of royalties in rail freights, it is important not to overstate the significance of this reform. In Queensland, the Government is removing one output royalty (excess rail freights) and increasing the level of another output royalty (the ad valorem royalty). In NSW, the Government is phasing out the collection of monopoly rents in rail charges without increasing other royalties. While this should improve economic efficiency, it is at the cost of a lower return to the community for the exploitation of coal resources.

10.5.1 Effect of phasing arrangements in Queensland

The phasing arrangements in Queensland for removing royalties from freight rates and introducing a higher ad valorem royalty rate were criticised by BHP:

From 1 June 1997, BHP Coal renegotiated its rail haulage arrangements for five of its North Bowen Basin Mines. As part of this negotiation, which was predicated on the premise of growth in the industry, the Government agreed to identify and separate out the de facto royalty and rail freight components of the rail freight rates, thereby allowing clearer negotiation of the true rail freight component. Based

on the achievement of performance linked incentives and a co-operative approach between Queensland Rail and BHP Coal to improving both current and future practices, potential for improved efficiencies and potential flow on benefits were also agreed. Payment of the de facto royalty component, directly to Queensland Treasury, will however continue until the year 2000. The continuation of the de facto royalty until that time will see the effective rail freight “rate” remain only marginally lower than it has been in recent years, and will not reduce substantially until 2000. Notwithstanding the advances in the recent agreement, the uneven application of the de facto royalty continues to place BHP Coal at a distinct competitive disadvantage with many other Queensland producers who do not pay this impost. ... between the time of this submission and the cessation of defacto royalties in 2000, BHP Coal will pay to the Government around \$1.0 billion in these royalties. (sub. 30, pp. 19–21)

The arrangements implemented in BHP’s case are in line with those announced by the Queensland Government in September 1993 (see Box 10.1). That is, mines under rail contracts that expire after 2000 are not subject to the higher rate of royalty until 2000, at which time they can renegotiate their rail contracts in a competitive environment. The exception to this is where renegotiation of rail contracts leads to mutual benefits for the Government and the company. The Queensland Government explained that this exception applied in BHP’s case:

... in return for the payment of a “special royalty” to offset the loss of State revenue, the State agreed to terminate the arrangements in advance of the respective expiry dates. The State, in agreeing to the premature termination of the pre-commercialisation rail haulage arrangements, released the mines to negotiate new rail haulage contracts incorporating the latest operating and capital efficiency gains. The State has offered similar arrangements to other mines with pre-commercialisation rail haulage contracts still in existence. (sub32, p. 51)

To the extent that BHP will be paying lower royalties after the year 2000, the changes to royalty and freight arrangements announced by the Government in 1993 have benefited BHP.

BHP’s concern that it is paying higher charges than other Queensland mines during the transition period could have been addressed by bringing forward the date for aligning the royalties applying to all mines. However, a shorter transition period may have disadvantaged some mines, exacerbating sovereign risk.

In conclusion the Commission notes that:

- the phasing out of royalties collected through rail freights has advantaged BHP overall;
- inevitably some mines may be advantaged and others disadvantaged during the transition period;

- a lengthy transition period is appropriate given the long lead times of investments in this industry;
- in negotiating arrangements with BHP, the Queensland Government has adhered to the phasing principles it announced in 1993; and
- the phasing arrangements have provided for flexibility in pursuing ‘mutual advantage’ and BHP has taken advantage of this provision to implement more efficient coal loading arrangements, and realise the benefits of lower freight rates.

10.6 Participants’ views on royalty arrangements

Some participants observed that the current basis for setting royalties made no allowance for changes in market conditions and companies’ capacity to pay. For example, Camberwell Coal said:

The super royalty applies only to open cut mines and was introduced in the late 1970’s when the coal industry was booming, and when open cut mines were seen as being particularly profitable. Circumstances have changed and the super royalty can no longer be justified, particularly to mines like Camberwell with high strip ratios. (sub. 13, p. 4)

Rio Tinto commented:

State government charges are not generally responsive to competitive forces. They tend to be based on a fee-for-service for use of the various government owned infrastructure monopolies, or royalties calculated on a dollars-per-tonne basis or as a percentage of the \$/tonne “mine-gate” selling price.

Accordingly, coal producers are squeezed between price pressures emanating from their markets and governments charges which are not responding to these market developments. (sub.22, p. 27)

In response to these concerns, the Commission sought participants’ views about the costs and benefits of replacing existing royalty schemes with a resource rent royalty. The views offered indicated that the costs associated with implementation of a resource rent royalty would exceed its benefits. The Queensland Government and Rio Tinto strongly opposed such a royalty, and the NSW Government and the NSW Minerals Council identified a number of problems with implementing it.

Nevertheless there are strong arguments for making royalties more responsive to market conditions. In NSW, the introduction of an ad valorem royalty system would:

- allow the risk of world price movements to be shared between mining companies and the government;

- ensure that royalties better reflected the value of coal resources; and
- encourage the exploitation of low grade coals.

Pacific Power supported the introduction of ad valorem royalties in NSW:

Pacific Power has some concerns with the current royalty arrangements in NSW, whereby a fixed royalty (including, in some instances a super royalty) is levied on all coal produced in NSW, regardless of coal quality.

The arrangement results in a situation whereby royalties levied on a low quality coal provided to a NSW generator may be of the order of three times as high (expressed as a percentage of coal price) as that levied on an export coking coal.

A reduction in the royalty amount paid on lower quality coals would enhance the attractiveness of the purchase of such coals by NSW generators. This may in turn contribute to greater coal resource utilisation and operational and marketing flexibility for coal suppliers.

From its perspective, Pacific Power sees some merit in an *ad valorem* system for royalty calculation, which would reflect the lower quality (and value) of domestic thermal coals. (sub. DR55, p. 3)

Like any change in royalty arrangements, a move from a specific to an ad valorem royalty system would involve winners and losers. Producers of thermal coal and lower quality coals would pay a lower royalty per tonne of production, but coking coal producers would pay a higher royalty per tonne. This may create difficulties for coking coal producers with high cost structures. However, in the longer term, producers of all coals would benefit from having a more market-responsive royalty scheme.

Recommendation:

The NSW Government should adopt an ad valorem royalty system.

11 MODELLING THE EFFECTS OF IMPROVED PERFORMANCE

The Centre of Policy Studies (CoPS) at Monash University was commissioned by the Productivity Commission to model the potential industry and economy-wide effects of productivity change in the black coal industry. This chapter summarises the results generated from MONASH-Coal, a customised version of the MONASH computable general equilibrium model of the Australian economy.

Overall, the CoPS results highlight the importance of productivity improvements for this export-oriented industry. Confirming intuition, the results also indicate that the economy and the community at large can benefit substantially from a more efficient black coal industry. Productivity improvements expand the productive capacity of the economy, allowing extra output and income to be generated using the same amount of inputs. As the black coal industry makes a significant contribution to national output, productivity gains in the industry can generate substantial national income gains. Modelling suggests that real GDP could be around 0.4 per cent higher than otherwise by 2009–10, and real private consumption 0.9 per cent higher, as a result of feasible, accelerated productivity change in the industry. In terms of today's dollars, this would represent additional annual national income in the order of \$3 billion in 2009–10.

Under the assumptions of the MONASH-Coal model, real income gains generated by productivity growth translate into higher real wages across the economy. This reflects a conservative view that trend growth in economy-wide employment is not affected by productivity gains in the black coal industry. If there were to be a somewhat smaller increase in real wages, aggregate employment could grow more rapidly as a result of productivity changes in the coal sector. This would spread the benefits of productivity growth more widely, and generate additional national output and income.

Under reasonable assumptions about conditions in international coal markets and the response of coal export prices to cost reductions, improvements in both labour and capital productivity would benefit the black coal industry and its employees. To the extent that improved international competitiveness generates more

coal exports and export income, it encourages higher investment in the industry than would otherwise occur. By encouraging relatively higher investment, higher productivity growth has the potential to slow job losses in the industry which have been occurring for many years and which are likely to continue in the absence of improved productivity. On the other hand, the modelling indicates that a failure to improve productivity would lead to lower output and investment growth, and accelerate job losses. Thus higher productivity growth can reduce the need for relocation of black coal industry workers, though productivity improvements could entail some restructuring within mines and the black coal industry.

Not surprisingly, the two major black coal producing States, NSW and Queensland, benefit from expansion of the sector, while other States, particularly those which are export-oriented, are estimated to experience somewhat slower growth than otherwise.

The modelling shows that improved productivity in rail, leading to lower freight rates, can deliver significant benefits to the industry and the economy. With productivity improvements in rail which close the estimated gap between current operating efficiency and best practice, coal exports are estimated to be about 10 per cent higher in 2009–10 than otherwise. The coal industry can also gain from lower freight rates associated with early introduction of competition in rail.

Restructuring of the rest of the economy is an inevitable response to expansion of coal exports and higher national income. Some sectors and States are predicted to experience slightly slower growth than they otherwise would, others moderately higher growth. Any costs incurred in this adjustment process would partly offset the estimated benefit of productivity improvements. Nonetheless, these costs would be transitional, whereas the gains from sustained productivity improvements would accrue permanently.

It should be borne in mind that the modelling results are illustrative. Modelling provides a tool for quantifying in broad terms the potential impact of productivity change in the black coal industry and the economy at large. In practice, productivity changes in the black coal industry will occur in the context of numerous unforeseen changes in the industry itself and in the domestic and international economies.

11.1 Introduction

This chapter summarises the results of economic modelling commissioned for this inquiry. Further details of the modelling results and assumptions are provided in Appendix L and Attachments L1 to L7. Appendix M discusses issues relevant to modelling productivity change in the black coal industry, while a detailed discussion of the MONASH model can be found in the Industry Commission's report on the Textiles, Clothing and Footwear Industries (IC 1997b, Appendix O). Attachment L8 summarises comments on the modelling exercise by two external, independent referees.

Five scenarios incorporating different assumptions about the productivity performance of the industry, coal export prices and rail transport efficiency and coal rail freight rates have been modelled by the Centre of Policy Studies. By modelling a range of possibilities, the Commission considers that better insights can be obtained, and more informed conclusions drawn. The impact of each scenario is assessed over a 12-year period — from 1997–98 to 2009–10.

The major assumptions underlying each scenario are:

- *Scenario 1 (the 'base case')* — 'steady' productivity growth in the black coal industry in line with recent performance of the industry. Projected exports in this scenario reflect ABARE export forecasts;
- *Scenario 2* — no further productivity growth in the industry after 1997–98;
- *Scenario 3* — accelerated productivity growth in the black coal industry;
- *Scenario 4* — accelerated productivity growth (as in Scenario 3). Foreign buyers capture part (Scenario 4a) and all (Scenario 4b) of the cost reduction by reducing the prices they are prepared to pay for Australian black coal; and
- *Scenario 5* — accelerated productivity growth (as in Scenario 3) coupled with rail freight reductions for coal reflecting (i) productivity improvements in rail service provision (Scenario 5a) and (ii) accelerated removal of excess charges for rail (Scenario 5b).

As already noted, all the scenarios and modelling results are illustrative only, designed to focus on the impact of productivity change on the black coal industry and the economy at large. In practice, productivity changes in the black coal industry will occur in the context of numerous unforeseen changes in the industry itself and in the domestic and international economies.

11.2 Scenario 1 (the base case): steady productivity growth

11.2.1 Outlook for the black coal industry: 1997–98 to 2009–10

This scenario, referred to as the base case, sets a ‘business as usual’ course for the black coal industry. It assumes that the industry achieves export levels forecast by ABARE while continuing to improve total productivity at broadly the same rate achieved since 1990. ABARE forecasts suggest that Australia’s international market shares in both thermal and coking coal will change little over the period examined.

ABARE and other forecasters predict very little growth in nominal black coal prices over the period examined (see Attachment L1, Table L1.2) and this will be insufficient to keep pace with expected increases in production costs. Without adequate productivity improvements, the industry is likely to face a cost/price squeeze.

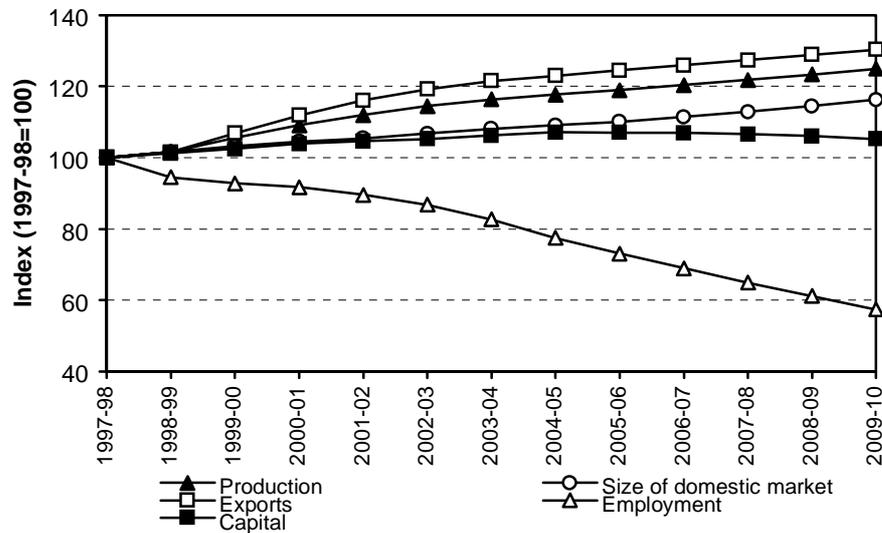
For most of the period it is assumed that some productivity improvements will arise from opening new, more capital-intensive mines and closing less efficient mines, as well as from moderate reforms in existing mines. Attachment L4 explains the basis of this assumption which implies higher capital intensity and lower employment in the industry, continuing a trend which has been evident for some time.

Nonetheless, despite higher capital intensity, annual net real investment in the industry is expected to decline from current levels. In other words, though total capital employed in the industry is expected to continue to rise, the *rate* of expansion is likely to decrease compared with current levels and compared with expansion rates in the rest of the economy. This is the picture which emerges from the base case projections presented in Figures 11.1 and 11.2.

In the base case, thermal coal exports are forecast to be 30 per cent higher in 2009–10 than in 1997–98 and coking coal exports about 20 per cent higher. Output growth is somewhat lower, reflecting slow growth of domestic sales, especially for coking coal.

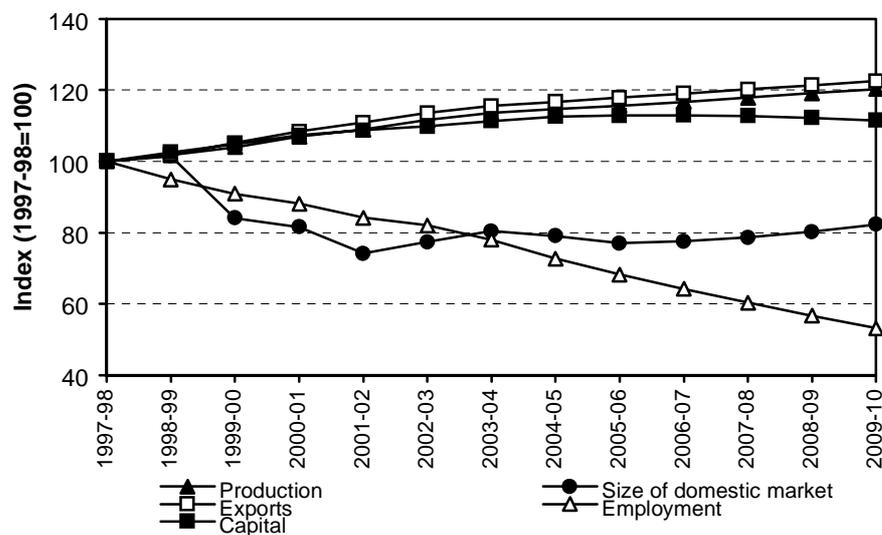
Industry output, investment and employment are projected to grow at rates below the economy-wide average. Thermal coal output is projected to grow by 1.9 per cent per year and coking coal output by 1.6 per cent, compared with real GDP growth of 3.0 per cent per year over the 12-year period examined. Annual investment in the industry declines by an average 2.5 per cent per year, leading to slow growth in capital employed.

Figure 11.1: **Base case: thermal coal indicators, 1997–98 to 2009–10, (index 1997–98=100)**



Source: MONASH-Coal simulations.

Figure 11.2: **Base case: coking coal indicators, 1997–98 to 2009–10, (index 1997–98=100)**



Source: MONASH-Coal simulations.

Black coal industry employment is projected to fall over the period examined, reflecting continuation of the introduction of more capital-intensive techniques and closure of labour-intensive mines in an effort to contain costs. Thus by 2009–10, total industry employment (in terms of hours worked) is projected to be more than 40 per cent below its 1997–98 level. If average hours per worker

do not change, this reduction implies job losses in the order of 10 000 over the next 12 years.

11.2.2 Outlook for the domestic economy: 1997–98 to 2009–10

For the rest of the economy, the base case scenario incorporates information (including from ABARE, Access Economics and CoPS) about likely developments in the international and domestic economies over the projection period.

Table 11.1 summarises the base case projections for the economy as a whole. Real GDP is projected to grow at an average annual rate of 3 per cent. This is quite strong relative to average growth over the past decade, and reflects Access Economics' view that economic developments in several Asian economies will have a significant short-term but less noticeable long-term impact on Australia's growth.

Table 11.1: Scenario 1 (base case): economy-wide projections

| <i>Macro variables</i> | <i>Average annual percentage change 1997–98 to 2009–10</i> |
|-----------------------------------|--|
| Real GDP | 3.0 |
| Real investment | 2.5 |
| Real private consumption | 2.9 |
| Export volumes | 5.5 |
| Import volumes | 3.9 |
| Traditional exports | 2.8 |
| Employment (hours) | 1.8 |
| Real wage (producer) ^a | 1.0 |
| Consumer prices | 2.3 |

a The producer real wage is defined as nominal wages relative to the prices received by producers (the GDP deflator), and thus gives an indication of the real cost of labour.

Source: MONASH-Coal simulations.

On the supply side of the economy, GDP is driven by employment and capital growth of around 2 per cent (with capital growth somewhat stronger than employment growth), implying total factor productivity growth of a little over 1 per cent per year. On the demand side, investment and private consumption are projected to maintain their shares of GNE, while the share of public consumption is expected to fall. Real exports and imports are projected to grow at 5.5 per cent and 3.9 per cent, respectively.

Projected developments in the industrial structure of the economy are presented in detail in Appendix L. Sectors projected to grow strongly include communications, electronic equipment, finance and business services, chemicals, transport equipment and transport and storage. This pattern of growth reflects relatively strong national investment and 'non-traditional' export growth as well as the continuing introduction of new communications and computerised technologies. Slow growing sectors include textiles, clothing and footwear and public administration. Growth in mining and agriculture of 2.8 per cent is slightly below projected GDP growth.

Changes in base case projections

The Commission chose to use the MONASH-Coal model so that the impact of productivity change in the black coal industry can be viewed against the background of a dynamic economy. Scenario 1, the base case, provides that background.

The base case provides a reasonable view of likely developments in the black coal industry and the domestic economy over the next 12 years. However, no-one knows the ultimate impact of the economic down-turn in Asia, and there will be many other unforeseen developments over the next decade.

Changes in productivity in the black coal industry (modelled in Scenarios 2 to 5) are assessed *relative* to the base case. The results in these scenarios, expressed as percentage differences from the base case, are unlikely to be very sensitive to variations in the base case assumptions. In other words, estimated *percentage* improvements in performance are not likely to vary greatly in response to variations in the base case.

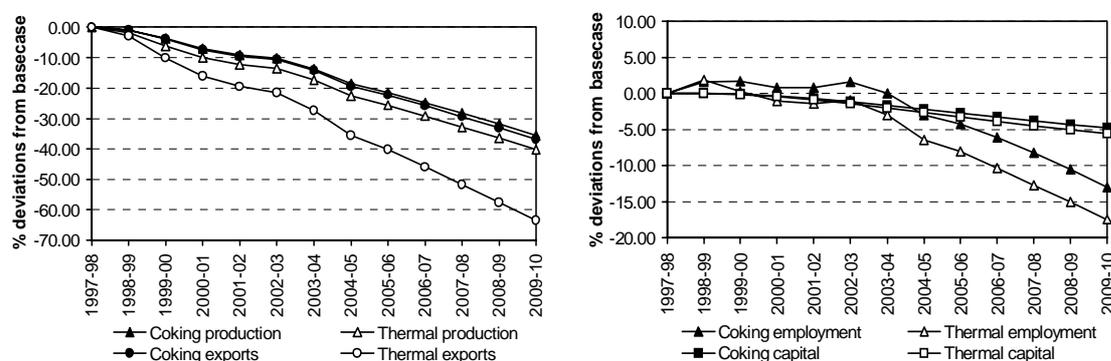
11.3 Scenario 2: no further productivity growth

In Scenario 2, CoPS has modelled a 'worst case' scenario. It assumes that productivity in the black coal industry remains unchanged at its 1997–98 level over the entire period to 2009–10. Relative to Scenario 1, where total factor productivity is assumed to grow at a little over 1 per cent per year, this scenario essentially models the impact of a cumulative *deterioration* in total factor productivity of the order of 15 per cent over the entire period (that is, a deterioration of a little over 1 per cent per year between 1997–98 to 2009–10).

11.3.1 Impact on the black coal industry

Without any further productivity improvements, the competitiveness of Australian coal exports declines and Australian producers lose international market share to more competitive producers. As indicated by Figure 11.3, thermal coal exports are estimated to fall relative to base case projections so that by 2009–10 exports are estimated to be 63 per cent below the base case projection. Coking coal exports are estimated to be around 37 per cent lower in 2009–10 than otherwise.

Figure 11.3: **Scenario 2: impact on coal mining, 1997–98 to 2009–10** (percentage deviations^a from base case)



^a Percentage deviations are calculated as the difference between the value of the relevant variable in the simulation and its value in the base case, expressed as a percentage of the base case value.

Source: MONASH-Coal simulations.

The fall is pronounced in thermal coal exports where Australia confronts intense competition from relatively new exporters, including Indonesia, South Africa and Colombia. The estimated fall in coking coal exports is less severe, reflecting the assumption that foreign demand for coking coal is not as price responsive as demand for thermal coal. The basis for these assumptions about the nature of international coking and thermal coal markets is discussed in detail in Appendix L and Attachment L5.

With productivity growth stalled, and exports lower relative to the base case, employment and investment in the industry are also estimated to be lower than in the base case. Eventually, the negative impact on employment of continuing reductions in exports more than offsets the positive effect on employment of no further labour-saving productivity change in the industry. Moreover, additional job losses in the industry imply additional labour adjustment, the costs of which should be added to the estimated losses flowing from a deterioration in productivity.

The results for this scenario are sensitive to the response of overseas buyers to an increase in the price of Australia's black coal exports. As modelled, with international coal markets assumed to be competitive, a rise in production costs (relative to the base case), by causing a rise in the price of Australian coal exports, generates large falls in exports. If foreign demand for Australian coal were less sensitive to higher coal prices, the estimated fall in exports would be smaller. The sensitivity of the modelling results to changes in export demand elasticities is discussed in Section 11.4.1 below.

11.3.2 Economy-wide effects

As shown in Table 11.2 (row 2), with the substantial decline of a major export industry, real national income and real private consumption are estimated to be lower than projected in the base case. Real GDP in 2009–10 is estimated to be 0.3 per cent lower than in the base case, and real private consumption 0.7 per cent lower. (As explained in Appendix M, in the MONASH-Coal model, real private consumption provides a measure of the net impact of productivity change on the community's economic welfare.)

The impact on real private consumption is estimated to be larger than the fall in GDP for two reasons. First, MONASH-Coal assumes that any change in real income (relative to the base case) affects only real private consumption. Second, as modelled, contraction of the black coal industry leads to expansion of some major commodity exports which causes a deterioration in the terms of trade. This effect reduces the purchasing power of income.

Economy-wide real wages also are estimated to be lower than in the base case. This reflects the modelling assumption that economy-wide employment growth, as projected in the base case, is invariant to productivity change in the black coal industry. If the real wage did not fall relative to its base case level, industries other than coal could not expand employment. Unemployment would be higher than otherwise and the estimated national income loss would be even larger than suggested here.

Some restructuring of the economy is an inevitable response to the large decline in coal exports. In order to restore long-run balance of payments equilibrium, imports must fall and other exports increase to offset the fall in coal export receipts. Overall, exports and imports are smaller in 2009–10 than in the base case. Details of estimated industry restructuring are provided in Appendix L.

Table 11.2: **Economy-wide impact of Scenarios 1 to 5** (percentage deviations from base case 2009–10)

| | <i>Real GDP</i> | <i>Real private consumption</i> | <i>Real investment</i> | <i>Real wage</i> |
|--|-----------------|---------------------------------|------------------------|------------------|
| Steady productivity growth (Scenario 1) | 0 | 0 | 0 | 0 |
| No further productivity growth (Scenario 2) | -0.3 | -0.7 | -0.6 | -0.3 |
| Accelerated productivity change (Scenario 3) | 0.4 | 0.9 | 0.7 | 0.6 |
| Accelerated productivity change and moderately lower coal prices (Scenario 4a) | 0.3 | 0.5 | 0.4 | 0.4 |
| Accelerated productivity change and significantly lower coal prices (Scenario 4b) | 0.2 | 0.0 | -0.2 | 0.1 |
| Accelerated productivity change in coal and rail (Scenario 5a) | 0.6 | 1.0 | 0.9 | 0.7 |
| Accelerated productivity change in coal and accelerated reduction in excess rail charges (Scenario 5b) | 0.4 | 0.9 | 0.7 | 0.6 |

Source: MONASH-Coal simulations.

11.4 Scenario 3: accelerated productivity improvements

Scenario 3 models feasible improvements in labour and capital productivity additional to those assumed in the base case. Additional productivity improvements are assumed to occur smoothly over five years, beginning in 1998–99. Thereafter, for the period 2003–04 to 2009–10, total factor productivity growth resumes its annual trend (base case) rate of around 1 per cent.

Overall, labour and capital productivity growth in the industry accelerates (relative to base case growth) by more than 5 percentage points per year between 1997–98 and 2002–03. The acceleration is assumed to occur through relatively rapid (relative to historical trends) changes in work and management practices in all aspects of mining operations — that is, in the mines themselves, in coal preparation plants and in mine administration.

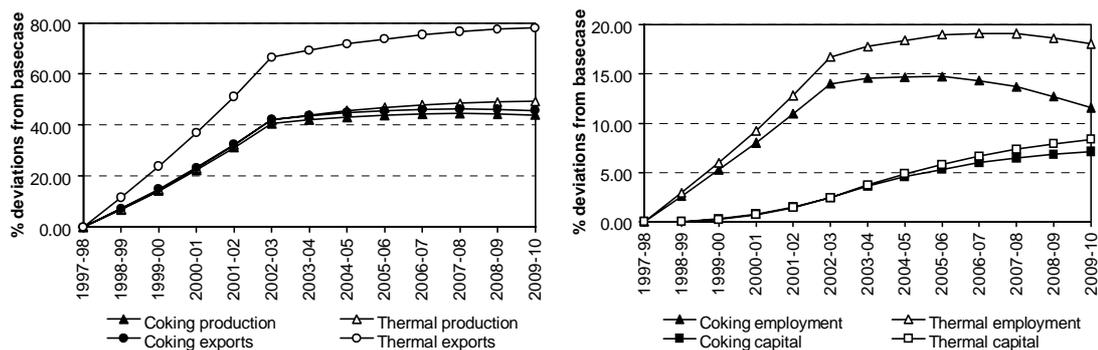
Examples of the changes in management and work arrangements that might contribute to accelerated productivity improvements are discussed in Chapter 5. They include reductions in idle time caused by inefficient shift change-overs and rostering of breaks, ‘early knock off’, lack of flexibility in roster arrangements and arbitrary union-based demarcation rules. Because reductions in idle time improve the productivity of both capital and labour, a *neutral* productivity improvement — that is, an improvement that equally improves labour and capital productivity — has been modelled.

As well as illustrating the potential impact of feasible productivity acceleration in the industry, Scenario 3 provides a reference point for assessing the impact of productivity gains of varying size. To a reasonable approximation, if the assumed productivity improvement (relative to the base case) were smaller (or larger), the impact on black coal industry performance would be proportionately smaller (larger).

11.4.1 Impact on the black coal industry

Modelling suggests that exports of both coking and thermal coal can increase substantially with improved productivity. For example, thermal coal exports in 2009–10 could be 80 per cent above their base case level, while coking coal exports could increase by around 46 per cent compared with the base case projection (Figure 11.4).

Figure 11.4: **Scenario 3: impact on the black coal industry, 1997–98 to 2009–10** (percentage deviations from base case)



Source: MONASH-Coal simulations.

With higher exports, output of both coking and thermal coal is estimated to increase at a much higher rate than in Scenario 1 — by 4.7 per cent per year for coking coal (compared with 1.6 per cent per year in Scenario 1) and by 5.3 per cent per year for thermal coal (compared with 1.9 per cent in

Scenario 1). Given known Australian coal reserves of around 76 billion tonnes, annual coal output of this magnitude could continue for almost 200 years. Average labour productivity levels implied by the results — of around 25 000 tonnes per man-year by 2009–10 — are also feasible, falling within productivity levels currently achieved in some Australian mines.

Total industry employment (measured in labour hours), as in all the scenarios, is estimated to continue to decline relative to 1997–98 levels. But with rapid productivity change, the rate of decline slows so that by 2009–10, there could be around 2500 more jobs in the industry than in the base case. The demand for labour grows (relative to the base case) because higher output and export growth outweigh the impact of labour-saving productivity changes. As indicated in Figure 11.4, coking coal employment is estimated to be 12 per cent higher in 2009–10 than in the base case, and thermal coal employment 18 per cent higher, reflecting strong growth in exports following the productivity improvement. The modelling thus indicates that productivity improvements in the industry can *reduce* labour market adjustment (and its associated costs), though changes in work arrangements will entail adjustments within the industry.

Qualifications and sensitivity analysis

These results assume that there are no domestic impediments to realising expanded export potential. MONASH-Coal assumes that port and other transport and handling services respond to increased demand. If there were significant impediments in some regions, the estimated expansion could be moderated.

The results also abstract from any transitional adjustment costs incurred. Although, in this high productivity growth scenario, job losses in the industry are estimated to slow down, changes in work arrangements will involve adjustment costs. In the short term, these transitional costs will moderate the extent of gains estimated by the model.

Importantly, for reasons explained in Appendix L, Attachment L5, the results in Scenario 3 assume that world thermal coal prices do not change significantly in response to changes in the level of Australian exports. Put another way, international demand for Australian thermal coal is assumed to be highly responsive to changes in price. (The elasticity of demand is assumed to be -20.) A small decline in Australian thermal coal prices will be sufficient to induce a large expansion in world demand for Australian exports.

Demand for Australian coking coal is assumed to be somewhat less responsive to price changes. This implies that a change in the level of Australia's coking coal exports will influence world coking coal prices to a larger extent than a

similar change in the level of thermal exports will influence thermal coal prices. This is likely to be the case because Australia's share of the coking coal market is larger than its share of the thermal coal market. As explained in Appendix L, Attachment L5, the elasticity of demand for coking coal is assumed to be -10.

Based on these assumptions about world demand for Australian coking and thermal coal, a reduction in costs in Australia broadly translates into increased exports because export prices fall only slightly. If foreign demand were less responsive to changes in Australian coal prices, prices would need to fall by a larger amount in order to encourage increased demand. Lower coal prices would also dampen Australia's export response. In other words, in this situation, an improvement in productivity would increase export *capacity* (for any export price), but the expansion in capacity would not be matched by an expansion in actual exports or export receipts.

In order to gauge the sensitivity of the results to changes in the export demand elasticities, Scenario 3 was run with elasticities of demand of -10 for thermal coal and -5 for coking coal. In other words, the responsiveness of foreign buyers to a change in the price of Australian coal was halved.

The results (presented in detail in Appendix L) indicate that with export elasticities of -10 for thermal coal and -5 for coking coal, the estimated export expansion (relative to the base case in 2009–10) following accelerated productivity change is around one-third lower for coking coal, and about one-quarter lower for thermal coal than with higher demand elasticities.

The impact of lower export demand elasticities also is captured indirectly by Scenario 4a (discussed below). Results for that scenario similarly indicate that export gains are still achievable for the black coal industry from productivity improvements despite lower coal prices.

On the whole, the Commission considers that international demand for Australian black coal (coking and thermal) *is* sensitive to price changes. Thus an expansion of Australian exports is *not* expected to induce large reductions in world coal prices which choke off that expansion. In particular, as discussed in Chapter 2, there is evidence that world market conditions are becoming increasingly competitive due to the emergence of new suppliers and markets, and increasing cost pressures on traditional coal buyers. On this basis, the Commission considers that Scenario 3 provides a reasonable representation of international market conditions.

11.4.2 Economy-wide effects

Productivity improvements and export growth in the coal sector are estimated to translate into long-term gains in real national income and private consumption (Table 11.2, row 3). Modelling suggests that real GDP could be 0.4 per cent higher in 2009–10 than it would be under base case productivity assumptions in the black coal industry. Expressed in terms of today's dollars, this would represent additional income in the order of \$3 billion in 2009–10.

Real private consumption (which, in MONASH-Coal, provides a measure of economic welfare) is estimated to be 0.9 per cent higher in this scenario in 2009–10 than in the base case. The estimated increase in private consumption exceeds the estimated national income gain because the model assumes that all additional real income is consumed. The purchasing power of income also is enhanced by an improvement in the terms of trade. This occurs because expansion of the black coal industry leads to contraction of some other major commodity exports, tending to increase their export prices.

The increase in national income accrues to workers throughout the economy. It is estimated that economy-wide real wages could be 0.6 per cent higher in 2009–10 than in Scenario 1.

When modelling the economy-wide impact of productivity changes in the black coal industry, the Centre of Policy Studies has adopted a pessimistic assumption about aggregate employment growth. Thus, in Scenario 3, real wages are forecast to increase, but there are no permanent gains in employment relative to employment levels achieved in Scenario 1. Some short-term employment gains occur while productivity accelerates because real wages are assumed to be sticky. This boosts national income in the early years of the period examined, but these gains gradually are wound back by real wage increases.

If the estimated real wage increase were moderated, *permanent* increases in aggregate employment could be achieved as the direct result of accelerated productivity growth in the black coal industry.

11.5 Scenario 4: accelerated productivity improvements leading to lower coal prices

As explained above, the Commission considers that Scenario 3 provides a reasonable representation of the international market for coal, and thus provides a good indication of the potential effects of accelerated productivity improvements in the Australian black coal industry. However, there are a range of views about the influence of changes in the level of Australian coal exports

on foreign demand and export prices. For example, one participant argued that demand for Australian coal is not at all responsive to price (see Chapter 2).

In Scenario 4, the Centre of Policy Studies has modelled this alternative view of the international market-place. Scenario 4 illustrates the impact of productivity improvements in the black coal industry when foreign buyers of Australian coal capture part (Scenario 4a) and all (Scenario 4b) of the benefit of cost reductions by negotiating lower prices for Australian coal.

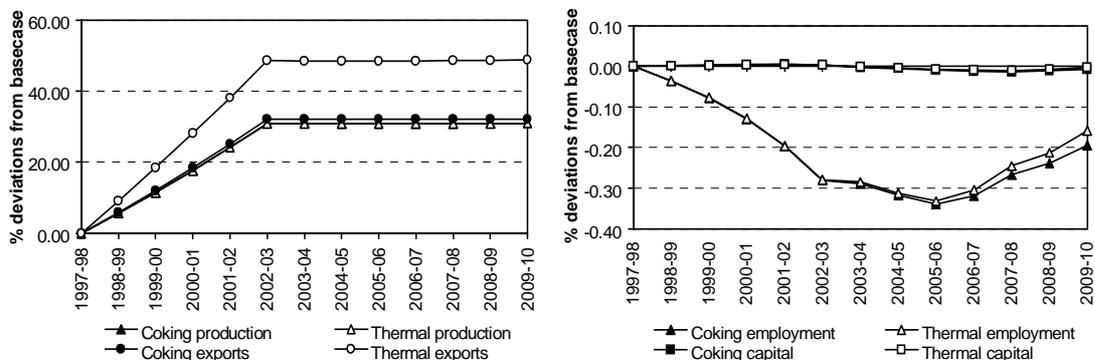
Importantly, the results still show that even if foreign buyers exert extreme pressure on export prices, national output can still expand as a result of productivity improvements in the black coal industry. This is because productivity improvements, which lead to more efficient use of factors of production (labour and capital), increase the *productive capacity* of the economy. That is, productivity improvements allow more output to be produced from given factor inputs. Generally speaking, this increase in capacity is best used in producing more coal, but if coal prices fall, and expansion of coal is discouraged, labour and capital can be expected to shift to other industries over time, boosting output in these industries. This process would involve adjustment costs, moderating estimated gains in the short term.

11.5.1 Scenario 4a: accelerated productivity improvements leading to moderately lower coal prices

In Scenario 4a, the black coal industry is assumed to expand output using its base case labour and capital, but the lower price paid by foreign buyers (thus enabling them to capture part of the productivity gain) discourages additional investment in the industry. Without additional investment (relative to the base case), employment in the industry varies little from the base case projection. (The difference is -0.2 per cent in 2009–10.) The gains in this scenario for the black coal industry (Figure 11.5) and the economy overall (Table 11.2, row 4) are still quite large, though smaller than if prices had not fallen.

As noted above, it is sometimes suggested that the international coal market is uncompetitive. While the Commission disagrees with this view, if it were the case that foreign buyers of coal were in a position to influence Australian coal prices, Scenario 4a provides a reasonable approximation of such behaviour.

Figure 11.5: **Scenario 4a: impact on the black coal industry, 1997–98 to 2009–10^a** (percentage deviations from base case)



a The impact on both thermal and coking coal production is virtually identical, as is the impact on thermal and coking coal capital.

Source: MONASH-Coal simulations.

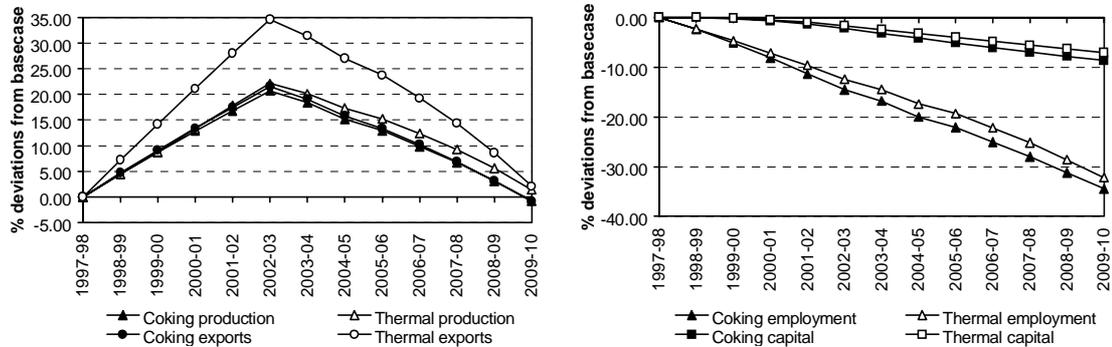
11.5.2 Scenario 4b: accelerated productivity improvements leading to significantly lower coal prices

Scenario 4b presents the extreme situation where foreign buyers of coal capture *all* of the cost reduction via lower coal prices. Coal export and output volumes grow relative to the base case while productivity accelerates in the first few years of the period modelled. However, because of the impact of lower coal prices, this expansion is overturned when productivity growth returns to its base case level.

Both employment and investment in the industry fall relative to the base case because the increase in output volume is too small to compensate for the negative effect of factor-saving productivity change on factor demands (see Figure 11.6).

Real GDP is still estimated to be 0.2 per cent higher than if productivity growth remained at its base case rate. The increase in GDP occurs because fewer resources are required to produce any volume of coal. If coal output does not expand, resources formerly employed in coal are freed up and available, over time, to expand output in other industries. Of course, this adjustment process would involve some transitional adjustment costs which should be offset against any predicted national income benefits.

Figure 11.6: **Scenario 4b: impact on the black coal industry, 1997–98 to 2009–10** (percentage deviations from base case)



Source: MONASH-Coal simulations.

Although GDP increases, consumer welfare, as measured by real private consumption, remains unchanged at its base case level due to the estimated deterioration in the terms of trade caused by lower coal prices. In other words, the rise in national income is offset by a decline in the purchasing power of that income.

The Commission considers this scenario (which implies that, whatever the Australian export price of coal, high or low, the quantity demanded will not change) to be highly unrealistic and pessimistic. It has been modelled to demonstrate that even if the benefits to the black coal industry of productivity improvements are captured entirely by foreign buyers, national output can still increase.

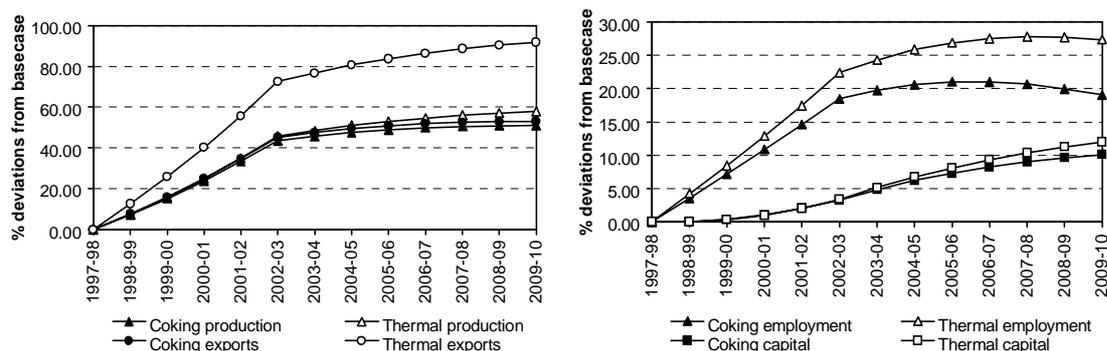
11.6 Scenario 5: accelerated productivity improvements in coal coupled with best practice productivity in rail transport of coal and accelerated removal of excess rail charges

Scenario 5a models the impact of achieving accelerated productivity change in the black coal industry itself, together with productivity improvements in rail transport of coal. Scenario 5b models the impact of achieving accelerated productivity change in the black coal industry together with rail freight reductions for the coal industry associated with expeditious introduction of effective competition in rail provision. While each scenario has been modelled separately, it is likely that increased competition in rail will drive cost and pricing efficiency simultaneously.

Scenario 5a assumes that rail freight costs are reduced by 20 per cent, closing the estimated gap between current levels of rail operating efficiency and best practice (see Chapter 7). The improvement, which when fully implemented reduces rail costs to the black coal industry by around \$150 million per year (or around \$1 per tonne of coal railed), is assumed to occur in tandem with accelerated labour and capital productivity improvements in the mines, as modelled in Scenario 3.

Under these assumptions, thermal coal exports are estimated to be around 90 per cent higher in 2009–10 than in the base case, and coking coal exports about 50 per cent higher. This implies a *net* addition to coal exports of more than 10 per cent due solely to productivity improvements in rail. Expansion of coal output, as well as flow-on effects of improved rail productivity to other domestic users (agriculture and other mining industries), is estimated to add 0.2 per cent to GDP by 2009–10. This is additional to the 0.4 per cent GDP gain arising from productivity improvements within mines.

Figure 11.7: **Scenario 5a: impact on the black coal industry, 1997–98 to 2009–10** (percentage deviations from base case)



Source: MONASH-Coal simulations.

Scenario 5b assumes that excess or monopoly charges for rail freight of coal — that is, charges (excluding rail royalties) in excess of the cost of providing rail services — are removed by 2001–02. (As with Scenario 5a, it is assumed that lower freight rates are achieved together with productivity improvements in mines.) In the base case it is assumed that these excess charges are removed by 2005–06, reflecting gradual implementation of reforms already announced. However, as discussed in Chapter 7, the Commission considers that there is scope both to hasten and to deepen the reform process in NSW and Queensland.

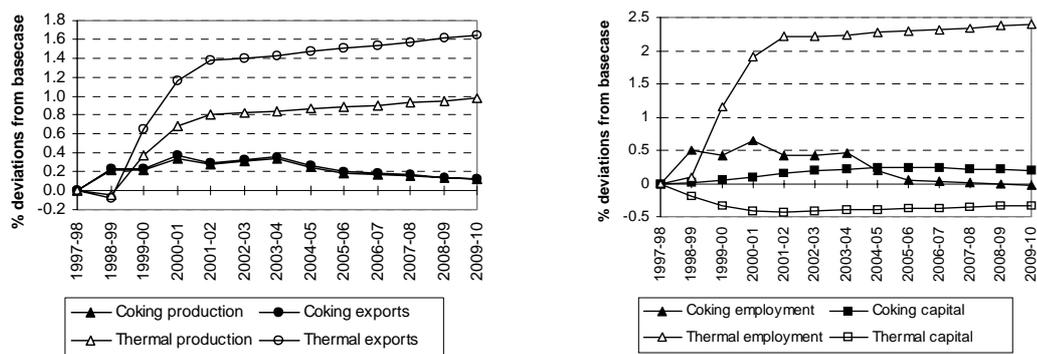
It is difficult to quantify excess freight charges due to difficulties in estimating costs. For reasons explained in Attachment L6, the Commission has assumed

that, on average, excess freight charges currently are around \$2 per tonne of coal railed.

In Scenario 5b it is assumed that removal of the \$2 per tonne excess charge is achieved by 2001–02, four years earlier than in the base case. Because this represents a one-off benefit for the coal industry compared with the base case, by 2009–10, export volumes are projected to be only slightly above the level estimated in Scenario 3 (see Figures 11.10 and 11.11). Nonetheless, the results (as shown in Figure 11.8, *excluding* the impact of productivity improvements within mines) indicate that, in cumulative terms, additional coal exports of around 10 million tonnes could be achieved between 1999–00 and 2005–06.

There would be scope for further rail freight reductions if excess rail charges were not reduced to the extent assumed in the base case. For example, if it were assumed that monopoly rents did not phase to zero by 2005–06, but remained at around \$2 per tonne for the entire period modelled in the base case, the gains to the coal industry from their early removal would be larger. Indeed, the increase in exports would be about double the increase estimated in Scenario 5a (which models a rail freight reduction of around \$1 per tonne). In other words, if rail freight rates were assumed to be around \$2 per tonne lower than in each year of the base case, coal exports could be around 20 per cent higher in 2009–10 than otherwise.

Figure 11.8: **Scenario 5b: impact on the black coal industry, 1997–98 to 2009–10** (percentage deviations from base case)^a



^a The results in Figure 11.8 *exclude* the impact of productivity change within mines.

Source: Monash-Coal simulations

For the economy as a whole there are virtually no additional gains under this scenario. All macroeconomic variables are estimated to remain as projected in the base case. When combined with productivity gains in coal mines (as modelled in Scenario 3), the economy-wide results are thus the same as for

Scenario 3 (see Table 11.2, Row 3). This occurs because the assumed reduction in rail freight rates (which is not due to productivity improvements) is modelled as a revenue-neutral tax change. This approach is required to reflect the fact that forgone ‘monopoly’ rail revenue must be made up by the government sector either by increasing taxes or by reducing expenditure. As modelled, monopoly rail revenue forgone is assumed to be balanced by an increase in income tax.

11.7 State and Territory results

Table 11.3 reports the estimated impact of accelerated productivity change in the black coal industry (Scenario 3) and productivity deterioration (Scenario 2) on employment and output in each State and Territory. More detailed discussion of the regional effects of productivity change is provided in Attachment L7.

Not surprisingly, relative to base case forecasts, NSW and Queensland benefit from expansion of the coal sector. States that are export-oriented, Western Australia especially, are estimated to experience somewhat slower growth than in the base case. Conversely, if the coal sector contracts, NSW and Queensland are adversely affected, while other States perform slightly better.

11.8 Summary

Figures 11.9, 11.10 and 11.11 compare the modelling results in each scenario for the whole economy and the coking and thermal coal industries.

Overall, the modelling conducted by CoPS for the Commission suggests that productivity improvements in the black coal industry generally are good for the economy, coal-producing States, and the community overall. This confirms intuition. More efficient use of resources in coal expands the productive and income-generating capacity of the economy. This increase in capacity can be used to produce more coal as well as other goods and services.

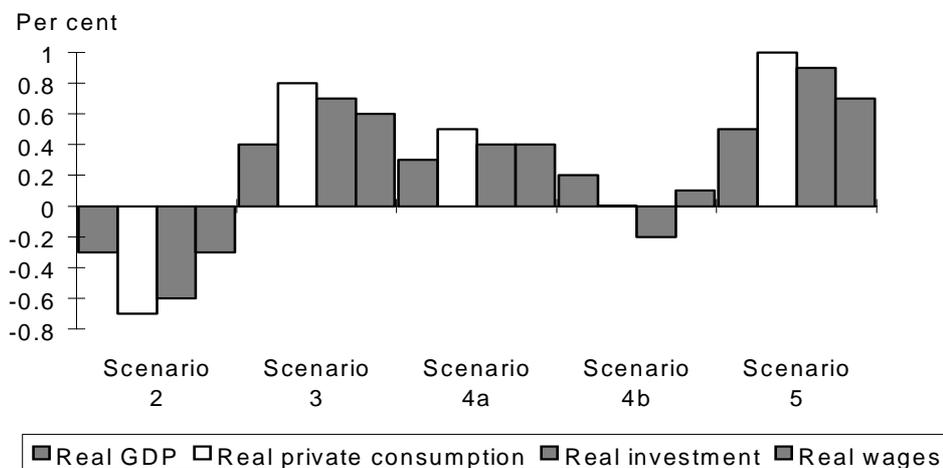
Table 11.3: **Output and employment by State and Territory in the base case, Scenario 2 and Scenario 3**

| | <i>Base case</i> | <i>Scenario 2</i> | <i>Scenario 3</i> |
|--|------------------|-------------------|-------------------|
| <i>Average annual percentage change 1997–98 to 2009–10</i> | | | |
| <i>Real Gross State Product</i> | | | |
| NSW | 2.85 | 2.79 | 2.92 |
| Vic | 2.62 | 2.64 | 2.61 |
| Qld | 3.56 | 3.44 | 3.71 |
| SA | 2.64 | 2.65 | 2.63 |
| WA | 3.59 | 3.63 | 3.53 |
| Tas | 2.32 | 2.34 | 2.30 |
| ACT | 3.19 | 3.17 | 3.22 |
| NT | 3.95 | 3.99 | 3.89 |
| <i>Employment (hours)</i> | | | |
| NSW | 1.63 | 1.60 | 1.65 |
| Vic | 1.48 | 1.50 | 1.47 |
| Qld | 2.37 | 2.33 | 2.42 |
| SA | 1.52 | 1.54 | 1.51 |
| WA | 2.32 | 2.35 | 2.27 |
| Tas | 1.23 | 1.24 | 1.20 |
| ACT | 2.11 | 2.11 | 2.12 |
| NT | 2.62 | 2.64 | 2.59 |

Source: MONASH-Coal simulations.

Restructuring of the economy is inevitable following expansion of the black coal industry. For reasons explored in Appendix L, some sectors and States and Territories are likely to experience slightly higher growth than otherwise, others slightly slower growth. It should be borne in mind, however, that any acceleration of productivity change in the black coal industry will occur in the context of a variety of unforeseen changes including improved efficiency in other industries. The *net* effect of all these changes will determine the actual structure of the economy.

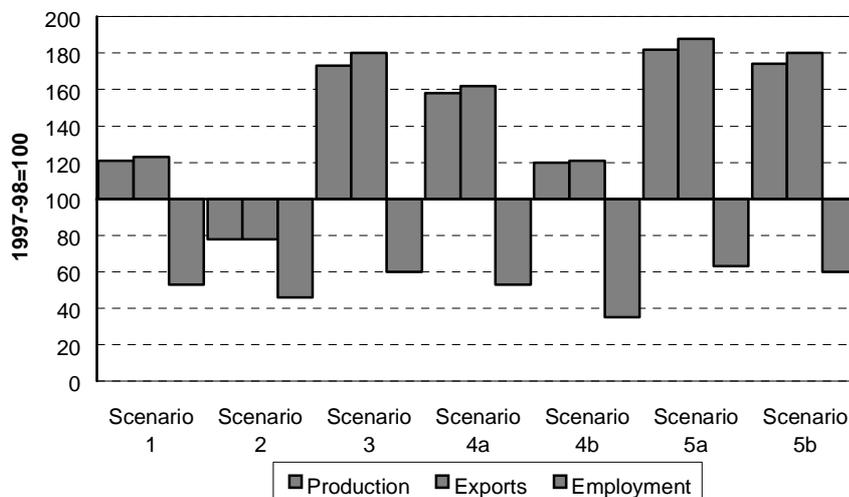
Figure 11.9: Economy-wide effects of Scenarios 2 to 5a
(percentage deviations from base case in 2009–10)^a



a Scenario 5 represents Scenario 5a only. Results for Scenario 5b are not shown because they are identical to the results for Scenario 3.

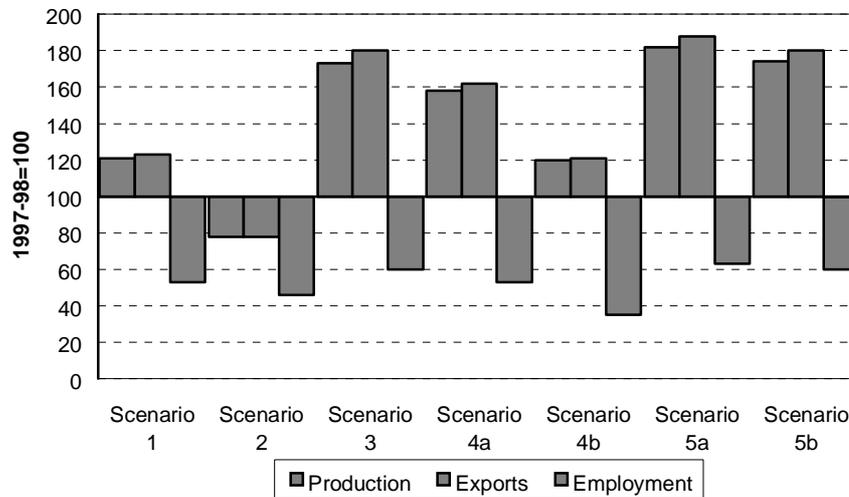
Source: Monash-Coal simulations.

Figure 11.10: Coking coal production, exports and employment in 2009–10, Scenarios 1 to 5 (index 1997–98=100)



Source: MONASH-Coal simulations.

Figure 11.11: Thermal coal production, exports and employment in 2009–10, Scenarios 1 to 5 (index 1997–98=100)



Source: MONASH-Coal simulations.

Productivity improvements are also good for the black coal industry and its workers *unless* cost reductions directly induce large export price falls (for example, as in Scenario 4b). The Commission considers that there is strong evidence that world coal markets are highly competitive and becoming increasingly so. In this environment, Australian coal exports should be able to expand as a result of domestic productivity improvements without inducing large price falls.

Importantly, price falls induced by productivity gains and lower costs in the Australian black coal industry must not be confused with falls in export coal prices caused by external factors including, for example, economic downturn in major markets, or increased exports from rival suppliers. Falls in export prices caused by these factors, which are outside Australia's control, lead to contraction of the black coal industry unless productivity accelerates.

REFERENCES

- ABARE (Australian Bureau of Agricultural and Resource Economics), 1990, submission to Industry Commission Inquiry *Mining and minerals processing: industry assistance, taxation and the environment*, AGPS, Canberra.
- 1991, *Factors Influencing the Demand for Australian Coal*, Research Report 91.4, Canberra.
- 1993, *Coal: The Economics of Coal Export Controls*, Research Report 93.8, Canberra.
- 1997a, *Australian Commodities. Forecasts and Issues*, 4(1), February.
- 1997b, *Australian Commodities. Forecasts and Issues*, 4(2), June.
- 1997c, *Australian Commodities. Forecasts and Issues*, 4(3), September.
- 1997d, *Australian Commodities. Forecasts and Issues*, 4(4), December.
- 1997e, 'Coal price — quality relationships and the outlook for coal', a paper presented at ABARE's *Outlook 97 Conference*, Canberra, 4–6 February.
- 1997f, *Quality adjusted prices for Australia's black coal exports*, a report to the Department of Primary Industries and Energy, Canberra.
- 1997g, *Australian Energy Consumption and Production: Historical Trends and Projections to 2009–10*, Research Report 97.2, Canberra.
- 1998a, *Outlook 98*, Proceedings of the National Agricultural and Resources Outlook Conference, Canberra, 3–5 February, vol. 3, Department of Primary Industries and Energy, Canberra.
- 1998b, 'Non-competitive market behaviour in international coking coal trade', Conference Paper 98.2, a paper presented at *The 42nd Annual Conference of the Australian Agricultural and Resource Economics Society*, University of New England, Armidale, 19–21 January.

- 1998c, 'Australia's coking coal exports to Japan: Price-quality relationships under benchmark and fair treatment pricing', Conference Paper 98.3, a paper presented at *The 42nd Annual Conference of the Australian Agricultural and Resource Economics Society*, University of New England, Armidale, 19–20 January.
- 1998d, 'The Australian Coal Industry — Productivity Improvements Required to Remain Competitive', a paper presented at ABARE's *Outlook 98 Conference*, 3–5 February.
- ABS (Australian Bureau of Statistics), 1996, *1992–93 Australian National Accounts: Input-Output Tables*, Catalogue no. 5209.0, AGPS, Canberra.
- 1997a, *Price indexes of materials used in Coal Mining, Australia*, Catalogue no. 6415.0, and various issues, Canberra.
- 1997b, *Australian mining industry*, Catalogue no. 8414.0, AGPS, Canberra.
- 1997c, 'Earning Statistics', *Australian Economic Indicators*, Catalogue no. 1350, pp. vii–xiv, AGPS, Canberra.
- ACA (Australian Coal Association), 1994, *Winning Coal: Securing a Viable and Expanding Future for Australia's Black Coal Industry*, ACIL, September.
- ACCC (Australian Competition and Consumer Commission), 1996, *Access Undertakings: A Draft Guide to Access Undertakings Under Part IIIA of the Trade Practices Act*, AGPS, Canberra.
- ACIL Economics and Policy Pty Ltd, 1997a, *Review of Mine Safety in NSW*, ACIL, Brisbane.
- 1997b, *Black Coal in the Australian Energy Market*, ACIL, September.
- ACIRL (Australian Coal Industry Research Laboratories), 1994, *An international comparison of performance indicators for the Australian Coal Industry*, a report to the Department of Primary Industries and Energy and the NSW Coal Association, AGPS, Canberra.
- ACIRRT (Australian Centre for Industrial Relations Research and Training), 1998, *The workforces in metallic minerals and black coal: a comparative study using 1991 and 1996 census data*, prepared for Rio Tinto, University of Sydney, January.

-
- AGA (Australian Gas Association), 1996, *Gas Statistics Australia 1996*, AGA, Canberra.
- Anderson, D. L., 1987, *An analysis of Japanese Coking Coal Procurement Policies: The Canadian and Australian Experience*, Centre for Resources Studies, Queen's University, Ontario.
- Australian Coal Report, 1997, *Coal 1997*, Barlow Jonker Pty Ltd, Sydney.
- 1998a, *Australian Coal Report*, vol. 20, No. 4, Barlow Jonker Pty Ltd, Sydney.
- 1998b, *Coalfax 7, 14 and 21 May 1998*, Barlow Jonker Pty Ltd, Sydney.
- Australian Mineral Economics, 1997, 'Coal and Power. Australia challenged by export coal emerging giants', *Australian Journal of Mining*, March, pp. 29–39.
- Australasian Railway Association, 1997, *1997 Yearbook and Industry Directory*, Australasian Railway Association, Melbourne.
- Barlow Jonker Pty Ltd, 1997, *Coal Supply Series*, vol. 1 & 2, available on subscription, October, Sydney.
- BC Rail, 1997, <http://www.bcrail.com/bcr/index.html>
- BIE (Bureau of Industry Economics), 1992, *International Performance Indicators: Rail Freight*, Research Report 41, AGPS, Canberra.
- 1993, *International Performance Indicators: Rail Freight Update 1993*, Research Report 52, AGPS, Canberra.
- 1995a, *International Benchmarking: Rail Freight 1995*, Report 95/22, AGPS, Canberra.
- 1995b, *International Benchmarking: Waterfront 1995*, Report 95/6, AGPS, Canberra.
- Blandy, R., Amstad, I., Baker, M., Bannister, G., Quagliata, A. and Wooden, M., 1986, 'Industrial relations systems and competitiveness' in Blandy, R. and Niland, J. (eds.), *Alternatives to Arbitration*, Allen and Unwin, Sydney, pp. 63–80.
- Blandy, R. and Baker, M., 1987, *Industry Assistance Reform and the Labour Market: The New Zealand Experience*, National Institute of Labour Studies/CEDA, Adelaide.
- Bosworth, D., Dawkins, P. and Stromback, T., 1996, *The Economics of the Labour Market*, Longman, London.

- Bowen, L., 1984, 'Role of Government in the Minerals Trade', *Mining Review*, August.
- Bruce, H., Horwitch, M. and Nueno, P., 1983, 'The Evolution of the International Coal Trade: A Strategic and Decision-making Perspective', *Journal of International Business Studies*, Spring/Summer, pp. 85–101.
- Burlington Northern Sante Fe Corporation, 1997, <http://www.bnsf.com/website/webdocs.nsf>
- Canadian National, 1997, <http://www.cn.ca/>
- Canadian Pacific, 1997, <http://www.cpr.ca/index.html>
- CCIWA (Chamber of Commerce and Industry of Western Australia), 1994, 'The WA v NSW Coal Industries: a comparative analysis', Exhibit No. 6 tendered by the CCIWA in the CITWA matter no. 80 of 1994 of *CFMEU v Griffin Coal Mining Co. and Western Collieries Ltd.*
- CFMEU (Construction, Forestry, Mining and Energy Union), 1994, 'Out of the Red and Into the Black', a submission to the Australian Coal Industry Council's *Study of the Queensland and New South Wales Black Coal Industry*, CFMEU, Sydney.
- 1997, 'Another export coal price cut underlines need for a united front', *Common Cause*, February.
- Cook, L. H. and Sieper, E., 1984, 'Minerals Sector Growth and Structural Change', in Cook, L. H. and Porter, M. G. (eds), *The Minerals Sector and the Australian Economy*, Allen & Unwin in association with the Centre of Policy Studies, Monash University, Sydney.
- Corden, W. M., 1984, 'Booming Sector and Dutch Disease Economics: Survey and Consolidation', *Oxford Economic Papers*, 36, pp. 359–380.
- Corrs, Chambers and Westgarth, 1997a, *Regulation of Occupational Health and Safety in the Australian Black Coal Industry*, Projects 1 & 2, Corrs, Chambers and Westgarth, Melbourne.
- 1997b, *Workplace Relations Act: an analysis for business*, Corrs, Chambers and Westgarth, Melbourne.
- CSX Transportation, 1997, <http://www.csx.com/index2.html>
- Creighton, W. B., Ford, W. J., Mitchell, R. J., 1993, *Labour law text and materials*, 2nd edition, Law Book Company Ltd, Sydney.
- Dahl, C., 1994, 'A survey of energy demand elasticities for the developing world', *Journal of Energy and Development*, 18(1), pp. 1–47.

-
- Dastmalchian, A., Blyton, P. and Adamson, R., 1991, *The Climate of Workplace Relations*, Routledge, London.
- Deery, S. J., Erwin, P. J. and Iverson, R.D., 1994, 'Predicting organisational and union commitment: the effects of industrial relations climate', *British Journal of Industrial Relations*, 32(4), pp. 581–597.
- 1996, 'Union management cooperation, dual allegiance and organisational effectiveness', a paper presented at *The 56th Academy of Management Meetings*, Cincinnati, Ohio.
- Department of Foreign Affairs and Trade (DFAT), 1993, *Uruguay Round Outcomes for Australia*, DFAT, Canberra.
- Easton, E. W., 1996, 'Rail charges and costs: transport of export coal', unpublished PhD Thesis, School of Economics, Faculty of Economics and Commerce, University of Adelaide, Adelaide.
- Easton Business Consultants, 1988, *Charges and Costs of Rail Transport of Coal, Lead and Zinc Concentrate: Summary*, Centre of Policy Studies, Monash University, Melbourne.
- EIA (Energy Information Administration), 1997, *International Energy Outlook 1997*, US Department of Energy, Washington D. C., April.
- Fairfield, J., 1997, 'Market Development and the Price Formation Process for Coal', a paper presented at ABARE's *Outlook 97 Conference*, Canberra, 4–6 February.
- Foots, K., 1996, 'The Best of Oz Ensham — Deliberately Different', paper presented to the *1996 Australian Coal Conference*, Conrad Jupiters, Gold Coast, 19–23 May.
- 1997, reported in the *Australian Financial Review*, 16 August, p. 14.
- Fox, C., Howard, W. and Pittard, M., 1995 *Industrial Relations in Australia, Development, Law and Operation*, Longman, Kings Gardens, Melbourne.
- Freebairn, J.W. and Trace, K., 1988, *Principles and Practice of Rail Freight Pricing for Bulk Minerals*, Centre of Policy Studies, Monash University.
- FreightCorp, 1997, *Annual Report 1996–97*, FreightCorp, Sydney.
- Gethin, P., 1990, *The Power Switch at Robe River*, AIPP (Australian Institute for Public Policy), Critical Issues No. 12, AIPP, Perth.

- Gordon, M. E., and Ladd, R. T., 1990, 'Dual allegiance renewal, reconsideration and recantation', *Personnel Psychology*, 43, pp. 37–69.
- Gordon, M. E., Philpot, J. W., Burt, R. E., Thompson, C. A. and Spiller, W. E., 1980, 'Commitment to the union: development of a measure and an examination of its correlates', *Journal of Applied Psychology Monograph*, 65, pp. 479–499.
- Hammermesh, D. S. and Rees, A., 1988, *The Economics of Work and Pay*, fourth edition, Harper and Row, New York.
- Harley, B., 1995, *Labour Flexibility and Workplace Industrial Relations: The Australian Evidence*, Australian Centre for Industrial Relations Research and Teaching Monograph No. 12, ACIRRT, Sydney.
- Hawke A. and Wooden, M., 1997a, *The Changing Face of Australian Industrial Relations*, The Transformation of Australian Industrial Relations Project Executive Monograph Series No. 1, National Institute of Labour Studies, Adelaide.
- 1997b, *The Changing Face of Australian Industrial Relations*, The Transformation of Australian Industrial Relations Project Discussion Paper Series No. 1, National Institute of Labour Studies, Adelaide.
- Higgs, P. J., 1986, *Adaptation and Survival in Australian Agriculture: A Computable General Equilibrium Analysis of the Impact of Shocks Originating Outside the Domestic Agricultural Sector*, Oxford University Press, Melbourne.
- Hirsch, B. T. and Addison, J. T., 1986, *The Economic Analysis of Unions: New Approaches and Evidence*, Allen and Unwin, Boston.
- Hofstede, G., 1980, *Culture's Consequences: International Differences in Work-Related Values*, Sage Publications, London.
- Hopkins, A., 1988, 'Deskilling, Job Control and Safety: Why Coalminers Violate Safety Regulations', *Labour & Industry*, 1(2) , pp. 322–334.
- forthcoming, 'Organisational Failure: The Moura Mine Disaster', manuscript.
- House of Representatives Standing Committee on Communications, Transport and Microeconomic Reform, 1997, *Inquiry into the role of rail in the national transport network*, Information and Issues, Department of the House of Representatives, Canberra.
- Hutchison, P. 1996, 'Steel: for the future', *World Coal*, October, pp. 31–43.

-
- IAC (Industries Assistance Commission), 1976, *Financing rural research*, IAC, AGPS, Canberra.
- 1988, *Assistance to Mining: Some issues and Preliminary Analysis*, AGPS, Canberra.
- IC (Industry Commission), 1991a, *Rail transport*, Report No 13, vol. 1, AGPS, Canberra.
- 1991b, *Mining and Minerals Processing in Australia*, Report No. 7, vol. 4, AGPS, Canberra.
- 1993, *Port Authority Services and Activities*, Report No. 31, AGPS, Canberra.
- 1994, *Petroleum Products*, Report No. 40, AGPS, Melbourne.
- 1995a, *Does Pacific Power Have Market Power? A report on the Implications for the National Electricity Market of New South Wales Generation Options*, August, AGPS, Canberra.
- 1995b, *Work, Health and Safety: Inquiry into Occupational Health and Safety*, Report No. 47, AGPS, Canberra.
- 1997a, *Assessing Australia's productivity performance*, Research Paper, AGPS, Canberra.
- 1997b, *The Textiles, Clothing and Footwear Industries*, Report No. 59, vol. 2, AGPS, Canberra.
- 1997c, *Telecommunications Economics and Policy Issues*, Information Paper, AGPS, Canberra, March.
- ICR (International Coal Report), 1997a, *International Coal Report*, vol. 433, 22 September, FT Energy.
- 1997b, *International Coal Report*, vol. 437, 17 November, FT Energy.
- 1998a, *International Coal Report*, vol. 440, 12 January, FT Energy.
- 1998b, *International Coal Report*, vol. 442, 9 February, FT Energy.
- 1998c, *International Coal Report*, vol. 444, 9 March, FT Energy.
- 1998d, *International Coal Report*, vol. 445, 23 March, FT Energy.
- 1998e, *International Coal Report*, vol. 448, 4 May, FT Energy.
- 1998f, *International Coal Report*, vol. 441, 26 January, FT Energy.
- 1998g, *International Coal Report*, vol. 451, 15 June, FT Energy.
-

- Ichniowski, C. and Shaw, K., 1995, 'Old dogs and new tricks: determinants of the adoption of productivity-enhancing work practices', *Brookings Papers: Microeconomics*, pp. 1–65.
- IEA (International Energy Agency), 1993a, *Inland Transport of Export Coal*, OECD, Paris.
- 1993b, *Major Coalfields of the World*, OECD, Paris.
- 1994, *Electric Supply Industry*, OECD, Paris.
- 1997, *Coal Information 1996*, OECD, Paris.
- ILO (International Labour Organisation), 1966, *ILO Eleventh International Conference of Labour Statisticians*, ILO, Geneva.
- Ivancevich, J. M. and Matteson, M. T., 1993, *Organisational Behaviour and Management*, 3rd Edition, Irwin, Boston.
- Iverson, R. D., 1996, 'Employee acceptance of organisational change: the role of organisational commitment', *International Journal of Human Resource Management*, 7(1), pp. 122–149.
- Iverson, R. D., and Maguire, C., 1997, 'The relationship between job and life satisfaction: implications for human resource management in remote communities', unpublished honours thesis, Department of Management and Industrial Relations, University of Melbourne, Parkville, Victoria.
- JAG (Joint Advisory Group), 1994, *Queensland Rail – World's Best Practices in Export Coal Haulage*, Mercer Management Consulting, Travers Morgan, Brisbane.
- JCB (Joint Coal Board), 1997, *Annual Report 1996–97*, JCB, Sydney.
- JCB and QCB (Joint Coal Board and Queensland Coal Board), 1988–1997, *Australian Black Coal Statistics*, JCB, Sydney.
- King, S., 1996, 'Asset Valuation and Access to Essential Facilities Under Part IIIA of the Trade Practices Act 1974 (Cth)', in Richardson, M. (ed.) *Deregulation of Public Utilities: Current issues and perspectives*, University of Melbourne, Melbourne, pp. 94–116.
- King, S. and Maddock, R., 1996, *Unlocking the Infrastructure: The Reform of Public Utilities in Australia*, Allen and Unwin, Sydney.
- Koerner, R., 1993, 'The behaviour of Pacific metallurgical coal markets: the impact of Japan's acquisition strategy on market price', *Resources Policy*, March, pp. 66–79.

-
- 1996, *Behaviour of Pacific energy markets: the case of the coking coal trade with Japan*, Pacific Economic Paper No. 252, Australia-Japan Research Centre, Australian National University, Canberra, February.
- LAXT (Los Angeles Export Terminal), 1997, *General Information and Terminal Rules and Regulations*, LAXT, mimeo.
- Lourenz, E. H., 1992, 'Trust and the Flexible Firm: International Comparisons', *Industrial Relations*, 31 (3), pp. 455–472.
- McLean, A., 1997, 'Coal — the new era of price formation', a paper presented at ABARE's *Outlook 97 Conference*, Canberra, 4–6 February.
- Macneil, J., Rimmer, M. and Testi, J., 1964, *Benchmarking and best practice in Australia: progress in the top 500 enterprises*, National Key Centre in Industrial Relations, Melbourne.
- Macquarie Generation, 1997, *1997 Annual Report*, Macquarie Generation, Sydney.
- Maitland, J., 1997, 'Trade Unions, Productivity and Profits in Coal: Rebutting the Myths', a paper presented to the *1998 Global Coal Market Conference*, Sydney, 19–20 November.
- Martin, C. H., Hargraves, A. J., Kininmonth, R. J. and Saywell, S. M. C., 1993, *History of Coal Mining in Australia*, The Australasian Institute of Mining and Metallurgy, Melbourne.
- MCIS (McCloskey Coal Information Services), 1997, 'Review of 1997 — A critical year', a paper presented at the *1998 Global Coal Market Conference*, Sydney, 19–20 November.
- Menzies, M., (1998), 'Industrial reform in MIM's coal operations', a paper presented at the *Industrial Relations and the Mining Industry Conference*, Sydney, 15–16 June.
- MINEC, 1997, 'Quo Vadis the Australian Coal Industry — Can We Compete?', a paper presented by Professor D. Barnett at the *1998 Global Coal Market Conference*, Sydney, 19–20 November.
- Mine Safety Review, 1998, *The Steering Group Report on Mine Safety Review Implementation*, vol. 1, April, NSW Department of Mineral Resources.
- Minerals Council of Australia, 1998, *Safety and Health Performance Report of the Australian Minerals Industry 1996–97*, Minerals Council of Australia, Canberra.
-

- 1997, *Safety and Health Performance Report of the Australian Minerals Industry 1995–96*, Minerals Council of Australia, Canberra.
- 1996, *Safety Performance of the Australian Mining and Minerals Industry 1993–94*, Minerals Council of Australia, Canberra.
- MJ (Mining Journal, London) 1997, *Mining Journal, London*, 329(503), 19–26 December.
- Muil, I., 1998, 'Ensham paves way for new coal mining culture', *Australia's Mining Monthly*, June, pp. 66–70.
- Mumford, K. and Dowrick, S., 1994, 'Wage Bargaining with Endogenous Profits, Overtime Working and Heterogeneous Labour', *Review of Economics and Statistics*, pp. 329–336.
- National Competition Council (NCC), 1996, *The National Access Regime: A Draft Guide to Part IIIA of the Trade Practices Act*, NCC, Melbourne.
- 1997a, *The NSW Access Regime for Rail Services*, Issues Paper, NCC, Melbourne.
- 1997b, *Application for declaration of certain rail freight services. Brisbane–Cairns Rail Corridor: Reasons for Decision*, NCC, Melbourne.
- 1997c, *NSW Minerals Council Limited's application for declaration of a rail service provided by NSW Rail Access Corporation: Recommendation*, NCC, Melbourne.
- 1997d, *NSW Minerals Council Ltd Application for declaration of a rail service provided by Rail Access Corporation*, Issues Paper, NCC, Melbourne.
- 1997e, *Specialized container transport application for declaration of a rail service provided by Rail Access Corporation: Reasons for Decision*, NCC, Melbourne.
- 1997f, *Specialized container transport applications for declaration of services provided by Westrail: Recommendations*, NCC, Melbourne.
- 1998, *Application for Certification of the NSW Rail Access Regime: Draft Recommendation*, NCC, Melbourne.

-
- National Economic Development Office (NEDO), 1986, *Changing Working Patterns: How companies achieve flexibility to meet new needs*, NEDO, London.
- National Rail Corporation (NRC), 1997, *Submission to the NCC concerning the application under Part IIIA of the TPA by the NSW Minerals Council*, NRC, Sydney.
- Nickell, S. and Nicolitsas, D., 1997, 'Wages, restrictive practices and productivity', *Labour Economics*, 4, pp. 201–221.
- NSW Government, 1989, *Working party report on a proposal for a resource rent royalty system applied to the NSW coal industry*, Final Draft, NSW Treasury, October.
- NSW Minerals Council, 1997a, *1995/1996 Coal Industry Survey*, survey compiled by Coopers and Lybrand.
- 1997b, *Annual Report 1996–97*, NSW Minerals Council, Sydney.
- Norfolk Southern, 1997, <http://www.nscorp.com/>
- Orcutt, G. H., 1950, 'Measurement of price elasticities in international trade', *Review of Economics and Statistics*, XXXII (May), 123ff.
- Organisation for Economic Cooperation and Development (OECD), 1986, *Labour Market Flexibility*, OECD, Paris.
- 1988, *Labour Flexibility in Europe: A Comparative Analysis of Four Countries*, OECD, unpublished.
- Power in Asia, 1997, 'Baht crisis threatens Thailand's projects', *Power in Asia*, No. 231.
- Pragnell, B., 1995, *Mapping Enterprise Agreements in the NSW and Queensland Coal Industry*, Working Paper No. 35, June, ACIRRT, Sydney.
- QCB (Queensland Coal Board), 1997, *Queensland Coal*, QCB, Brisbane.
- Queensland Commission of Audit, 1996, *Report of the Queensland Commission of Audit*, J. Swan Government Printer, Brisbane.
- Queensland Department of Mines and Energy, 1997, *Queensland Minerals and Energy Review 1996–97*, QDME, Brisbane.
- QMITAB (Queensland Mining Industry Training Advisory Body), 1998, *Queensland Mining Industry Training Plan 1998*, QMITAB, Brisbane.
- Queensland Rail, 1996, *Annual Report 1995–96*, Queensland Rail, Brisbane.

- 1997, *Annual Report 1996–97*, Queensland Rail, Brisbane.
- Reith, The Hon. P. 1997, *Review of Black Coal Mining Industry Long Service Leave Funding Arrangements*, News Release, no. 73/97, 22 October, Canberra.
- Rimmer, M. and Zappala, J., 1988, 'Labour Market Flexibility and the Second Tier', *Australian Bulletin of Labour*, 14(4), pp. 564–591.
- Sheldon, Hon. J. and Johnson, Hon. V., 1997, *Queensland Rail Ready for Competition*, Media Release, 17 December.
- Shell Coal Pty Ltd., 1998, Submission No. 84, House of Representatives Standing Committee on Communications, Transport and Microeconomic Reform, *Inquiry into the role of rail in the national transport network*, vol. 5, pp. 1137–1150.
- Smith, B., 1977, 'Bilateral Monopoly and Export Price Bargaining in the Resource Goods Trade', *Economic Record*, 53(141), pp. 30–50.
- 1982, 'Bilateral Commercial Arrangements in the Energy Coal Trade', in Harris, S. and Ikuta, I. (eds.), *Australia, Japan and the Energy Coal Trade*, Australia-Japan Research Centre, Canberra.
- Spoornet, 1997, <http://www.spoornet.co.za/>
- State Rail Authority, 1996, *Annual Report 1995–96*, State Rail Authority, Sydney.
- Steering Committee on National Performance Monitoring of Government Trading Enterprises, 1994, *Guidelines on accounting policy for valuation of assets of government trading enterprises using current valuation methods*, AGPS, Canberra.
- Sutcliffe, P. and Callus, R., 1994, *Glossary of Australian Industrial Relations Terms*, Australian Centre for Industrial Relations Research and Teaching and Australian Centre in Strategic Management, Sydney.
- Symonds Travers Morgan Pty Ltd, 1996, *Australian Rail Freight Performance measured against best practice 1993–94 Update*, Symonds Travers Morgan Pty Ltd, Canberra.
- Swan Consultants Canberra Pty Ltd, 1994, *International Benchmarks for Australia's Black Coal Industry*, a report prepared for ACIL Economics and Policy, Swan Consultants, Canberra.
- Tasman Asia Pacific, 1997, *The Scope for Productivity Improvement in Australia's Open Cut Black Coal Industry*, Tasman Asia Pacific Pty Ltd, Canberra.

-
- 1998, *Benchmarking the Productivity of Australia's Black Coal Industry*, Tasman Asia Pacific Pty Ltd, Canberra.
- Taylor, R. M., 1994, *Study of the Queensland and New South Wales Black Coal Industry: A Report to the Australian Coal Industry Council*, Australian Coal Industry Council, November, Canberra.
- Transgrid & VPX, *National Electricity Market: Gateway to the National Market*, Information booklet.
- Trompenaars, F., 1993, *Riding the Waves of Culture*, The Economist Books, London.
- Turner, J. W., 1982, 'Coal Mining in Newcastle 1801–1900', *Newcastle History Monograph No. 9*, The Council of the City of Newcastle, NSW, pp. 179.
- Union Pacific, 1997, <http://www.up.com/>
- United Mine Workers of America, 1997, <http://www.access.digex.net/miner/colminrs.html>
- Warden's Inquiry (Mr F. W Windridge), 1996, *Report on an Accident at Moura No. 2 Underground Mine on Sunday, 7 August, 1994*, Qld Department of Minerals and Resources, Brisbane.
- Wooden, M. and Baker, M., 1994, 'Trade Unions and Quits: Australian Evidence', *Journal of Labour Research*, 15(4), pp. 403–418.
- Wooden, M., Robertson, F. and Cernaz, R., 1996, *Coal Industry Awards and Agreements and the Implications for Work Practices and Working Conditions*, Working Paper Series, No. 141, National Institute of Labour Studies Inc., Adelaide.
- Wooden, M. and Robertson, F., 1997a, *Determinants of Work-related injuries: an inter-industry analysis*, Working Paper Series No. 144, National Institute of Labour Studies Inc., Adelaide.
- 1997b, *Employee Relations Indicators: Coal Mining and Other Industries Compared*, Working Paper Series No. 143, National Institute of Labour Studies Inc., Adelaide.
- Working Party Report (1989), *Proposal for a Resource Rent Royalty System Applied to the NSW Coal Industry*, Final Draft, NSW Treasury, October.
- Worksafe Australia (various), *Estimates of National Occupational Health and Safety Statistics, Australia*, 1993–94, 1992–93 and 1991–92, AGPS, Canberra.

