Australia’s Mining Boom

Edited by Justin Healey
## CHAPTER 1  
**AUSTRALIA’S MINING INDUSTRY**

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**MANAGING THE MINING BOOM**

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Australia’s Mining Boom is Volume 348 in the ‘Issues in Society’ series of educational resource books. The aim of this series is to offer current, diverse information about important issues in our world, from an Australian perspective.

KEY ISSUES IN THIS TOPIC
The impact of the current mining boom in Australia, aided by unprecedented demand for minerals from an emerging China, has helped this nation to withstand global financial turmoil. Australia’s mining and energy resources – coal, iron ore, gold, bauxite, oil, gas, copper, uranium, etc – accounts for about 9% of GDP, but more than half of national exports. The resources sector is booming, however its success may cause problems elsewhere, such as pushing up the value of the dollar, which can adversely affect sectors like manufacturing and tourism.

How sustainable is the latest mining boom, and how should government manage the ‘two-speed economy’? Is the recent controversial introduction of the mining tax going to fairly spread the super profits from Australia’s non-renewable mineral wealth to all Australians? How much does Australia’s economy rely on minerals revenue, and what are the boom’s impacts on employment and other sectors in the economy, as well as the social and environmental costs? Are the structural changes in the Australian economy brought about by the mining boom sustainable – what happens when the mining boom goes bust?

SOURCES OF INFORMATION
Titles in the ‘Issues in Society’ series are individual resource books which provide an overview on a specific subject comprised of facts and opinions.

The information in this resource book is not from any single author, publication or organisation. The unique value of the ‘Issues in Society’ series lies in its diversity of content and perspectives.

The content comes from a wide variety of sources and includes:
➤ Newspaper reports and opinion pieces
➤ Website fact sheets
➤ Magazine and journal articles
➤ Statistics and surveys
➤ Government reports
➤ Literature from special interest groups

CRITICAL EVALUATION
As the information reproduced in this book is from a number of different sources, readers should always be aware of the origin of the text and whether or not the source is likely to be expressing a particular bias or agenda.

It is hoped that, as you read about the many aspects of the issues explored in this book, you will critically evaluate the information presented. In some cases, it is important that you decide whether you are being presented with facts or opinions. Does the writer give a biased or an unbiased report? If an opinion is being expressed, do you agree with the writer?

EXPLORING ISSUES
The ‘Exploring issues’ section at the back of this book features a range of ready-to-use worksheets relating to the articles and issues raised in this book. The activities and exercises in these worksheets are suitable for use by students at middle secondary school level and beyond.

FURTHER RESEARCH
This title offers a useful starting point for those who need convenient access to information about the issues involved. However, it is only a starting point. The ‘Web links’ section at the back of this book contains a list of useful websites which you can access for more reading on the topic.
MINERALS BASICS

An overview of Australia’s mineral resources and production from Geoscience Australia

Australia is a leading producer of minerals for the world and produces some 22 minerals in significant amounts from more than 300 operating mines. Minerals are produced in all States and the Northern Territory. There is no mining in the Australian Capital Territory apart from quarries used to mine aggregate and other construction materials.

Australia is a leading producer of minerals for the world and produces some 22 minerals in significant amounts from more than 300 operating mines.

Minerals are an important part of the Australian economy, accounting for about seven per cent of gross domestic product (GDP). The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) reports that mining employs around 167,000 people directly. In addition, the Minerals Council of Australia states that there are a further 153,000 employed indirectly by the industry.

Minerals are Australia’s largest export. According to ABARES, the industry’s exports were worth approximately $114 billion in 2009 (excluding petroleum), accounting for around 46 per cent of total exports and 58 per cent of merchandise exports. Australian mining companies trade freely in the global marketplace, exporting goods on a commercial basis around the world with the major markets for Australian mineral exports being Japan, China, Korea and India.

Australia is in the top five mineral producers and has a large inventory of resources of most of the world’s key minerals commodities. Australia is the world’s leading producer of bauxite, alumina, rutile, and zircon; the second
largest producer of gold, iron ore, lead, zinc, lithium and manganese ore; the third largest producer of uranium; the fourth largest producer of nickel; and the fifth largest producer of aluminium, brown coal, industrial diamond and silver (Table 1). Australia also has the largest identified resources of lead, nickel, rutile, silver, uranium, zinc and zircon, and the second largest resources of bauxite, copper, gold, iron ore, niobium and tantalum. Australia’s lithium resources are ranked third, and black coal resources ranked fifth in the world (Table 1).

RESOURCES AND PRODUCTION

Geoscience Australia compiles and reports on an annual basis the national inventory of mineral resources from information released publicly by mining companies in Australia’s Identified Mineral Resources. Geoscience Australia also provides national scale maps showing Australia’s mineral deposits and endowment by region for a wide range of mineral commodities.

Australian mineral production and exports are reported quarterly by ABARES in Australia’s Mineral Statistics. The outlook for commodity prices and Australia’s exports are given in the ABARES Commodity Outlook.

HISTORY AND USE

Mining in Australia dates back to around 1800 when coal was mined near Newcastle. Metal mining commenced with mining of lead at Glen Osmond (South Australia) in 1841 followed by copper shortly after at Kapunda (South Australia) in 1842. Gold mining played a major role in Australia’s development following the initial gold rushes near Bathurst in New South Wales and Ballarat and Bendigo in Victoria in the 1850s-1860s, and at Coolgardie and Kalgoorlie in the Eastern Goldfields of Western Australia in the 1890s. Mining of the major base metal deposits of Broken Hill discovered in 1883, and Mount Isa (1923) and the Golden Mile at Kalgoorlie (1893), which now operates as the Super Pit, continues today and continues to be responsible for the development of these regional cities. Other mining developments of major national economic significance were the expansion of the coal mines of the Hunter Valley and Bowen Basin, and the iron ore mines of the Hamersley Basin in the 1960s and 1970s. Further details on the history of Australian mining is provided in the Australian Mines Atlas.

Minerals are essential to modern living and have a very wide range of applications, including coal for fuel for electricity and steel production and ores for the production of a wide range of metals and mineral products including iron ore to produce steel used in construction, ships motor vehicles, and machinery, bauxite for aluminium, copper for electrical wiring and plumbing and metals for a wide range of alloys, such as nickel for stainless steel. Metals such as niobium, tantalum, and rare earths are used in high-technology applications such as mobile phones, magnets and batteries. Further details are given in the Australian Mines Atlas Minerals Fact Sheets.

Extraction of all minerals follows a similar path commencing with exploration using a range of geological, geophysical and/or geochemical tools followed by drilling to find and evaluate mineralisation. If these steps provide promising results, more detailed work is undertaken to estimate the size and quality of the resource. This is followed by a pre-feasibility study to assess the economic potential of the identified resource. If favourable, a feasibility study is undertaken to assess the commercial viability of mining the resource, including mine planning to evaluate the commercially recoverable part of the deposit, the metallurgy, value and market potential of the mined ore, the full costs of mine development including infrastructure, mining, milling, and recovery of the ore, the cost of finance and mine closure and rehabilitation.

The largest importers and consumers of minerals and metals are China, the USA and Japan. Australia’s coal and iron ore are generally traded between supplier and consumer based on a negotiated contract price set quarterly based on various benchmarks. Most base metals (copper, lead, zinc, nickel) are traded internationally on the London Metal Exchange with smaller volumes sold directly or through the smaller Comex and NYMEX exchanges in the United States and the Shanghai Futures Exchange in China. Other commodities are generally sold outside the international clearing schemes by direct sales at negotiated prices. The market for a number of smaller volume commodities is dominated by a single or small number of dominant suppliers.
THE STORY OF MINERALS IN AUSTRALIA

Minerals have been part of the Australia’s culture and development since man’s first appearance on this continent, according to this extract from the *Australian Mines Atlas*

In Australia, minerals have been part of the continent’s culture and development since man’s first appearance. Minerals were used to colour paints in ancient rock art which is an integral part of Aboriginal heritage.

Minerals began to be produced in Australia in large quantities from the early days of European settlement at Sydney Cove. Within ten years of the First Fleet arriving in 1788, coal was discovered near Newcastle in New South Wales and later to the south and west of the settlement. These areas provided fuel for heating and cooking, and later steam locomotion in the young colony of New South Wales. The first metal mined in Australia was lead at Glen Osmond in South Australia in 1841. The young colony was quick to start exporting agricultural products but by 1850 exports of copper and lead from South Australia earned more than Australia’s exports of wool and wheat.

The goldrushes of the 1850s made the Australian colonies world famous for mining.

The goldrush of the 1850s

The goldrushes of the 1850s made the Australian colonies world famous for mining. Gold was first discovered in New South Wales in 1823 by a public official named James McBrien while he was on a survey mission in hills near the Fish River east of Bathurst. The gold was sparse and McBrien’s record of his find was forgotten. Other traces of gold were found in the following decades in New South Wales and in Victoria. Edward Hammond Hargraves had returned to Australia from the Californian goldrushes and guided by a publican’s son, John Hardman Australia Lister, he had ridden to Lewis Ponds Creek, near Bathurst. Here he washed sand and gravel in a borrowed tin dish and of the six dishes he washed, all but one yielded a grain of gold. Hargraves’ efforts to publicise his find started the first goldrushes and others followed in Victoria, particularly at Ballarat and Bendigo.

With news of the rushes, people began to emigrate to the Australian colonies and growing population enabled increased agricultural and industrial development. By the 1850s, Australia was producing almost 40 per cent of the world’s gold.

1870-1900

In the 1870s, Australia became an important producer of tin with the discovery of the metal at Mt. Bischoff in Tasmania. In the latter years of the 19th century, the first great mines were established: copper and gold at Mt. Morgan near Rockhampton in Queensland; silver, lead and zinc at Broken Hill in New South Wales; gold at Coolgardie and Kalgoorlie in Western Australia; and iron ore at Iron Knob and Iron Baron in South Australia.

1900-1950

In the early years of the 20th century, mining activity in Australia began to decline despite a continued rise in the value of mineral production. The only major finds of the first half of the century were lead, zinc and copper deposits at Mt Isa but their full potential was not realised until the 1950s.

In the early years of the 20th century, mining activity in Australia began to decline.

The resources boom

Until the early 1960s it was believed Australia lacked sufficient reserves of iron ore for domestic use. Once export controls of iron ore were lifted, the development of the Pilbara iron ore region in Western Australia commenced. Aided by information from the Bureau of Mineral Resources (now Geoscience Australia), the pace...
of exploration was stepped up.

Discoveries of the ‘new’ metals – bauxite (the source of aluminium), nickel, tungsten, rutile (the source of titanium), uranium, oil and natural gas followed a resurgence of interest in Australia’s mineral resources. Production of other minerals also increased and Australia became a major raw materials exporter, especially to Japan and Europe.

The situation today
Australia is one of the world’s leading mineral resources nations. It is the world’s largest refiner of bauxite and the fourth largest producer of primary aluminium. It is the largest producer of gem and industrial diamonds, lead and tantalum, and the mineral sands ilmenite, rutile and zircon.

Australia has the potential to remain among the world’s leading mineral nations.

It is the fifth largest producer and largest exporter of black coal and the second largest producer of zinc, the third largest producer of gold, iron ore and manganese ore and the fourth largest producer of nickel. It is the fifth largest producer of copper and silver. It has the world’s largest resources of low-cost uranium.

Australia also has the potential to remain among the world’s leading mineral nations. New deposits have been discovered and developed as demand for mineral products grows, but the minerals industry has to continue to find and develop more mineral deposits to meet the demand for its products and replace worked out mines.

Many Australians believe huge areas of the continent are devoted to mining when in fact less than 0.02 per cent of Australia is affected by mining. Although this disturbance is small when compared with that caused by other activities such as real estate development, farming and grazing, road construction and the urban sprawl, the minerals industry must responsibly manage the environment in which it operates.

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The Australian Bureau of Statistics has published an article called The Australian Mining Industry: From Settlement to 2000 which is a valuable source of information about Australia’s mining history.

Extract from What Minerals Mean to Australia, courtesy of the Minerals Council of Australia www.australianminesatlas.gov.au © Commonwealth of Australia (Geoscience Australia) 2012
Australia’s identified mineral resources

Australia’s mineral resources are an important component of the nation’s wealth. Understanding the available resources is a prerequisite for formulating sound policies on resources and land-access. Geoscience Australia prepares a national inventory of resource stocks and these are reported in the online publication Australia’s Identified Mineral Resources.

Companies listed on the Australian Securities Exchange are required to report publicly on ore reserves and mineral resources under their control, using the Joint Ore Reserves Committee Code (JORC). Data reported for individual deposits by mining companies are compiled in Geoscience Australia’s national mineral resources database and used in the preparation of the annual national assessments of Australia’s mineral resources. National resources are reported in categories of the National Mineral Resources classification system. This involves aggregating JORC categories into a smaller number of categories in the national system. The national inventory provides a long-term national perspective of what is likely to be available for mining.

AIMR 2009 includes data on company estimates of ore reserves as well as evaluations of long-term trends in mineral resources, international rankings, recent developments in the mining industry, mine production, and summaries of recent exploration results.

At December 2008, Australia had the world’s largest economic resources of brown coal, mineral sands (rutile and zircon), nickel, silver, uranium, zinc and lead. The country also ranks among the top six worldwide for resources of bauxite, black coal, copper, gold, industrial diamond, iron ore, ilmenite, lithium, manganese ore, niobium, tantalum, vanadium and antimony.

Australia’s mineral resources are adequate to ensure that the mining sector continues to hold the potential to remain the most important export earning sector of the Australian economy for the foreseeable future.

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Mineral production

Australia has a comparative advantage in production of mineral commodities compared to most other countries. This stems from its rich and diverse mineral endowment, high quality regional scale geoscience information which lowers the risks of exploration, advanced exploration, mining and processing technologies, a skilled work force, generally benign physical conditions and low population...
density. These factors mean that modern mining can be undertaken in line with increasing community expectations for environmental and social performance.

World economic growth in recent years, particularly in China and India, has increased demand for mineral products worldwide. Australia is the world’s leading producer of bauxite and alumina, the second largest producer of uranium, lead and zinc, the third largest producer of iron ore, nickel, manganese ores and gold and the fourth largest producer of black coal, silver and copper.

The minerals industry is Australia’s largest export earner with mineral exports accounting for nearly 50% of the annual value of total exports of goods and services in recent years.

Although there have been significant increases in Australian mine production, Australia’s share of annual world production for most mineral commodities has declined in the past five years, with the largest declines for bauxite, lead, nickel, zinc and zircon. Large, low cost mining operations also have commenced in overseas countries in recent years.

Even though Australia has large economic resources of many mineral commodities, this is not a guarantee that such resources will continue to be exploited in Australia. In an increasingly globalised and competitive commodity market, multinational mining companies continue to search for mineral deposits that will offer attractive returns on investment. Such returns are influenced by the quality of the resources (grade, tonnage, metallurgical properties) as well as environmental, social and political factors, land access and the location and scale of competing projects. Increasingly, minerals projects are being ranked by multinational companies against investment returns from other projects worldwide particularly during periods of global financial stress. This has resulted in a number of mine closures in Australia. In the case of nickel, multinational companies closed sulphide and lateritic nickel mines in Western Australia and Tasmania during 2008 and consolidated their operations at larger, low cost mining operations, sometimes outside Australia. However with recent recovery in the nickel prices, mining companies have returned to re-evaluate these projects.

Mining regulation
Regulation of Australian mining industry is the responsibility of State and Territory government agencies. These agencies administer a range of mining, health and safety regulations/legislation relevant to the mining industry. State government mines departments are responsible for granting exploration and mining tenements and for collecting mining royalty payments from the companies.

Mineral exports
The minerals industry is Australia’s largest export earner with mineral exports accounting for nearly 50 per cent of the annual value of total exports of goods and services in recent years. In current dollar terms, the value of Australian mineral exports (excluding petroleum, natural gas and petroleum refinery products) increased from $45.9 billion in 2002-03 to a record level of $139.4 billion in 2008-09, dominated by coal, iron ore, bauxite/aluminium, copper, nickel and gold. The major increase in the overall value of mineral exports in this period reflects increases in both production and commodity prices.

For some years Australia has been the world’s largest exporter of black coal, iron ore and gold.

Impacts of improved technologies
In recent decades, improvements in mining techniques (including large scale mining equipment and automation) have reduced mining costs and allowed economic extraction of deposits which previously were uneconomic. New metallurgical techniques and breakthroughs (e.g. carbon based leaching technologies for gold deposits) have improved the rate of recoveries of metals/minerals from various deposits, resulted in major increases in economic resources of certain commodities and enhanced the viability of known deposits for some commodities such as lateritic nickel deposits.

Maintaining the economic impact of Australia’s mineral industry
AIMR 2009 shows that there have been very few world class discoveries in Australia in the past two decades and that the inventory has been sustained largely through
MINING INDUSTRY ANALYSIS

Mining showed weaker profits in 2009-10, with Operating Profit Before Tax (OPBT) decreasing $11.9 b (18.8%), Earnings Before Interest, Taxes, Depreciation and Amortisation (EBITDA) decreasing $15.8 b (21.5%) and Inventories Valuation Adjustment (IVA) decreasing $19.1 b (17.9%). The percentage decreases in these aggregates are the highest of all the Total selected industries. The mining industry was impacted in 2009-10 by lower commodity prices, which was the primary driver in these items decreasing.

Even with declining profits, mining remains the largest contributor to OPBT (18.9%) and EBITDA (17.9%), but has dropped to be the second largest contributor to IVA (from 12.8% in 2008-09 to 10.6% in 2009-10 of Total selected industries).

Depreciation and amortisation is a significant element of the cost structure of mining, and represented 13.3% of its total expenses in 2009-10, the highest proportion of any selected industry.

In 2009-10, mining had the highest capital expenditure ($45.6 b), highest wages and salaries per employee ($117,500), highest sales and service income per person employed ($1.06 m) and profit margin (33.4%) of all the selected industries.

Source: Australian Industry, 2009-10 – 8155.0
Australian Bureau of Statistics | www.abs.gov.au

Most of Australia’s current mineral production and exports are sourced from deposits discovered during exploration more than two decades ago.

Sustaining the strength of the minerals sector is dependent on:

- Discovering a new generation of large low cost mineral deposits to sustain the resource base, and
- Increasing mine production to maintain world market share for major mineral commodities. All this will require new approaches to exploration, mining and processing, together with good supporting infrastructure and access to land and finance.

Australia’s Identified Mineral Resources and other fundamental data on the minerals sector can be obtained from the Australian Atlas of Mineral Resources, Mines and Processing Centres.

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Geoscience Australia | www.ga.gov.au
OVERVIEW

- Australian exploration expenditure in 2010-2011 rose by $718 million to $2,951 million, an increase of 32%.
- All jurisdictions except Victoria recorded substantial increases in exploration expenditure.
- Western Australia dominated exploration spending in Australia with 54% of total expenditure, followed by Queensland (22%) and South Australia (9%).
- Exploration spending on the search for mineralisation in greenfields districts rose by 22%.
- Iron ore exploration received the largest expenditure, followed by gold.
- Exploration results were announced for a wide range of commodities from across the country including initial resource estimates for many iron ore deposits.

EXPLORATION REVIEW

Total mineral exploration expenditure for the 2010-11 financial year was $2,951 million, an increase of 32% compared to the 2009-2010 financial year ($2,233 million). Exploration expenditure increased for most commodities including coal (up 62% to $520 million), copper (up 60% to $323 million), lead, zinc and silver (up 46% to $76 million), nickel and cobalt (up 33% to $271 million), iron ore (up 27% to $665 million), uranium (up 27% to $214 million), and gold (up 13% to $652 million). Minor falls were recorded for diamond (down 14% to $9 million) and mineral sands (down 8% to $26 million). Minor falls were observed in diamond exploration expenditure which was down 14% to $9 million, and mineral sands expenditure decreased to $26 million. Iron ore exploration received the largest expenditure followed by gold. Exploration expenditure for other commodities, including manganese, molybdenum, phosphate, tungsten and vanadium, collectively increased by 33% to $196 million.

An increase in exploration expenditure was seen in all jurisdictions except Victoria. Tasmania witnessed an increase of 80% to $37 million, Queensland was up by 52% to $664 million, South Australia jumped 52% to $225 million, Northern Territory was up by 31% to $195 million, Western Australia increased by 28% to $1,590 million and New South Wales was up by 17% to $153 million. Victoria recorded a reduction in exploration spending, down by 31% to $58 million. Western Australia dominated exploration spending with 54% of total spending in Australia, followed by Queensland (22%) and South Australia (9%).

Increases in exploration spending were recorded in both near-mine (brownfields) areas and in the search for undiscovered mineralisation in new districts and provinces (greenfields). Brownfields exploration spending rose by 39% to $1,914 million, whereas greenfields expenditure rose by 22% to $1,037 million.

Drilling in brownfields and greenfields exploration programs increased by 17% to 9,699,000 m, with drilling in brownfields areas dominant, increasing by 19% to 6,263,000 m.
Mining broadly relates to the extraction of minerals occurring naturally as solids, such as coal and ores, liquids such as crude petroleum, or gases such as natural gas. Included are activities carried out at or near mine sites as an integral part of mining operations, such as dressing or beneficiation of ores or other minerals. Natural gas absorption and purifying plants are also included.

Australia continues to rank as one of the world’s leading mining nations, with substantial identified resources of major minerals and fuel close to the surface. In 2009, it had the world’s largest economic demonstrated resources of brown coal, mineral sands (rutile and zircon), nickel, uranium, lead and zinc.

In industry gross value added terms (at current prices), the mining industry was the fourth largest contributor to Australia’s gross domestic product (GDP) in 2009-10, with 8% of total GDP.

Expenditure on mineral exploration in 2010-11 was 72% higher than in 2006-07. During the same period, the value of exports from the mining industry more than doubled to $136 billion. The industry contributed 55% of the total value of goods exported from Australia in 2010-11, an increase of 37% from 2006-07.

The contribution of an industry to the overall production of goods and services in an economy, gross domestic product (GDP), is measured by industry gross value added (GVA). Total production of the mining industry as measured by industry GVA (in volume terms), increased by 6% between 2008-09 and 2009-10, and doubled between 1989-90 and 2009-10 (Graph 18.1).

Over the last 10 financial years, the only annual decrease in production was in 2003-04 (3%) while the largest annual increase (8%) was in 2006-07.

Table 18.2 shows the industry GVA of the mining industry and its contribution to Australia’s GDP in the period 2005-06 to 2009-10.

Total industry GVA of the mining industry increased by 21% over the period 2005-06 to 2009-10. The mining industry’s contribution to GDP was 8.4% in 2009-10 and 9.8% the year before.

Production in the services to mining industry accounts for a small proportion (around 6%) of total mining production. However, the total value of services to mining may be larger than these figures indicate as some services may

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<td>Mining (excl. services to mining)</td>
<td>$m</td>
<td>95,395</td>
<td>103,414</td>
<td>104,702</td>
<td>107,695</td>
<td>115,015</td>
<td>20.6</td>
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<tr>
<td>Services to mining</td>
<td>$m</td>
<td>5,568</td>
<td>6,085</td>
<td>6,749</td>
<td>6,767</td>
<td>6,498</td>
<td>16.7</td>
</tr>
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<td>Total mining(a)</td>
<td>$m</td>
<td>100,863</td>
<td>109,499</td>
<td>111,451</td>
<td>114,462</td>
<td>121,513</td>
<td>20.6</td>
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Contribution to GDP(b) % 7.2 7.7 7.6 9.8 8.4

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006 edition (1292.0).
(b) Volume measures. Reference year is 2008-09.
(c) Volume measures for years other than 2008-09 and 2009-10 are not additive.
(d) In current prices.

Source: Australian System of National Accounts, 2009-10 (5204.0)
have been provided by businesses classified to other industries, such as construction or business services.

**Contribution to state and territory production**

The importance of the mining industry in terms of production, as measured by total factor income, varies across the states and territories. Total factor income is a measure of state/territory production and is equal to the total payments received by labour and owners of capital used in the production of goods and services.

In Western Australia, the contribution of the mining industry remained relatively steady through the years 1997-98 to 2003-04 (between 18% and 21% of state production). However, since 2004-05, the contribution has risen to be 29% in 2009-10 (Graph 18.3).

The mining industry’s share of Queensland production rose gradually from 6% in 1997-98 to 11% in 2006-07, peaked in 2008-09 at 15%, then returned to 11% in 2009-10.

During the period 1997-98 to 2003-04, the Northern Territory experienced significant changes in the contribution of the mining industry to territory production, with a low of 13% in 1998-99 to a high of 34% in 2000-01, before falling to 18% in 2003-04. From this period, a steady annual increase saw the contribution rise to 26% in 2008-09, followed by a fall to 22% in 2009-10.

**Exports**

Table 18.4 shows the proportion of exports contributed by the mining industry, based on exports by industry of origin.

In the period 2006-07 to 2010-11, the value of exports from the mining industry more than doubled. By comparison, the value of exports from the manufacturing industry, after a peak in 2008-09 declined to 2006-07 levels. As a consequence, the mining industry’s contribution to total goods exported from Australia increased from 37% in 2006-07 to 55% in 2010-11, while that for the manufacturing industry fell from 51% to 34% over the same period.

**STRUCTURE AND PERFORMANCE**

Production of an industry can be measured in terms of industry value added (IVA), in much the same way as industry GVA. However, unlike industry GVA (the national accounts concept of production),

<table>
<thead>
<tr>
<th>SHARE OF TOTAL EXPORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINING</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>%</td>
</tr>
<tr>
<td>36.8</td>
</tr>
<tr>
<td>40.3</td>
</tr>
<tr>
<td>51.0</td>
</tr>
<tr>
<td>49.7</td>
</tr>
<tr>
<td>55.4</td>
</tr>
</tbody>
</table>

(a) On a free-on-board basis.

Source: ABS data available on request, International trade.
IVA is not adjusted for a number of national accounting conventions, as the information to make these adjustments cannot be collected in the Economic Activity Survey (the main source of data for this section). The advantage of using IVA is the availability of more detailed (component) industry statistics.

In 2009-10, mining businesses paid a total of $16.8 billion in wages and salaries, and generated $153.5 billion in sales and service income and $87.8 billion IVA (Table 18.5).

The metal ore mining industry contributed the largest proportion (41%) of total mining production measured in terms of IVA, followed by oil and gas extraction and coal mining (both 26%). The metal ore mining industry also generated the highest level of disposal of assets, with $1,024 million (48% of total).

**Capital expenditure**
In 2009-10, net capital expenditure (capital expenditure after disposals of assets) was highest in the oil and gas extraction industry (43%), followed by metal ore mining (32%) (Table 18.6). The exploration and other mining support services industry had the highest level of disposal of assets, with $1,024 million (48% of total).

**Operating profit before tax (OPBT)**
Operating profit before tax (OPBT) is a measure of profit before extraordinary items are brought to account and prior to the deduction of income tax and appropriations to owners (e.g. dividends paid). From 2008-09 to 2009-10, OPBT for the mining industry fell by $11.9 billion or 19% to $51.3 billion.

---

**TABLE 18.5: MINING INDUSTRY(a), SUMMARY OF OPERATIONS – 2009-10**

<table>
<thead>
<tr>
<th>ANZSIC SUBDIVISION</th>
<th>WAGES AND SALARIES(b) $M</th>
<th>SALES AND SERVICE INCOME(c) $M</th>
<th>OPERATING PROFIT BEFORE TAX $M</th>
<th>CHANGE IN INVENTORIES $M</th>
<th>INDUSTRY VALUE ADDED $M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal mining</td>
<td>4,120</td>
<td>44,844</td>
<td>12,678</td>
<td>196</td>
<td>22,533</td>
</tr>
<tr>
<td>Oil and gas extraction</td>
<td>2,384</td>
<td>28,273</td>
<td>12,845</td>
<td>44</td>
<td>22,573</td>
</tr>
<tr>
<td>Metal ore mining</td>
<td>5,583</td>
<td>61,126</td>
<td>25,856</td>
<td>846</td>
<td>35,713</td>
</tr>
<tr>
<td>Non-metallic mineral mining and quarrying</td>
<td>898</td>
<td>5,371</td>
<td><strong>-422</strong></td>
<td>-20</td>
<td><strong>2,031</strong></td>
</tr>
<tr>
<td>Exploration and other mining support services</td>
<td>3,766</td>
<td>13,873</td>
<td><strong>334</strong></td>
<td>*78</td>
<td>4,956</td>
</tr>
<tr>
<td><strong>Total mining</strong></td>
<td><strong>16,751</strong></td>
<td><strong>153,488</strong></td>
<td><strong>51,291</strong></td>
<td><strong>1,144</strong></td>
<td><strong>87,807</strong></td>
</tr>
</tbody>
</table>

* Estimate has a relative standard error of 25% to 50% and should be used with caution.
** Estimate has a relative standard error greater than 50% and is considered too unreliable for general use.

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006 edition (1292.0).
(b) Includes capitalised wages and salaries. Excludes the drawings of working proprietors.
(c) Includes rent, leasing and hiring income.

Source: Australian Industry, 2009-10 (8155.0).

---

**TABLE 18.6: MINING INDUSTRY(a), ACQUISITION AND DISPOSAL OF ASSETS – 2009-10**

<table>
<thead>
<tr>
<th>ANZSIC SUBDIVISION</th>
<th>TOTAL ACQUISITIONS $M</th>
<th>DISPOSAL OF ASSETS $M</th>
<th>NET CAPITAL EXPENDITURE $M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal mining</td>
<td>9,115</td>
<td>531</td>
<td>8,584</td>
</tr>
<tr>
<td>Oil and gas extraction</td>
<td>18,883</td>
<td>272</td>
<td>18,611</td>
</tr>
<tr>
<td>Metal ore mining</td>
<td>14,232</td>
<td>262</td>
<td>13,970</td>
</tr>
<tr>
<td>Non-metallic mineral mining and quarrying</td>
<td>645</td>
<td>40</td>
<td>605</td>
</tr>
<tr>
<td>Exploration and other mining support services</td>
<td>2,757</td>
<td>*1,024</td>
<td>*1,733</td>
</tr>
<tr>
<td><strong>Total mining</strong></td>
<td><strong>45,632</strong></td>
<td><strong>2,129</strong></td>
<td><strong>43,503</strong></td>
</tr>
</tbody>
</table>

* Estimate has a relative standard error of 25% to 50% and should be used with caution.
(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006 edition (1292.0).

Source: Australian Industry, 2009-10 (8155.0).
Loading iron ore into the cargo hold of a bulk carrier ship, Western Australia

TABLE 18.7: MINING INDUSTRY(a), OPERATING PROFIT BEFORE TAX

<table>
<thead>
<tr>
<th>ANZSIC SUBDIVISION</th>
<th>2008-09 $M</th>
<th>2009-10 $M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal mining</td>
<td>28,636</td>
<td>12,678</td>
</tr>
<tr>
<td>Oil and gas extraction</td>
<td>27,006</td>
<td>12,845</td>
</tr>
<tr>
<td>Metal ore mining</td>
<td>10,586</td>
<td>25,856</td>
</tr>
<tr>
<td>Non-metallic mineral mining and quarrying</td>
<td>-395</td>
<td>-422</td>
</tr>
<tr>
<td>Exploration and other mining support services</td>
<td>-2,677</td>
<td>**334</td>
</tr>
<tr>
<td>Total mining</td>
<td>63,155</td>
<td>51,291</td>
</tr>
</tbody>
</table>

** Estimate has a relative standard error greater than 50% and is considered too unreliable for general use.
(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006 edition (1292.0).

Source: Australian Industry, 2009-10 (8155.0)

Research and experimental development (R&D)

The Organisation for Economic Co-operation and Development (OECD) defines R&D as comprising “...creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications.”

R&D includes types of activities: basic research, applied research and experimental development. In general, mining exploration is not considered to be R&D.

Graph 18.8 shows the type of business expenditure on R&D in the mining industry. For the period 1999-2000 to 2009-10, other current expenditure (which excludes labour costs) was the major component of R&D expenditure for the mining industry, accounting for 81% of total mining industry R&D expenditure in 2009-10.

Other current expenditure is a broad category and includes expenditure on materials, fuels, rent, leasing, maintenance, payments to outside organisations for specialised services, and the proportion of expenditure on general services and overheads attributable to R&D activity. Its value increased significantly from $201 million in 1999-2000 to $3,005 million in 2009-10 (69% and 81% of total mining industry R&D expenditure respectively).

The amounts spent on labour costs and capital expenditure also increased significantly over this period, by $520 million and $80 million respectively.

During the period 1999-2000 to 2009-10, the mining industry’s contribution to total business R&D expenditure rose from 11% to 22%. The manufacturing industry’s share of total business R&D expenditure continued to be the highest, accounting for 25% in 2009-10.

billion (Table 18.7). The coal mining and the Oil and gas extraction industries both fell significantly (56% and 52% respectively), which more than offset a large increase of $15.3 billion (144%) by the metal ore mining industry.
Speaking last September, Philip Lowe, the Assistant Governor (Economic) at the Reserve Bank noted that economists at the central bank used to spend a lot of time trying to work out why quarterly changes in Australian output were so highly correlated with quarterly changes in US output. No longer: the correlation between the two series has fallen. Instead, movements in Australian GDP are now increasingly correlated with movements in Chinese GDP, as Australia’s economic trajectory has succumbed to China’s gravitational pull.¹

In Australia’s dance with the dragon, the big driver has been the resources trade and the key channel of influence has been the terms of trade (the ratio of export to import prices).

The speed of change has been quite dramatic. Back at the start of the 1990s, China was the destination for only about two and a half per cent of Australian merchandise exports, and a bit over two per cent of Australian imports. Just two decades on, and in 2010 China took almost 25 per cent of total Australian exports and was the source of about 19 per cent of Australia’s imports, accounting for almost 22 per cent of total merchandise trade. In the same year, China accounted for roughly seven per cent of Australian services trade. China is now Australia’s largest trading partner, its most important export market, and its biggest source of imports.

Australia’s bilateral trade with China falls squarely into the classic pattern of comparative advantage: Australia tends to export resources and import manufactured products.² In 2009-2010, for example, more than 85 per cent of Australian merchandise exports to China comprised primary products. The most important of these were iron ore and concentrates, accounting for some A$ 25 billion, or about 54 per cent, of the A$ 46.4 billion of Australian merchandise exports to China.
Exports of coal accounted for a further A$5 billion (roughly another 11 per cent of the total). On the import side, major items included clothing (A$3.8 billion or ten per cent of the total), computers (A$3.5 billion, ten per cent) and telecom equipment and parts (3.4 billion, nine per cent). In 2009-10, China was Australia’s largest market for iron ore and concentrates by some distance – accounting for almost 72 per cent of all Australian ore exports (Japan, in second place, accounted for just over 17 per cent of the total). China was also the largest export market for copper ores and concentrates (taking more than one quarter of all exports) and one of the top three export markets for Australian coking coal.

Chinese-powered demand for Australian commodities has contributed to a big increase in the price paid for these resources, with global prices for iron ore increasing at an average annual rate of 23 per cent over the 2005-2010 period, and prices for coal rising eight per cent (A$ terms). Volume growth has been smaller than price growth, but still substantial: back in 2003, Australia was shipping around half a million tonnes of iron ore each day. Now daily shipments exceed one million tonnes, and if projected new capacity comes on line, the figure is forecast to climb to perhaps two million tonnes a day within the next five years.

One major consequence of these developments is that Australia’s terms of trade, measured on a five-year moving average basis, are now higher than at any point since Federation. Or, as RBA governor Glenn Stevens explained it last year: while five years ago a shipload of Australian iron ore was worth about the same as roughly 2,220 flat screen TVs, by 2010, the same load was worth about 22,000 TVs, partly due to TV prices falling, but mainly thanks to the spike in the price of iron ore.

This China-led rise in the terms of trade is reshaping the Australian economy in a wide range of ways, contributing to an increase in national income (and hence Australian living standards) and a change in the structure of national comparative advantage; delivering a big boost to state and federal government tax receipts and a bonanza for the resource sector companies that comprise a significant proportion of the Australian share market; exerting upward pressure on the (nominal and real) exchange rate; and sparking a major investment boom in the mining sector.

There are also new steps to be learned in Australia’s dance with the dragon. So, for example, a growing channel of economic influence is Chinese investment. True, according to ABS data, the stock of Chinese total investment remains very small: as of end 2009 it was just A$16.6 billion, or a bit less than one per cent of the total stock of foreign investment. (This compares to a stock of A$514.7 billion – or 27 per cent of the total – of US investment, still Australia’s largest foreign investor.) But recent flows suggest that China’s hitherto negligible role as an owner of Australian economic assets is now changing, with Chinese investment in 2009 climbing to A$7.8 billion, or about five per cent of total inflows that year.

More Chinese money will follow: investment approvals from the Foreign Investment Review Board (FIRB) show approvals of Chinese investment rising from A$2.6 billion in 2006-07 (less than two per cent of approvals by value) to A$26.6 billion in 2008-09 (16 per cent), making China second only to the United States in value of total

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**TRADE WITH CHINA**

<table>
<thead>
<tr>
<th>% of total value of merchandise trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>20</td>
</tr>
</tbody>
</table>

Sources: ABS and author’s calculations

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**TERMS OF TRADE**

<table>
<thead>
<tr>
<th>Index</th>
<th>1900/01–1999/00 average = 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>100</td>
<td>120</td>
</tr>
<tr>
<td>140</td>
<td>160</td>
</tr>
</tbody>
</table>

**1900/01–1999/00 trend**

**5-year centred moving average**

* Calendar years prior to 1900, financial years thereafter, RBA estimates for 2010/11 to 2012/13.

Sources: ABS; Gillitzer and Kearns (2005); RBA; Source: Stevens, ‘The Resources Boom’. (2011)
approvals. In 2009-10 this fell back a bit to A$16.3 billion (about 12 per cent of approvals by value), but this was still enough to leave China as the third largest investor by country of approval.
It is a problem that most governments would love to have, but mining companies are warning the Federal Government that it needs to boost spending on training or risk wasting the boom and damaging the rest of the economy.

Some analysts are sceptical about that argument, saying that miners are just trying to shift the cost of training their workers on to taxpayers.

The BHP figures are only a rough estimate, but they highlight once again the explosive growth in the mining sector.

Finance Minister Penny Wong was quick to emphasise the obvious benefits on Sky News on Thursday morning.

“You know what this shows us? It shows us the extent to which this mining boom can also be an opportunity boom,” Senator Wong said.

“It is something we spoke about in the budget – that one of the challenges was to make sure we could get ... spread the opportunities of the mining boom as far and as wide as we could.”

But the boom also presents equally thorny and obvious problems, by putting pressure on wages in other sectors and driving up costs.

Resources analyst Peter Strachan says many of those problems are plaguing Western Australia at the moment.

“It’s somewhat distressing in a way ... living in Western Australia we are really suffering this Dutch disease big time,” Mr Strachan said.

“Where there is a small number of people ... I think globally in Australia it is only like 2.2 per cent of the workforce are in the mining industries.

“Those people are obviously having a great time. Their salaries have sort of doubled in the last four or five years and they are pushing up the costs in the community for everyone else.

“Finding workers

The bullish estimates also present another difficult question: Where are the workers going to come from? The mining industry has been trying to recruit people from the cities and from regions struggling with high unemployment.

Tom Reid from the Australian Mines and Metals Association says the Government needs to liberalise its skilled migration policies.

“We believe that if the skilled migration processes were made more efficient and effective, that we could help ease the burden of the skills shortage to the resources industry, particularly in those areas that we’ve identified may not be able to be filled by the current supply from Australia,” Mr Reid said.

The Minerals Council has also been agitating for the Government to boost spending on mining-related training and university courses.

But the Melbourne Institute’s Mark Wooden says mining companies should not expect the Government to take on responsibility for training all their workers.

“My view is they need to plan on doing it themselves basically ... taking on apprentices. I think most of the obstacles there are usually with the companies,” Professor Wooden said.

“Now the mining sector of course does have the huge disadvantage that the mines are typically located not where the workers are and so then there is the question of getting workers to their place, and often the problem is that there isn’t very good infrastructure.

“Things like housing are in great short supply so mining companies have got to come to the party there.

“They’ve got to be prepared to invest and so if they are going to expand, they have got to be prepared to take on a lot of the costs but they want to pass on a lot of the costs to the taxpayer.”

The Government says it is tackling the problem, pointing to a new agency that it has established to retrain workers for new jobs in growing industries like mining.

Senator Wong says the Government has also been putting extra money where it is needed.

“We put $3 billion in the budget into skills and participation – a very large injection of investment into getting more Australians into jobs,” she said.

She says the Government is determined to spread the benefits of the boom to all Australians and not just the relatively small numbers working in the mining sector.  

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Miners sound warning on skills shortage

Mining giant BHP Billiton estimates the resources industry will need more than 150,000 extra workers over the next five years. An ABC News report by Stephen Dziedzic
The latest State of the States report by Commsec found WA was leading the nation across five key indicators: economic growth, construction work, rates of employment, retail trade, and equipment investment.

The report measures those factors against decade-long averages for each state and territory.

Commsec economist Savanth Sebastian says Australia has moved from having an economy running at three speeds to one in which WA stands apart from the rest, as a result of the mining boom.

“I think that’s something the Australian economy, the public really has to get used to,” Mr Sebastian said.

“It’s going to be something that’s around for some time. It really is this structural shift that is taking place.”

Western Australia’s economy is followed by the ACT and Victoria, then Queensland, New South Wales and South Australia and finally the Northern Territory and Tasmania.

But Mr Sebastian says the lagging economies are not necessarily struggling.

“I don’t think it’s the rest of the country’s falling further and further behind, rather than Western Australia’s accelerating,” he said.

“Coupled with that story, you look at Queensland at the moment and you go back a year ago and the floods and the natural disasters had hit it.

“It really was at the bottom of the pack, but it’s really starting to now shift up a gear and Queensland has actually crept up the rankings.”

Mr Sebastian suggests the Government support industries such as manufacturing to ensure other states and territories are not left too far behind.

Commsec chief economist Craig James says policy makers should be wary of using Western Australia as an indicator of the performance of other states.

“They just can’t look at Western Australia and say that’s symptomatic or that’s happening across the country,” he said.

Australia has moved from having an economy running at three speeds to one in which WA stands apart from the rest.

The State Opposition says many ordinary West Australians are struggling despite living in a booming economy.

The opposition’s Ben Wyatt says it is time the WA public benefited from the mining boom, instead of being forced to deal with higher costs of living.

“I think your average West Australian will be looking at this report and wondering, if we’re doing so well in Western Australia, why am I doing life so hard, why have my electricity bills gone up?” he said.

“And, it certainly doesn’t fit the narrative put out there by the Premier and the Treasurer that the finances are in such disarray.”

Mr James says state and federal governments must ensure treasury funds accumulated by the mining sector are being used productively for the rest of the economy.
Australia might be panicking about the financial shocks being felt around the globe but, according to leading industry analyst and economic forecaster, BIS Shrapnel, it is the structural change to the Australian economy being caused by the resources boom, and the strength of the Australian dollar that are the real concerns.

BIS Shrapnel’s Long Term Forecasts 2011-2026 report focuses on medium-term issues, and says that local trade-exposed manufacturing and services are contracting as they make way for growth in the mining industry, but what Australia really needs is an infrastructure investment-led productivity drive to bring balance to the economy.

“The current financial market ructions are serving as a distraction from something much more important: the impact of the resources boom on the rest of the Australian economy,” says BIS Shrapnel’s Chief Economist, Dr Frank Gelber.

“It’s the high Australian dollar that is affecting the competitiveness of trade-exposed industries, in export markets and when competing locally with imports.”

The strength of the dollar is underpinning this ongoing process of structural change in the Australian economy. It’s the high Australian dollar that is affecting the competitiveness of trade-exposed industries, in export markets and when competing locally with imports. Manufacturing, secondary processing, agriculture, inbound and outbound tourism, education services and other trade-exposed services have been badly affected.

“The new taxes won’t hurt the economy – a mining tax will do little to discourage investment in this buoyant period, and the carbon tax is a bit player,” says Dr Gelber. “It’s the strength of the dollar that is doing the damage to domestically produced tradeable goods and services.”

Significant job losses in export steel and Qantas are just the most recent outcomes – albeit larger and more highly visible – resulting from activities being shifted offshore. There has been an escalation of such activities for several years now, as well as weakness in inbound and local tourism and services, partially due to the GFC-induced downturn in the Australian economy, but mainly due to the dollar.

“It’s not as though this is a new phenomenon,” says Dr Gelber. “We’ve been losing bits of industry for the last
30 years; every time the dollar goes too high.”

The contraction of trade-exposed industries will continue as long as the Australian dollar remains high. Dr Gelber warns that we should never underestimate the importance of the currency in determining where things are produced.

“We think the Australian dollar needs to be valued at around USD 75-80 cents to underwrite a competitive domestic tradeables sector,” he says.

Dr Gelber says there’s not much Australia can do about the strength of the dollar.

“It is a free floating dollar in a free enterprise economy,” he says. “The RBA knows it can’t successfully intervene, so we are stuck with the high dollar, at least while commodity prices remain so high.”

BIS Shrapnel says while the minerals boom won’t last forever, structural change is a medium-term, often irreversible, process. The change leaves Australia vulnerable once the stimulus of minerals investment as the driver of growth, and high commodity prices to boost the trade balance, has ended.

“We need to prepare the economy for the end of the boom,” says Dr Gelber.

“We can’t expect any significant protection or government intervention in the operation of the market.”

“It’s all very well to point to the need for productivity, but it’s not that easy. People have been decrying the weakness of productivity growth this decade. They talk about it as if it comes automatically. It doesn’t. We have to earn it.”

In the 1990s, says BIS Shrapnel, it came through changes in work practices as Australians worked smarter and, incidentally, harder.

“I’m not sure there’s a lot of room to work harder now,” says Dr Gelber. Future growth, he says, could come through productivity-enhancing investment, both public and private. But, according to Dr Gelber, the public sector is just catching up from underinvestment in the 1990s and the first part of the last decade. Investment by the private sector is still weak with companies trying to save their cash post-GFC.

“The current overseas malaise should be a lesson to us,” says Dr Gelber. “The market works on short-term logic, but we need to live with the long-term consequences.”

“We need to put our minds to doing the things that will soften the blow when the minerals boom ends. Now. While we still can. Rather than just blowing the dough. Hence the importance of a resources tax to prepare the economy for the end of the boom.”

Dr Gelber says, for example, the state and federal governments should undertake infrastructure projects which will make Australian industry more efficient and cost-effective. The national broadband network is one such project but there are other projects that could reduce the cost of doing business in Australia.

“While the resources boom continues and the dollar stays high, investment in infrastructure will serve as a rearguard action against loss of industry,” says Dr Gelber. “But, equally importantly, it will serve as the underpinning of growth once the minerals boom ends.”

“The market works on short-term logic, but we need to live with the long-term consequences.”

ABOUT BIS SHRAPNEL

BIS Shrapnel is Australia’s leading provider of industry research, analysis and forecasting services. BIS Shrapnel helps clients better understand the markets in which they operate, through reliable and detailed market data, analysis of developments and drivers and thoroughly researched forecasts.

BIS Shrapnel compiles accurate, clearly explained and detailed information on industry sectors, markets and industries in which their clients operate. BIS Shrapnel provides market size and segmentation data, market shares, consumer attitudes and supplier reputation information, and regularly conducts both business-to-business and consumer research.

Over the company’s 47-year history, BIS Shrapnel has built up a strong level of expertise and unique methodologies for forecasting.

News release, 1 September 2011
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Issues in Society | Volume 348

Australia’s Mining Boom
Australia’s effort to levy extra taxes on mining companies has been an unmitigated debacle, capped by the passage early this morning of the Minerals Resource Rent Tax with a further last-minute compromise.

It is one of the great lose-lose outcomes – nobody wins.

To get the vote of Andrew Wilkie, the Member for Denison, a seat about as far from mining as it’s possible to get, the Government increased the profit threshold at which the tax kicks in, from $50 million to $75 million.

This is now a deficit tax – it will cost more in concessions to get it passed than it will raise in new revenue. That gap widened by about $100 million last night with the Wilkie amendment.

There are two big problems with the MRRT: state mining royalties can be offset against it and an increase in superannuation has been shackled to it.

A resources rent tax was proposed in the Henry Tax Review of 2009 as part of a package of measures designed to deal with the pressure the resources boom was putting on non-mining industries.

The idea was to replace ad valorem mineral royalties on mine production volumes with a rent tax on profits because governments weren’t sharing in the big increase in commodity prices that increased the terms of trade and therefore the currency.

There was, and is, a fundamental disconnect between the terms of trade boom that was killing manufacturing and tourism and the tax revenue governments were getting from it because royalties are levied on volume not price.

The Henry proposal involved a 40 per cent extra resources rent tax and a reduction in company tax to 25 per cent, plus a series of depreciation and capital allowance benefits for manufacturers and other small businesses.

There was, and is, a fundamental disconnect between the terms of trade boom that was killing manufacturing and tourism and the tax revenue governments were getting from it.

The last time there was a sustained terms of trade boom in Australia, in the late 19th and early 20th centuries as a result of gold, wheat and wool exports, the policy response involved regulating wages through the Harvester Judgement and then imposing a tariff on imports to protect manufacturing. This so-called Australian Settlement had the effect of insulating manufacturing from the terms of trade and its effect on the currency but led to a gradual, disastrous decline in competitiveness.
It’s worth pointing out that the United States had the same terms of trade problem 100 years ago but chose not to protect manufacturing, with the result that it became the great manufacturing powerhouse, only eventually destroyed in the 21st century by China’s currency manipulation.

In the 1970s and 1980s Australia removed tariff protection and centralised wage fixing, so that the new terms of trade boom – ironically resulting from China’s defeat of America’s manufacturing supremacy – leaves Australian manufacturing entirely exposed to its effects.

Former treasury secretary Ken Henry had been banging on about the two-speed economy problem for years, and in the Future Tax System review that he chaired contained his solution: a resources rent tax to be spent on reducing company tax. Without wage regulation and tariffs there is no other way to protect manufacturing from the effects of the mining boom.

But the Labor Government has managed to completely mess it up.

First the Resources Super Profits Tax was plucked out of the Tax Review by Wayne Swan and Kevin Rudd and dumped on the miners by surprise. They revolted and won.

Then Julia Gillard negotiated a lower tax on iron ore and coal with BHP, Rio Tinto and Xstrata so that only the smaller companies with smaller advertising budgets would complain. As part of that, she was forced to allow existing mineral royalties to be deducted from the tax, which totally negated the idea replacing *ad valorem* royalties from a tax on profits.

And then, to make the whole exercise completely pointless she tied it to an increase in the superannuation guarantee levy from 9 per cent to 12 per cent.

That increases manufacturing costs instead of reducing them, and vastly increases the cost of the exercise to the Federal Budget.

According to Brian Toohey in this morning’s Financial Review, the cost to the budget of the extra superannuation tax deductions will be $4.2 billion in 2019-20. The total cost of the concessions connected to the MRRT will be $9.4 billion in that year – less than a third of which is paid for by the revenue to be collected from the MRRT.

In the 2012-13 financial year, in which the budget is supposed to return to surplus, the net cost of the MRRT package – revenue minus giveaways – is $1.7 billion.

It is, in short, a joke. Everybody loses. It was an idea designed to help Australia deal with the terms of trade boom that has been bastardised by politics into a complicated impost on mining that achieves nothing at all and in fact worsens the position of everyone involved.

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Managing the mining boom

Mining booms and the Australian economy

AN ADDRESS TO THE SYDNEY INSTITUTE BY DEPUTY GOVERNOR OF THE RESERVE BANK, RIC BATTELLINO

Introduction

The topic of my talk tonight is ‘Mining Booms and the Australian Economy’. I have chosen this topic because the Australian economy is currently experiencing a surge in mining activity, one of a sequence of mining booms since the European settlement of Australia. These have been a powerful force in shaping the Australian economy.

Tonight I want to review the effects of these booms. Of particular interest is the question of whether there are recurring themes from which we can draw lessons on how to manage the current episode.

My talk is based on research by a couple of my colleagues from the Bank which draws on the work of several economic historians. I won’t take time to list these references now, but they are shown at the end of my talk.

Mining booms in Australia

The distinguishing features of a mining boom are significant increases in mining investment or mining output, usually both, which go on to have important macroeconomic consequences.

On this basis, I think we can identify five major mining booms during the past two hundred years or so (Graphs 1 and 2).

These are:
➤ The 1850s gold rush
➤ The late 19th century mineral boom
➤ The 1960s/early 1970s mineral and energy boom
➤ The late 1970s/early 1980s energy boom, and
➤ The current episode, which is again both a mineral and energy boom.

There have also been quite a number of other mini booms in mining activity, but given the time available I am going to limit myself to the five episodes I have just noted.

I will start with a brief summary of the causes, characteristics and consequences of each of the booms, and then provide a more general assessment of their macroeconomic implications.

(a) The 1850s gold rush

The 1850s gold rush was the first major mining boom in Australia. Economic historians note that the timing of these gold discoveries may have been related to international developments such as the California gold rush of the late 1840s, which had heightened general interest in gold exploration and mining. The first well-publicised find of gold in Australia, near Bathurst in New South Wales, was by a veteran of the California gold rush. Domestic economic developments may also have influenced the timing, as the continuing effects of the 1840s recession meant that labour in Australia was abundant and mobile, and therefore more likely to become involved in prospecting.

This boom ended up being mainly centred on the gold fields of Victoria. It was atypical compared with later booms in that it was not accompanied by a large increase in mining investment. At that stage, large amounts of capital were not readily available and, in any case, the form of mining that was taking place – surface mining.
alluvial mining—was well suited to
large inputs of labour and little input
of capital.

The boom lasted for about a decade
and a half; by the mid 1860s, the gold
rushes of Victoria had largely faded.

Measured in terms of value added
to GDP, this boom greatly exceeded all
subsequent mining booms. At its peak
in 1852, mining comprised about 35 per
cent of GDP. This created tremendous
upheavals in the economy at the time.
The value of exports from New South
Wales and Victoria rose by a factor
of six in three years, and exports of
gold exceeded wool exports for the
following 18 years.4

Labour flowed strongly to the
gold states, particularly Victoria,
and Melbourne became the largest
city in Australia. Some of this flow
of labour came from other states.
For example, the male populations
of South Australia and Tasmania fell
by 3 per cent and 17 per cent respec-
tively in 1852. But a large amount
of labour also came from sharply
increased immigration; the Australian
population almost trebled during a
10-year period.5

Wages rose sharply, at first in min-
ing, then across the country as labour
flowed to the diggings. Between 1850
and 1853, wages in Victoria rose by
250 per cent.6

Colonial governments had no
powers over the money supply or the
exchange rate.7 The money supply
trebled in the space of a couple of years.
All the adjustment in the economy took
place via inflation. The rise in inflation
meant that by the middle of the boom
the real exchange rate was about 50 per
cent higher than at the start.

There was evidence of what
we now call the ‘Dutch disease’—
i.e. damage to some non-mining
industries because of the difficulty
of retaining labour, increased costs
and the high real exchange rate.8 For
example, shepherds’ wages doubled
between 1850 and 1853, creating
difficulty for the wool industry and
wool exports grew at much reduced
rates. Also, according to one data
source, the number of manufacturing
establishments in New South Wales
fell from 165 in 1850 to 140 a couple
of years later.9

Wages rose sharply across the
country as labour flowed to
the diggings. Between 1850 and
1853, wages in Victoria rose
by 250 per cent.

The overall impact on economic
activity was, however, highly positive.
Confidence was high, the flow of
immigration greatly boosted demand
for goods and services, and industries
servicing the mines—e.g. sawmilling,
brick-making and transport—all
boomed. Parts of agriculture also
benefited from greatly increased
demand for food. The infrastructure
provided to service the mines—such
as extensive road-building—went on
to have many positive effects in terms
of opening up agricultural land. GDP
growth remained very strong for a
decade after the boom peaked.10

Despite having a new source of
tax and licence revenue, governments
faced pressures in their finances,
both because of strong demand for
infrastructure spending and sharply
rising costs of providing it. In 1853, for
example, the Victorian Government spent £520,000 on roads, compared with £11,000 two years earlier. Governments therefore resorted to borrowing, which they did through London markets. They found this relatively easy to do, as the discovery of gold had made the colonies more creditworthy.

(b) The late 19th century mineral boom

The second boom was that in the late 19th century. This boom was driven by the discovery and development of new gold and metal mines across the country, but particularly in Western Australia, Queensland and western New South Wales. Partly this was the natural consequence of the spread of the population to more remote areas, but partly it reflected capital market developments. There was ample capital available in London to fund exploration activities as the recession in the early 1890s had led to a fall in investment opportunities.

Also the development of the ‘no-liability’ company made it much easier to access this capital. In 1894, 94 Western Australian companies had been floated in London; two years later there were 690. Sadly for the British investors, much of this money was never repaid in dividends, an indication of the risks that can be involved in mining investment.

The main part of this boom took place against a very subdued economic background, both in Australia and in the major economies. The financial collapses that occurred after the bursting of the 1880s property bubble had led to a global depression with very large falls in output and high unemployment.

The continuing effects of that financial collapse meant that this boom, somewhat unusually, was not accompanied by a sharp acceleration in money supply growth. Similarly, the large amount of spare capacity in the economy meant that there was significant deflation at the start of the boom, which limited the subsequent peak in inflation.

The population of WA increased from 48,000 to 180,000 during the 1890s; and Broken Hill grew from 6,000 in 1888 to almost 20,000 in 1891.

There were some pressures on wages as the unemployment rate fell sharply from the very high levels of the early 1890s, and there were signs of rising industrial disputation. The real exchange rate, however, did not move much through this episode.

The current account, which had moved to a very large deficit during the 1880s property bubble (13 per cent of GDP) moved back to a more normal small deficit in the 1890s, and eventually into surplus when the mining boom ended and the economy slowed in the early 1900s.

The inter-regional effects of the boom, as in the 1850s, were very powerful. There were strong flows of labour to the new mine sites. The population of Western Australia increased from 48,000 to 180,000 during the 1890s; and the population of Broken Hill grew from 6,000 in 1888 to almost 20,000 in 1891. Charters Towers had its own stock exchange.

There were also significant shifts in industrial composition. Exports of wool and grains stagnated and metals took over as Australia’s leading export.

Eventually, the combination of rising costs and falling profits meant that capital dried up, investment fell, and the boom ended. Some of the policy actions taken at that time – such as the imposition of tariffs to protect urban industries – had powerful long-run influences.

(c) The 1960s/early 1970s boom

The third boom was that in the 1960s/early 1970s. This boom was quite broadly based, but the key parts were sharp increases in mining of coal and iron ore, and the development of oil and bauxite discoveries.

The background to this boom was that both the global and domestic economies were becoming increasingly stretched, with rising commodity prices and rising inflation more generally. Particularly important for Australia during this period was the economic development of Japan. As well as adding to the global demand for resources, this had particular significance for Australia because Japan’s proximity lowered transport costs and made certain mineral discoveries economically viable.

This boom differed from the episodes in the 19th century in that it was more capital intensive. Partly this reflected supply factors, as global capital markets had developed significantly since the turn of the century. Partly it was also technological, as some of the resources could only be developed with large-scale investment. Mining investment rose from about ½ per cent of GDP in 1960 to a peak of almost 3 per cent in the early 1970s.

Export prices rose strongly, particularly in the early 1970s, resulting in a large swing in income towards exporters. The current account of the balance of payments moved to surplus, an outcome that has not been repeated since.

Employment grew strongly in the second half of the 1960s, by close to 3 per cent per annum, due to large-scale immigration and increased female participation. Wages rose strongly, and the centralised wage fixing system spread the increases widely through the community.
The nominal exchange rate remained relatively fixed until towards the end of the boom, the eventual appreciation of the exchange rate in the early 1970s coming too late to benefit the economy. Money supply growth picked up to over 20 per cent per annum in the early 1970s and fiscal policy also became expansionary. Inflation rose sharply.

Tariff cuts were introduced in 1973 to help control inflation, but the benefit of this was later offset by the imposition of import quotas to try to protect manufacturing jobs.

By the mid 1970s, both the Australian economy and the global economy were experiencing severe difficulties, primarily flowing from the adverse consequences of very high inflation. The boom therefore ended; mining investment fell to low levels, and commodity prices stagnated.

**The late 1970s/early 1980s boom**

The fourth major boom was in the late 1970s/early 1980s. This boom was largely driven by the energy sector, in particular steaming coal, oil and gas. This followed the second of the oil price shocks in the late 1970s. In addition, the increased cost of energy made Australia an attractive place for energy-intensive activities such as aluminium smelting.

Investment in mining started to pick up in the late 1970s and increased sharply in 1981 and 1982.

This mining boom led to a sense of euphoria about Australia’s future which was accompanied by a resurgence of wage demands and rising inflation. Monetary and fiscal policies were tightened but did not succeed in keeping the economy in check.

**Investment in mining started to pick up in the late 1970s and increased sharply in 1981 and 1982.**

The exchange rate system at that time involved management of the Australian dollar against a trade-weighted index of currencies. The authorities followed a policy of appreciating the exchange rate, but, with the benefit of hindsight, the rate of appreciation was relatively mild and did little to insulate the Australian economy from rising inflationary pressures.

The boom was relatively short-lived. The downturn in the global economy in 1981, following the oil price shock, meant that demand for energy ended up being much less than had been expected; this was reflected in both the volume and the prices of exports. At the same time, the distortions caused by high wage growth and inflation, and the resulting tight policies, meant that by 1982-83 the domestic economy had followed the global economy into a severe recession.

**The current boom**

This brings me to the surge in mining investment that is currently under way. This is again very broad-based across a range of resources, but the core part centres on the large expansion in the iron ore, coal and gas industries. It has been, to a large degree, driven by demand for resources by emerging economies, with China being the most significant.

Judged by the pattern in mining investment and commodity prices, the start of this boom can be dated from around 2005. By 2007 and early 2008, it was severely testing the productive capacity and flexibility of the economy. That all changed in the second half of 2008, as the effects of the mining boom were offset by the impact of the global financial crisis. However, now that this has passed, the underlying dynamics of the resource boom are starting to reappear.

Many of the characteristics of this episode have been similar to those of earlier booms, but there are a few key differences worth noting:

- First, mining investment as a share of GDP has been significantly higher than recorded in previous booms and is thought likely to rise further. In terms of additions to output, the contribution of mining this time has been larger than that during the booms of the 1960s and 1970s, but still below that of the late 19th century and much lower than that in the 1850s.
- Second, the terms of trade have risen much more than they did in earlier mining booms. The current level of the terms of trade rivals the sharp peaks that were associated with rises in wool prices following the First World War and during the Korean War (Graph 3). The current mining boom has seen both the volume and the price of resource exports rise strongly.
- Third, this is the first boom during which the exchange rate has been floating, and in which a significant rise in the nominal exchange rate
has been an important part of the economic adjustment. This has added an important degree of flexibility to the economy, by allowing the real exchange rate to rise through a means other than inflation.

How long the current surge in mining activity will continue is uncertain. Past booms do not seem to have lasted more than about 15 years before resource depletion, or international or domestic developments, acted to slow economic activity and bring the boom to an end. On this occasion, the growth potential of countries such as China and India suggests that the expansion in resource demand could continue for an extended period, though this will depend at least to some extent on the economic management skills of the authorities in these countries, not to mention our own.

Assessment

The booms that I have described took place over a period of about 160 years, and against very different backgrounds. Yet, some similarities come through.

The first point that stands out is the important role played by global events in causing mining booms in Australia. In some cases this was due to the effect on prospecting activity (e.g. the impact of the California gold rush in the 1850s boom and the availability of international capital to fund the 1890s boom); in some cases it was due to a change in the relative prices of commodities on global markets (e.g. the late 1970s boom); and in others due to the emergence of powerful new trading partners (e.g. the development of Japan in the 1960s and the development of China and India recently).

History tells us that mining booms are periods of significant economic change that can pose complex challenges for policymakers.

The second point is that the overall impact of each boom was to strengthen the economy. Increased investment in mining, higher income from mining activities, and the need for increased infrastructure to service the mines all worked in this direction. Also, each boom had high, or increasing, population growth in its early years which added to the economic momentum. Not everybody benefited from that economic pick-up and some industries went into decline due to the difficulty in competing for workers with the newly expanding sectors.

The third point that seems clear from history is that every mining boom was accompanied by increased inflationary pressure. Sometimes this was part of a global story, sometimes it was due to wage behaviour, but the general factor was pressure on the productive resources of the economy due to the expansion of economic activity. Leaving aside the current episode, only in the 1890s boom, which began when the economy had large-scale spare capacity, was the rise in inflation contained to single digits.

One interesting issue is the role of the exchange rate in these booms. Theory suggests that part of the adjustment process for an economy experiencing a mining boom is a rise in the real exchange rate in order to facilitate the flow of real resources that is needed. In all the previous booms, however, the nominal exchange rate was either fixed or managed very tightly. The real exchange rate could therefore only adjust through inflation.

In the current episode, with a floating rate, the behaviour of the nominal exchange rate has been very different from the past (Graph 4). It has risen early in the boom and by a large amount. This has been an important factor helping to dissipate inflationary pressures.

Conclusion

Let me conclude.

History tells us that mining booms are periods of significant economic change and that they can pose complex challenges for policy-makers. Key among these is the need to ensure flexibility in the economy and maintain disciplined macroeconomic policies in order to contain the inflationary forces generated by the boom.

History also shows that, in the past, these challenges proved to be quite difficult to deal with. However, in the 30 years since the previous boom, the Australian economy has developed in ways that should make it better able to accommodate the surge in mining activity that is currently under way. The floating exchange rate is a key difference, but goods and labour markets are also more flexible, and the monetary and fiscal policy frameworks are now more soundly based. This gives grounds for confidence that we
can do better this time, but the task will not be without challenges.

REFERENCES

ENDNOTES
1. I would like to thank Ellis Connolly and Christine Lewis for this work. The data underlying the graphs in this speech are drawn from multiple data sources, which may affect the comparability of series over time.
10. See Blainey (1963, p.62); Doran (1984); Maddock and McLean (1984); Butlin (1986).
15. See Blainey (1963, p.194); Doran (1984); Withers et al (1985).
17. See Blainey (1963, p.289).

Address by Ric Battellino,
Deputy Governor of the Reserve Bank to
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The rise in prices for natural resources and the associated planned increase in Australian-based capacity to supply key commodities is one of the largest such economic events in our history. The Reserve Bank has had a good deal to say about it.

I will touch again today on the main points we have made. I will not say much that is new. Nor will I be seeking to convey any messages about monetary policy.

Those matters were covered in some depth with the House Economics Committee less than two weeks ago.

I will structure my remarks around four questions.

➤ What do we know from previous booms?
➤ What do we know about this one?
➤ What don’t we know?
➤ Finally, how should that knowledge, and the limits to it, guide our response to the boom?

What do we know about previous booms?

I am going to re-use a chart that originated in a research paper by Jonathan Kearns and Christian Gillitzer, with some updating. This was the basis of a previous address last November. I have noticed it being shown rather more widely of late, no doubt because of the striking messages it conveys.

One thing we know, by observing this time series, is that large swings in prices for agricultural and resource commodities, resulting in big variations in Australia’s terms of trade, have been a recurring feature of our economic experience ever since Australia became a significant producer of such commodities.

There have been a number of big booms. They all ended. The really high peaks were quite temporary – just one or two observations in this annual time series, such as in the mid 1920s or the early 1950s.

Periods of pretty high terms of trade lasted for some years in several instances – as shown by the five-year average – but so far they have all been followed by a return to trend, or even a fall well below trend.

We also know that these swings were very important for the macroeconomy. My colleague Ric Battellino gave a very thoroughly researched speech on this question a year ago today. He looked at five major episodes, including the current one, over two centuries. Let me offer a reprise of his four main observations.

First, global developments have always played a part in causing the booms. Changes to the availability of capital or the emergence of large, low-income countries with rapid growth prospects (Japan or China) have often affected the price of minerals and energy.

Second, these booms were always expansionary for the Australian economy overall.

Third and related, previous booms were usually associated with a rise in inflation. The exception was the one in the 1890s, which occurred when the economy was experiencing large-scale overcapacity.

Fourth, the role of the exchange rate is crucial. The current episode stands apart from the previous ones because all those booms were experienced with a fixed or heavily managed exchange rate. This severely compromised the conduct of monetary policy, and also muddied many of the price signals that the economy needed to receive.

In short, these episodes were major externally generated shocks that proved very disruptive, not least because the country’s macroeconomic policy framework was not well equipped to handle them.

The high levels the terms of trade reached on some
occasions were not permanent, but they did persist long enough to have a big impact on economic outcomes.

**What do we know about this boom?**

The main thing we know about the current episode is that it looks very large. It is being driven by a big increase in demand for key Australian export commodities. Global consumption of coal has increased by about 50 per cent over the past decade; consumption of iron ore has increased by 80 per cent since 2003. Back then, Australia shipped around half a million tonnes of iron ore each day; now it is over a million tonnes a day. Coal shipments have been running at a rate of around 300 million tonnes a year, at least until the recent floods.

Australian capacity to export LNG is now around 20 million tonnes a year, up from around half that in 2004. This looks like it will increase to over 50 million tonnes within five years.

The rise in demand has been driven in large part by the rapid growth of key emerging market economies such as China and India. Over the past decade:

- The average annual growth of GDP per capita has been around 5 1/2 per cent in India and almost 10 per cent in China
- The number of people living in cities in those two countries, especially China, has risen by over 250 million, which implies having to expand or create cities (with the attendant buildings and infrastructure) to house the entire population of Australia more than 10 times over or, alternatively, to house the populations of France, Germany and Japan combined, and
- Steel production has doubled in India and it has more than quintupled in China.

Thus far, the demand for resources has stretched the global capacity of suppliers. Prices of key raw materials have consequently been driven upwards. As a result Australia’s terms of trade have risen sharply, to be about 65 per cent above the 20th century average level, and about 85 per cent above the level that would be expected had the downward trend observed over the 20th century continued. Even assuming the terms of trade soon peak and decline somewhat, they are nonetheless, over a five-year period, at their highest level since at least Federation – by a good margin. With the terms of trade at their current level, Australia’s nominal GDP is about 13 per cent higher, all other things equal, than it would have been had the terms of trade been at their 100-year average level. Of course Australia has substantial foreign ownership in the resources sector so a good proportion of this income accrues to foreign investors. Nonetheless, probably about half of that additional 13 per cent of GDP accrues to Australians one way or another.

We also know that a large expansion in the resources sector’s capacity to supply commodities is being planned. Already, mining sector capital investment has risen from an average of around 2 per cent of GDP over the past 25 years to about 4 per cent, which exceeds the peak reached in the booms of the late 1960s and early 1980s. Given the scale of possible additional investment projects that have been mooted, resources sector investment could rise by a further 1-2 per cent of GDP over the next couple of years. If it occurs, this will be by far the largest such expenditure of a capital nature in the resources sector in Australia’s modern history. Again, a significant proportion of the physical investment will be imported, but a large domestic spend is nonetheless likely.

A further thing we know about the boom is that it is associated with a much higher level of the exchange rate than we have been accustomed to seeing for most of the time the currency has been market determined, a period of more than 25 years (though, over the long sweep of history, the nominal exchange rate was often considerably higher than it is now). On a trade-weighted basis, it is 25 per cent above its post-float average. The striking relationship between the effective exchange rate adjusted for price level differentials (the ‘real’ exchange rate) and the terms of trade that is observable over quite a long period in the data still seems broadly to be in place.

Interest rates also have a bearing on the exchange rate. Even though most market interest rates are very close to medium-term averages, or even below them in some cases (e.g. the cash rate and the 90-day bill rate), interest differentials have recently strongly favoured the Australian dollar because of the persistence of extremely low rates in all of the world’s major financial centres. Moreover, the expectation that relatively high returns will be earned...
on real capital in Australia – in mining for example – is a powerful factor influencing capital flows.

We know that changes in the real exchange rate are part of the textbook adjustment mechanism to shocks like changes in the terms of trade. In past episodes, where movements in the nominal exchange rate were more limited (or did not occur at all), a range of other prices in the economy had to respond – arguably a more disruptive way of adjusting to the shock. On this occasion, the nominal exchange rate has responded strongly. This helps to offset the expansionary effect of the increase in investment, and also gives price signals to the production sector for labour and capital to shift to the areas of higher return. In other words, firms in the traded sector outside of resources are facing a period of adjustment. But in the face of such a shock they were always going to face that adjustment, one way or another.

What don’t we know?

The main thing we don’t know is how long the boom will last. This matters a great deal.

If the rise in income is only temporary, then we should not respond to it with a big rise in national consumption. It would be better, in such a case, to allow the income gain to flow to savings that would then be available to fund future consumption (including through periods of temporarily weak terms of trade, which undoubtedly will occur in the future). Likewise it would not make sense for there to be a big increase in investment in the sorts of resource extraction activities that could be profitable only at temporarily very high prices. Moreover, the economic restructuring that would reduce the size of other sectors that would be quite viable at ‘normal’ relative prices and a ‘normal’ exchange rate – assuming there is such a thing – would be wasteful if significant costs are associated with that change only to find that further large costs are incurred to change back after the resources boom ends.

If, on the other hand, the change is going to be quite long-lived, then national real income is going to be permanently higher, and we can look forward to enjoying significantly higher overall living standards into the distant future. In that world, a great deal of structural economic adjustment is bound to occur. In fact it almost certainly could not really be stopped. It would not be sensible to try to stop it.

We know that the peaks of previous terms of trade booms were relatively short-lived. In the current episode, the very high level of the terms of trade already seems to be persisting for longer than in previous episodes. Is this telling us that we should expect the boom to disappear at any moment? Or is it telling us that this episode is different from the others?

In favour of the latter view, if China and India maintain, on average, their recent rates of ‘catch-up’ to the productivity and living standards of the high income countries, and if they follow roughly the same pattern of steel intensity of production as seen in the past in other economies, a strong pace of increase in demand for resources will likely persist for some time yet. On the other hand, resources companies in Australia and beyond are rushing to take advantage of the current increase in prices by bringing new capacity on line. Will this increase in supply be just sufficient to match demand? Will it be too little? Or too much? An additional complicating factor is that serious attempts at reducing CO₂ emissions would probably change the story at some point. The lessons of history, moreover – that booms don’t go on indefinitely – are also too great to ignore.

At this stage, the Reserve Bank staff are assuming that the terms of trade will fall in the latter part of the forecast horizon. The associated assumptions about key resources prices are toward the conservative end of current market forecasts, which typically assume a smaller fall in prices. Even under the Bank’s current assumptions, however, the terms of trade are still very high, by historical standards, at the end of the forecast period.

But any forecast or assumption made in this area is subject to wide margins of uncertainty. We know that
something very big is happening and has been for a while. We simply do not know whether it will continue like this, or not.

**How to respond?**

How, then, should we respond to our knowledge, and to the limits of our knowledge?

To recap, we know that:

- Previous commodity price and/or mining investment booms were big events that had major expansionary and inflationary effects
- Those booms all ended, generally with more or less a total reversal of the earlier rise in the terms of trade, though this often took some time. On some occasions, this brought on a significant economic downturn
- The current boom looks bigger than any other since Federation at least, in terms of the rise in the terms of trade over a period of several years
- The previous episodes occurred without the benefit of a flexible exchange rate to help manage the pressures. On this occasion that particular price is adjusting, which should help to contain the pressures and help the economy to adjust more efficiently.

We do not know what the terms of trade will do in future. It would be rather extreme to assume that the rise of China and India is a short-run flash-in-the-pan phenomenon. Likewise it would be imprudent not to allow for a fairly significant fall in prices, even if only to still pretty attractive levels, over several years. But the truth is that we will learn only gradually what the detailed shape of the new environment is.

How should we handle this uncertainty? A few simple messages seem to me to be important.

First, we should not assume that the recent pace of national income growth is a good estimate of the likely sustainable pace. We should allow a good deal of the income growth to flow into saving in the near term. We can always consume some of that income later if income stays high, but it is harder to cut back absorption that rises in anticipation of income gains that do not materialise.

To date, that precautionary approach seems to be in place. Households are saving more than for some years and the much-discussed ‘consumer caution’ has been in evidence. Firms are consolidating balance sheets. Governments have reiterated commitments to stated medium-term fiscal goals.

Second, there is going to be a non-trivial degree of structural change in the economy as a result of the large change in relative prices. This is already occurring, but if relative prices stay anywhere near their current configuration surely there will be a good deal more such change in the future. Because we can’t confidently forecast where relative prices will settle, we cannot know how much such change is ‘optimal’. Therefore we can’t be sure that some of it will not need to be reversed at some point. But the optimal amount of change is unlikely to be none at all. So we should not look to prevent change; we should look to make it cost as little as possible. In general, that means preserving flexibility and supporting adaptation.

Third, productivity is going to come back into focus, especially in sectors that are exposed to the rise in the exchange rate. Their prices will be squeezed, and their costs potentially pushed up by the demand of the resources sector and related industries for labour. Surely maintaining viability will involve achieving significantly bigger improvements to productivity than we have observed in recent years.

Fourth, if we have to face structural adjustment, it is infinitely preferable to be doing it during a period in which overall income is rising strongly. If nothing else, in such an environment the gainers can compensate the losers more easily. Many other countries face major issues of economic adjustment in an environment of overall weakness.

**Conclusion**

At the risk of sounding like a broken record, the rise in Australia’s terms of trade over the past five years is the biggest such event in a very long time. It reflects powerful forces at work in the global economy to which our country is more favourably exposed than most. It presents opportunities and challenges. With a large boost to income, we need to think about the balance between saving and spending, because we do not know the permanent level of the terms of trade. I argue for erring on the side of saving for the time being, and I think this is by and large what is happening so far. With a large change in relative prices, we should also expect to see a good deal of structural change in the economy. A careful response to that prospect is also needed, and no doubt your conference will examine such issues over the day ahead. I wish you well in your deliberations.

**ENDNOTES**

4. I asked our econometricians to test the hypothesis that the observations over the past few years were drawn from the same process as generated the observations over the 20th century. Their answer, based on a battery of suitable tests for a univariate time series, was that it was too early to tell.
5. I note that prices observed over the past year have exceeded, more or less continually, what had been assumed.

Remarks by Glenn Stevens, Governor of the Reserve Bank at the Victoria University Public Conference on The Resources Boom: ‘Understanding National and Regional Implications’, Melbourne, 23 February 2011

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Managing the mighty structural forces unleashed by the mining boom

AUSTRALIA’S MINING BOOM IS BOTH A BOON AND A BANE TO OUR ECONOMIC DEVELOPMENT, OBSERVES IAN HARPER

Australia’s stark comparative advantage in mining is both a boon and a bane to our economic development. Investment in the mining industry as a share of Australia’s GDP has already reached unprecedented levels and looks set to double in coming years.

The mining industry is almost single-handedly responsible for Australia experiencing close to trend annual growth while the rest of the developed world languishes.

Yet the mining boom unleashes mighty structural forces that bear down on the Australian economy. A strongly appreciating Australian dollar – driven by high commodities prices and strong demand for Australian mineral exports – undermines the competitiveness of non-mining export activities, including manufacturing and services exports, and encourages local consumers to prefer imports over locally-sourced goods and services.

Shortages of skilled labour – in fact, any labour at all – in mining regions drives wages and salaries to stratospheric levels, in turn bidding up prices for accommodation, food and local services.

Broadly speaking, investment has moved from the south and east of Australia, where most people live and work, to the north and west of the continent, where most of the mineral wealth lies. There is a parallel movement of capital away from low-productivity sectors like manufacturing and retail trade towards high-productivity mining and related services. This is not only to be expected but also welcomed, as Australia struggles with declining average productivity levels.

How we cope with the changing pattern of demand for labour, especially skilled labour, will determine how well we manage the mining boom. Ways must be found simultaneously to meet the needs of the mining sector and to ensure that the non-mining sector realises improvements in efficiency and productivity sufficient to allow affected by the mining boom.

This makes life very difficult for individuals and families who do not benefit directly from inflated incomes and yet also face inflated prices for basic goods and services in regions affected by the mining boom.
it to survive the boom.

Indeed, this is the non-mining sector’s best hope: that productivity levels can be raised so that labour is released to serve the mining industry without harming output levels in the rest of the economy.

It’s not only the economic fabric that is stressed and strained by the booming sector “problem”. Social challenges also arise when investment and jobs move away from where people live and community life is established. One trend is the rapid take-up of “fly in/fly out” (FIFO) employment patterns.

One respondent to a recent Senate inquiry expects FIFO employment to increase six-fold over the next 20 years, while relocation and local recruitment will barely double. FIFO might represent a handy way to avert the cost of relocating workers and their families to remote regions, but it comes at a cost to family relationships and community life more broadly.

Social challenges arise when investment and jobs move away from where people live and community life is established.

It also stymies the broader economic development of the regions blessed – or cursed – with mineral wealth. It is the equivalent at a local level of wholly imported capital and labour working the mines in Africa, leaving local residents with little if anything to show for their “development” apart from higher food prices.

There are numerous alternatives to FIFO as a means of closing the geographic and skills gaps opened up by the mining boom. In a recent report entitled Where’s your next worker?, Deloitte explored twelve alternative strategies for bringing workers to jobs and jobs to workers.

Promoting the use of shared services is clearly one of them. This includes but is not limited to offshoring. “Near-shoring” – that is, accessing shared services providers located interstate within Australia rather than overseas – can often be a more competitive alternative when full account is taken of management costs and cultural differences. Either way, there is a pressing need for productivity improvements in the non-mining sector as there is for services to be supplied to the booming mining sector, and shared services models help to satisfy both needs.

Beyond shared services, there are other ways to augment the supply of skills without moving local workers around so much. Boosting skilled migration must continue as a priority and, in this vein, the government’s recently announced US-Australia Bilateral Employment Initiative is to be welcomed. Here is a way of tapping unemployed or underemployed tradespeople in the United States for short-term employment in Australia, where demand outstrips supply.

“Crowd-sourcing” skills is yet another and more innovative solution. Digital communications and social media are in their infancy, yet the potential for tapping expertise over the internet is huge. Australian internet start-up, Kaggle, is just one example of what is possible, where technical problems are thrown to the crowd with little more than the thrill of the challenge offered by way of motivation.

Other solutions include enhancing opportunities for retirees, home-based carers, people with disabilities and indigenous Australians to participate more actively in the paid workforce. In the case of indigenous Australians, at least one of the gaps – the geographic gap – is generally already closed. But others, including skills and disadvantage, still loom large.

More can be done to improve employee engagement as well as re-engineering jobs so that workers are more effective in what they do.

Delivering more and better skilled labour is not just about moving workers around, although this will be part of any solution.

Importantly, measures which improve the productivity of the existing workforce, including at a distance from the workplace, will help resolve the tensions born of our prodigious mineral endowment.

The measure of how successfully we manage the mining boom is how well we respond to the resulting pressures on labour markets.

Ian Harper is a Partner at Deloitte, a director of Deloitte Access Economics Pty Ltd, and a Professor Emeritus at the University of Melbourne.

This formed part of an address he gave at the Shared Services and Outsourcing Convention in Melbourne.

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The 20th century belonged to the West – not only in military terms but primarily in resource consumption. This century is expected to be dominated by Asia.

Given the generally high per capita consumption of a range of resources by developed nations, we must ask a fundamental question: can the world provide the same material standards of living for Asia without bankrupting the global ecological bank?

Surprisingly, the answer can be either yes or no – depending on one’s point of view (as Obi Wan famously opined). Optimists point to the history of continually growing mineral and metal production and economic resources throughout the 20th century and say “no worries”. Technology, exploration and economics are their friends.

Pessimists decry the near exponential growth of production and consumption of non-renewable resources and claim such patterns are inherently unsustainable. Simple mathematics and environmental limits are their focus.

Realists see the merit in both points of view.

BOOM TIME

Let us explore the nature of economic mineral resources. In today’s world, we mine fossil fuels, base metals, precious metals, ferrous metals, light metals, energy metals and a wide variety of miscellaneous minerals and metals – a significant majority of the known elements.

Australia and Brazil have both found massive iron ore resources and now dominate seaborne global iron ore exports.

Although some elements are abundant throughout the earth’s crust, such as iron or aluminium, all minerals need to be found in deposits both high in concentration and easy to process to be worth mining.

Throughout the past two centuries, the world has been scoured for new deposits which could be profitable to mine – and in many countries the mining industry continues to find more. For example, Australia and Brazil have both found massive iron ore resources and now dominate seaborne global iron ore exports. Parts of Africa now look set to repeat this pattern.

On the technology front, major advances in mining...
and ore processing have enabled breakthroughs in metal and mineral production. Prominent examples include the development of flotation technology for metal sulfide ores (now widely used in copper, lead-zinc, nickel, gold mining), carbon in pulp technology which uses cyanide in gold mining, solvent extraction-electrowinning technology, safer and cheaper explosives, bigger and bigger diggers and trucks, more efficient grinding technology, and so on.

On the economic front, the long-term trend is continually growing demand to meet consumption patterns. There can be the occasional hiccup during an economic downturn, but the trend is inexorably up – boom times aplenty for a miner.

Global per capita steel consumption has increased from 150 kg per capita in 2001 to 203 kg per capita in 2010. Allow for growing consumption in China’s 1.3 billion people and India’s 1.2 billion people (not to forget Africa’s billion people or South America’s half a billion). New cities are born, infrastructure built, manufactured goods made and exported – the sheer scale of current and prospective future demand for minerals and metals is indeed stark.

**BARRIERS TO GROWTH**

Although it may surprise many, economic mineral resources can often be underestimated (oil being the exception – peak oil is a real and urgent problem). Even allowing for strong growth in demand, I would certainly remain confident that there are sufficient deposits known globally for most mineral and metal resources to meet growing demands for several decades. Perhaps by the latter decades of this century we might start to approach limits, but we are already encountering other problems.

On the environmental front, ore grades and quality are gradually declining, meaning more mining to produce the same amount of metal. The real barriers to ongoing mining are mainly social and environmental. On the social front, community opposition to projects and commodities is growing and placing substantial pressure on the ability of the mining industry to develop new projects.

Clive Palmer’s China First coal project in central Queensland threatens to mine most of the Bimblebox Nature Refuge – an area which is supposed to be protected by a perpetual conservation agreement between the landholder and government.

On the environmental front, ore grades and quality are gradually declining, meaning more mining to produce the same amount of metal. As open cuts get bigger, there is more and more mine waste.

At some ‘modern’ mines in Australia, extremely polluted water flows freely to adjacent streams. Hanrahan’s Creek in the Northern Territory is biologically dead due to severe acid mine drainage from the defunct Redbank copper mine.

There are many other legacy mine sites across the nation, even large ones at Mount Morgan, Mount Lyell or Rum Jungle. And the legacies are growing – check out the Hunter Valley coal province or Kalgoorlie’s famous ‘Super Pit’ in Google Earth.

The success of different mining sectors in reducing their greenhouse gas emissions footprint has been varied too – aluminium and steel have reduced their carbon intensity significantly thanks to energy efficiency and new technology. But many sectors have increased their carbon intensity.

The transition away from fossil fuels to meet the climate change challenge will remain a key global test of mining’s environmental performance.

**DODGING THE BUST**

Overall, Australia remains in a strong position to continue to mine almost anything virtually anywhere to meet growing Asian demand – the mineral resources are certainly known. The trick will be managing increasingly complex social issues and environmental impacts, especially the move away from fossil fuels and uranium.

The boom may continue for some time, but we need to be mindful of the inevitable environmental and social bust. Our vision should not involve selling dirt and buying diamonds, then wondering why we are still in debt as a nation.

**Dr Gavin Mudd is a Senior Lecturer at Monash University.**
Does Australia have a resources curse?

THE CHALLENGES OF MANAGING A MINING BOOM

High commodity prices have boosted the Australian economy and seen big mining companies start massive capacity expansions ... but higher interest rates and the strong Australian dollar are weakening other sectors, such as housing, retail, manufacturing and tourism. This raises concerns about 'Dutch disease', as the mining industry crowds out other activities, potentially leaving the economy 'hollowed out'. Following is the introduction from an Australia Economics report written by Paul Bloxham for HSBC Global Research.

ARE RESOURCES A CURSE?

But now the Australian story is familiar: very high commodity prices are motivating massive investments by the mining industry. But, if it is all good news, why does the rest of the economy feel sluggish? Is Australia suffering from so-called 'Dutch disease', or some other type of 'resources curse'? This report looks at some of the large adjustments that are occurring in the Australian economy and discusses some of the challenges of managing a mining boom.

Being blessed with a large stock of high quality commodities would typically be thought of as a good thing. But history and economics tells us that this is not always the case.

Being blessed with a large stock of high quality commodities would typically be thought of as a good thing. But history and economics tells us that this is not always the case. The apparent blessing of abundant natural resources can, in fact, be a 'curse', leading to slower economic growth. Two economists, at Harvard University, Jeffery Sachs and Andrew Warner (2001) famously showed that on average, between 1970 and 1990 countries with more natural resources grew slower than those without.

Could Australia also be faced with a similar fate? Does Australia have a 'resources curse'?

Resources curses come in many forms.

> One form is so-called 'Dutch disease'. This is when the exchange rate appreciates, as capital flows towards an economy rich with resources and drives a decline in competitiveness for other exchange rate sensitive industries: for example, manufacturing. This effect was labelled ‘Dutch disease’ after the Netherlands experience with the discovery of natural gas in 1959. (As we point out later, it was actually a pair of Australian economists who first developed the theories about why this happens – such is Australia's history with these issues.) Critically, it is only if these effects lead to permanent damage to an economy's productive capacity that it can truly be called 'Dutch disease'.

> Another 'curse' of having natural resources is that it can put a country at the whim of often very volatile international commodity markets, which can lead to...

KEY POINTS

> While not everyone will benefit from the mining boom, the overall economy is expected to be significantly better off than otherwise, so we do not think that Australia has 'Dutch disease'.

> But the benefits of the mining boom will not necessarily be evenly shared across the population. Australia faces significant challenges from substantial structural change. The strength of the exchange rate and higher interest rates is already putting pressure on some industries, particularly the tourism, manufacturing, education exports and retail industries. We expect these industries to remain lacklustre as they make way for the massive mining expansion.

> The blessing of resources is a potential 'curse' in other ways. First, it stymies the reform agenda, which leads to slower growth in productivity and means the economy cannot grow as rapidly without driving up inflation. Second, it makes the economy far more tied to the success of China and its continued demand for commodities, which is a key risk.

> Policymakers can respond to this by productivity enhancing reform – including tax reform, better education policy, and regulatory reform – and by preparing ‘shovel ready’ infrastructure projects for the when the mining investment boom subsides.

> More public saving and increased redistribution of returns from the resources boom to future generations and to support the economy in the future could help. A larger mining tax and a sovereign wealth fund would be useful for achieving these objectives. This would also slow the very rapid pace of structural change in the economy.

> As demand from the mining boom attempts to outstrip the supply capacity of the economy this is expected to continue to put upward pressure on inflation – due partly to weak productivity growth – which we expect to mean interest rates still need to rise. This will happen even with only modest growth in the non-mining parts of the economy, due to the enormous scale of the mining boom and its impact on the economy as a whole.

> As always, the Australian economy is intrinsically dependent on developments in the global economy: particularly on China and commodities. Australia now seems more tied to China than it ever was to the US. Greater saving by government, as described above, would help deal with this risk.

> A significant global downturn, particularly one that affected China and commodity prices, is a key risk to Australia and would likely see a substantial cut to the RBA’s cash rate, a depreciation of the AUD and a significant fiscal stimulus – which the government could manage given very low public debt levels. These would be key support mechanisms for the Australian economy in the event of a crisis.
Resource wealth can also lead to policy complacency, as do many other unearned windfalls. This can manifest in a stymied reform agenda. As the old saying goes, crisis and opportunity are often one and the same. Now in its 20th year of continuous growth, Australia has had little impetus for reform.

In some cases, government mismanagement of resources, extractive practices by governments or, indeed, conflicts can occur as a result of resource wealth.

For Australia, the final of these explanations is unlikely to be relevant, given strong institutions and a democratic system of government. But the first three listed above, are all potential problems.

In Australia’s case there is some evidence of the early symptoms of ‘Dutch disease’, with recent weakness in the non-mining sectors of the economy. Officials are starting to recognise this, with the Reserve Bank recently referring to the economy as ‘multi-speed’. But the key question is whether this is part of a necessary structural change in the economy, or if there is irrecoverable damage being done to the non-mining sectors, such that when commodity prices fall, Australia’s productive capacity is lowered.

The main industries that are being negatively affected are manufacturing, tourism and education exports. In large part this is happening because the AUD is around its highest level in 30 years, which is reducing the international competitiveness of these industries. But it is not just exporters that have been impaired by the strong AUD: import competing industries have also found the environment tougher. Expanded use of online retail by domestic consumers and reduced tourist numbers has seen traditional retailers under pressure. Above average interest rates, have also weakened the housing market.

But importantly, as yet, we haven’t seen greater divergence across industries than is historically normal for Australia. Nor have we seen greater divergence across the states than is usual. We also have, as yet, not seen substantial lay-offs in the affected industries or capital stock shrinkage.

Of course, if commodity prices do fall, Australia’s income will decline sharply as well. While this is not ‘Dutch disease’, it is another of the resource curses: the curse of increased income volatility.

While Australia has always been beholden to global forces – and it used to be the case that when the United States sneezed, Australia caught a cold – we argue that Australia is now much more tied to China and its demand for commodities than it ever was to the US. Increased dependence on commodities means that cycles in commodity prices will be more destabilising for the Australian economy than in the past. A recent example is the global financial crisis, which saw a very sharp decline in commodity prices, substantially reducing incomes in Australia and weakening the fiscal position.

Finally, the Australian economy is now in its 20th year of continuous growth. This is a very strong performance, but it comes with a cost: reduced impetus for reform. The biggest productivity-enhancing reforms in Australia’s history occurred largely in the 1980s and 1990s with the reduction of barriers to international trade, labour market reforms, deregulation of financial markets, and the floating of the AUD. Little reform has occurred in recent years, which have seen a substantial slowdown in productivity growth. This may limit Australia’s ability to grow without inflation, which increases the risk that the Australian economy is left in a weak position if commodity prices do fall at some point.
One of the most interesting features of the mining boom is the way that it is opening up old, and unresolved, political and policy debates in Australia. Do we trust that the benefits to the small group of people directly involved in the mining industry will “trickle down” to the rest of us? Should governments protect employment-intensive industries? Or should we trust that free trade and market forces will do a good job of allocating our resources for us?

The current mining boom not only raises all of those questions but also puts pressure on our political leaders to actually answer them. While the Gillard Government’s reluctance to come clean on such issues is a little less visible than Tony Abbott’s willingness to boldly walk both sides of the free market-protectionism street, both parties are suffering from the same philosophical and political dilemmas.

The mining industry has had a dream run in Australia over the past 50 years and the past seven years have been as sweet as it gets. A big risk to mining is political instability and some of the biggest costs are associated with the infrastructure required to move resources from the mine to the customers.

Both sides of politics, at the state and federal levels, have prided themselves on their political and financial support for mining expansion.

Mining employs just 217,000 people directly and creates around that many jobs again indirectly. For the other 20 million Australians the mining boom is delivering more pain than gain.

In the past seven years, however, the benefits to the mining industry have become just too big, and the adverse impact of their growth on other parts of the economy has become just too visible to go unchallenged.

The problem for the major political parties is that the issue has come down to a simple question: do you want to support the mining industry or the manufacturing industry? Weasel words about “getting the balance right” just aren’t going to cut it.
The massive growth in the profits of the mining industry delivers only trivial benefits to those who are not directly involved in the industry.

Mining employs just 217,000 people directly and creates around that many jobs again indirectly. For the other 20 million Australians the mining boom is delivering more pain than gain.

This is particularly true for the million people who work in manufacturing and the millions more who work in other industries being hammered by the high exchange rate including tourism, education and parts of agriculture.

No matter how much money the mining industry spends on advertising, it can’t conceal the emerging reality that the high dollar associated with this boom is destroying more jobs than it is creating.

The Australian manufacturing industry has been constantly reinventing itself since our tariff barriers came down and our dollar began to rise. There have been many casualties along the way, but those who remain are, by definition, the most innovative and competitive we have.

But no matter how innovative they are, it is virtually impossible to adapt as quickly as an exchange rate surge from $0.60 cents to $1.05 against the US dollar. There is no doubt that it is the mining boom that is driving manufacturing to the wall.

No matter how much money the mining industry spends on advertising, it can’t conceal the emerging reality that the high dollar associated with this boom is destroying more jobs than it is creating.

Add to this the fact that the high interest rates associated with the mining boom are directly increasing the mortgage payments of the 98.1 per cent of non-miners and you can see why the politics of this issue is only beginning to heat up.

So what, if anything, can government do to insulate the bulk of the economy from the surging exchange rate?

The defenders of the mining industry are working overtime to define the question as a simple choice between continued support for market forces or a return to the protectionist past. In doing so, the boom boosters are hoping to shame both sides of politics into doing nothing to harm the interests of the big miners.

There are, of course, other options.

The government could broaden the base of its proposed mining tax to include, for example, the enormous profits being made by gold miners.

Having done so, if the government were to create a sovereign wealth fund which invested heavily offshore the short-term outflow of money would take some pressure off the exchange rate. By moving money offshore when the exchange rate is high Australians will receive a substantial capital gain when the money is brought back onshore when the boom begins to bust.

They could also slow the rate of mining expansion. The mining industry is currently planning massive new investments in coal, iron ore, coal seam gas and other mineral extraction.

The faster this expansion occurs the greater the pressure on our exchange rate and interest rates will be. That is, the faster the mining boom is allowed to proceed the greater the risks to the broader community will be.

The mining industry is spending up big on its advertising campaign to assure us that we all benefit from the mining boom. But even tens of millions of dollars worth of tax deductible ads can’t keep hiding either the maldistribution of the benefits of the boom or the rapidly rising costs to the rest of the economy.

The next stage of their campaign is to try and convince us that there is nothing we can do to stop it, but they would only be spending all that money if they were afraid that the opposite was true.

Richard Denniss is an Adjunct Professor at the Crawford School, Australian National University.
Australia’s mining boom: fact or fiction?

OUR PERCEPTIONS OF THE MINING INDUSTRY ARE WILDLY OUT OF STEP WITH THE REALITY, ARGUES GREENS SENATOR LARISSA WATERS

A ustralia’s love affair with the mining boom has been in the headlines for many years now. Mining is credited with saving us from the Global Financial Crisis, putting food on our tables, keeping our economy strong and thousands of people employed.

It’s been a great public relations success. A survey released by Essential Media this week showed that 67 per cent of Australians count mining as one of our top three most important industries. A typical Australian believes the mining sector accounts for more than one third of economic activity, and employs about 16 per cent of our workforce.

Unfortunately, our perceptions of the mining industry are wildly out of step with the reality.

Today, The Australia Institute released its new research paper *Mining the Truth; The rhetoric and reality of the commodities boom*, which provides a detailed analysis of the ways in which the mining boom is affecting our economy, both positive and negative.

The true picture of Australian mining revealed is startling, in all the parts that have been glossed over, rewritten or ignored.

The true picture of Australian mining revealed is startling, in all the parts that have been glossed over, rewritten or ignored.

To begin with, mining doesn’t even come close to accounting for a third of our economic activity. Mining represents about 9.2 per cent of GDP, roughly the same as manufacturing. And the perception that mining employs around 16 per cent of our workforce credits the industry with nine times more workers than it actually has, about 1.9 per cent of the workforce. Despite the expansion of mining over the past seven years, mining accounts for only 7 per cent of new jobs created over that time.

Of course, mining likes to roll in all the indirect jobs it creates. If every sector calculated their share of the workforce in this way, the total number of Australian jobs would be inflated by three times the true number.

Ironically, mining could create many more jobs here if it sourced more of its materials in Australia. But without local content rules for big mining projects, most materials are sourced offshore. Australian steel, for example, make up only 10 per cent of the steel used for mining. If mining used more Australian steel, it might have been a very different outcome for 1,400 BlueScope workers.

The *Mining the Truth* report also sheds some light on some of the questions we are currently facing; if mining has boosted our economy and benefited all of us, why are other...
sectors struggling? What is the truth behind the two-speed economy?

Mining has hiked up the exchange rate, creating a direct disadvantage for our industries which need to compete internationally, such as tourism and manufacturing. Most importantly, mining and the high prices of commodities are major causes of our current high interest rates, putting great pressure on other sectors and Australian households.

But surely the profits that are created by mining are more than enough to offset the negative impacts of mining on other sectors?

As a matter of fact, they are. BHP Billiton recently posted an annual profit of $22 billion – more than half of the entire annual budget of the state of Queensland. Overall, mining will realise a whopping $600 billion in profit over the next decade.

The fairytale story of mining is less about happily ever after, and more about the Haves and the Have-Nots.

And we are going to get next to nothing of it – 83 per cent of Australian mining is foreign-owned, and these profits will be sent back overseas. The industry has spent millions on campaigns designed to limit fair taxation on mining, even though the average rate of corporate tax paid by mining companies is around 14 per cent, mainly thanks to generous tax deductions by the Government.

The Resource Super Profits Tax would have collected an additional $200 billion in the next decade. Just imagine that money being invested back into Australian communities, hospitals, schools and public facilities.

Its meagre proposed replacement, the Minerals Resource Rent Tax, would raise only an extra $38.5 billion over the same time period. $38.5 billion – out of $600 billion of pure profit. That’s less than 6.5 per cent.

The profit margin of mining is, on average, 37 per cent. Compare this to manufacturing, which enjoys a 6 per cent profit margin, or retail, which sits at 4 per cent. By now, the fairytale story of mining is less about happily ever after, and more about the Haves and the Have-Nots.

It’s often argued that the mining boom does benefit everyone, by boosting superannuation through increased share prices. But again, this argument fails when held up to the light – the average superfund, among Australians who have superfunds, has barely 4 per cent of its portfolio exposed to the mining sector.

Where is the voice of fairness in all this? Why are only the Greens standing up to say the minerals in the ground belong to all of us, not just the people who dig them up? Why aren’t the old parties making sure that a fair share of mining profits is returned to all Australians? Far from acting in the best interests of the public, the Government has provided one long gravy train for the mining industry.

The latest mining campaign is Our Story, another multi-million dollar PR exercise to tell us mining is good news for everyone. It doesn’t include the story of high interest rates, unemployment in our other export industries, and an Australian public whose assets are being stripped from them without fair recompense.

If it did, we may discover that the true story of the mining boom is not the fantasy we’ve all been sold.

83 per cent of Australian mining is foreign-owned, and these profits will be sent back overseas.

Senator Larissa Waters is the Greens spokesperson for mining, and the first Greens Senator for the state of Queensland.

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8 September 2011 | www.abc.net.au/unleashed
Mining companies are finally sharing the benefits with the native owners of the land, writes Paul Cleary

Aboriginal Australians living in remote areas have, for the past five decades, experienced at close quarters the ill-effects of large scale mining, while receiving few of the benefits.

From Cape York, to Arnhem Land, Kakadu and the Pilbara, the industrial-scale mining that got underway from the 1960s onwards did little to improve Aboriginal welfare.

Even when mining companies agreed to substantial royalty deals – as with the Ranger uranium mine and Groote Eylandt – it made little difference.

Decades of research in Australia confirms that Aboriginal people have succumbed to the same ‘resource curse’ effects as experienced by people in the developing world.

So the advent of the biggest resources boom in our history and mega mining developments might suggest that the curse will loom larger.

**Corporate social responsibility**

Fortunately, there’s cause for optimism as mining companies are now putting Aboriginal welfare at the fore of their social responsibility agenda.

The turning point actually occurred in 1995 when Leon Davis, chief executive of CRA Ltd (now Rio Tinto), broke ranks with his industry and said he would negotiate under native title law.

Since then, the company has blazed a trail in negotiating agreements that offer job and economic development opportunities to Aboriginal people, and others are now following. Rio now employs about 1,600 Aborigines, making it the single largest such employer in the country.

This month the company concluded the five agreements with Pilbara indigenous groups that will deliver jobs and economic development benefits while enabling it to rapidly expand mining operations in the region.

Local Aboriginal elders worry about the loss of sacred sites, saying that much of their country remains in pristine condition at present.

**Value of agreements**

Simon Hawkins, chief executive of the land council Yamatji Marlpa Aboriginal Corporation, estimates the agreements could be worth $2 billion to its four groups over the next 40 years.

The benefits in terms of business development could be substantially more than that amount, given the drive by mining companies to award contracts to indigenous businesses.

The income is based on a direct 0.5 per cent direct share of production, with 80 per cent saved in a charitable trust and used for business development and social services. The balance is to be held in a direct benefit trust.

One third is to be locked away for the benefit of future generations.

The agreements spread benefits around the region via a regional corporation that will be funded by Rio for the first five years.

**The benefits for Rio Tinto**

In return, Rio will have the certainty that its plans to dramatically ramp up production in the region, from 220 million tonnes per annum (mtpa) to as much as 500 mtpa in coming years, without being hindered by a claim or a determination under the **Native Title Act**.

Local Aboriginal elders worry about the loss of sacred sites, saying that much of their country remains in pristine
condition at present.

Sam Walsh, managing director of Rio’s iron ore business, says he recently travelled through the region and saw large areas fenced off to protect cultural heritage.

**Negotiations continue**

BHP is believed to be offering a broadly similar 0.5 per cent deal in its native title negotiations, though it has a floor as well as a ceiling, with comparable economic benefits.

But Fortescue Metals Group, which has won accolades for its commitment to improve Aboriginal welfare, has consistently paid fixed dollar compensation well below this share, arguing that such deals amount to “mining welfare”.

Its contentious negotiations with the Yindjibarndi people in the Pilbara are based on a $4 million a year, unindexed, in return for resources worth $10 billion a year at current prices, or just 0.04 per cent. Earlier FMG agreements have paid as little as 0.01 per cent.

**Official silence**

Government policy is silent on these agreements. While we have minimum standards for wages negotiations, deals struck between powerful mining interests and impoverished Aboriginal communities are a complete free for all.

Native title lawyer Ronald Bower reveals how some groups still manage to find a way through this jungle. In earlier FMG negotiations, Bower advised the Eastern Guruma people to accept a very poor offer because he realised the company was steadfastly opposed to paying any more. He is now advising a breakaway group within the Yindjibarndi community.

But following the FMG deal, the Eastern Guruma people’s fortunes have flourished. They have used what little money they got from their agreement to start businesses. One of those businesses recently picked up a contract with Rio worth $160 million a year.

**Government policy is silent on these agreements. While we have minimum standards for wages negotiations, deals struck between powerful mining interests and impoverished Aboriginal communities are a complete free for all.**

After being denied benefits from the riches in their midst, big changes are afoot.

Benefits now being derived from the mining boom by Aboriginal people and communities are in part the result of Paul Keating’s *Native Title Act*, in part the result of changed corporate culture, and in large part from the ability of Aboriginal people to pick themselves up after being knocked down for decades.

*Paul Cleary is a research scholar at the Centre for Aboriginal Economic Policy Research, Australian National University.*

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Open pit gold mine, Kalgoorlie, Western Australia
Australia’s Mining Boom

We are letting our resources luck turn to dust

A recently released book entitled Too Much Luck highlights the many negative consequences of the mining boom, according to this review by Kerry Carrington

THE CONVERSATION

Paul Cleary’s book Too Much Luck: The Mining Boom and Australia’s Future, is a timely appraisal of the dramatic economic and social impacts, as well as the political ramifications of the current resource boom.

Cleary argues that the resource investment stampede is squandering Australia’s precious non-renewable fossil fuels, leading to a high dollar, inflation and interest rates, at the expense of manufacturing, education and tourism industries.

There is, he argues, a strong case for a more measured approach to harvesting these resources in the long-term interests of all Australians through better taxation, saving and regulation of the resource sector. This book is not anti-mining and does not argue that resources should be left in the ground, as Stephen Kirchner would have us believe.

Cleary coins the phrase “investment stampede” to capture the seismic shifts at work. The sector is growing fast – too fast – at 15% per annum, with a pipeline investment of $174 billion. Global demand especially from Asia has fuelled this boom. Current economic returns for the mining corporations and their shareholders are staggering.

In August 2011 BHP announced an annual net profit of $23.5 billion, while earlier in the year Rio Tinto had announced an annual profit of $14.3 billion.

Cleary’s book analyses an array of adverse impacts resulting from an investment stampede, including the growth of fly-in, fly-out (FIFO) workforces. Until the 1970s, mining leases tended to be issued by governments subject to conditions that companies build or substantially finance local community infrastructure, including housing, streets, transport, schools, hospitals and recreation facilities. Townships and communities went hand in hand with mining development.

There are estimated to be around 150,000 non-resident workers directly employed by the resources sector, anticipated to rise to around 200,000 by 2015.

Not any more. The haste of this extraction process has become increasingly reliant on a continuous production cycle of 12-hour shifts, seven days a week, and one increasingly reliant on fly-in, fly-out or drive-in, drive-out (non-resident) workers who typically work block rosters, and reside in work camps adjacent to existing rural communities.

There are estimated to be around 150,000 non-resident workers directly employed by the resources sector, anticipated to rise to around 200,000 by 2015, but no government body appears to be counting and projected growth is equally elusive.

This is an odd oversight given the rapid growth of reliance on non-resident workers in the resources sector carries significant impacts for individual workers and their families and host communities, as evidenced by the many submissions to the Australian Parliament House inquiry into FIFO/DIDO work practices, chaired by the Independent MP Tony Windsor.

Some of the significant impacts include:

➤ A sudden influx in high risk populations (young single males with large disposable incomes) exacerbating crime and alcohol-related social disorder problems
➤ The creation of new lucrative unregulated drug markets and markets in commercial sex work
➤ Rises in traffic congestion and road accidents
➤ Stretch on infrastructure
➤ The erosion of community wellbeing
➤ Heightened risk of protracted social protest over coal-seam gas extraction
➤ Ongoing widespread social protest
against the erection of camps in close proximity to established rural communities
➤ Increasing burden on local services
➤ Soaring housing costs and other local costs of living
➤ “Fly over effects” on the local economy, and an ever-decreasing permanent resident workforce
➤ Increasing rates of staff turnover
➤ Reversal of the trend of women entering the mining industry (down from 15.7 to 12.6 per cent according to the most recent ABS statistics)
➤ Increases in the average hours worked each week exacerbating fatigue-related car accidents and work injury as they commute either end of work cycles than in the workplace (an average of hours 45 hours as at August 2011, with 1 in 3 working over 60 hours per week).

These impacts undermine the long-term sustainable community development of rural Australia. It is troubling therefore that dramatic socio-demographic processes have been unleashed by this boom without concerted attempts to accurately research, measure or account for the numbers of non-resident workers involved and their nation-changing impact on the Australian society and economy.

Just as the number of non-resident workers is not being researched or counted, Cleary draws our attention to how the rapid depletion of natural non-renewable resources is not being counted either. Again, the long term social and environmental costs, including the time value of Australia’s natural resources and the opportunity costs of squandering them through an investment stampede are not being measured.

Instead, the gaze of most state politicians in particular has been transfixed on the short-term economic benefits shared by so few. Cleary draws attention to the dominance of a short-term economic view which frames the current resources boom – a view to which Kirchner appears wedded.

The real challenge for a government of and for the people – and not just a government at the beck and call and in the pocket of the powerful mining industry lobby – is to recalibrate the frame of reference for assessing and responding to the social and ecological impacts of the mining boom in the long-term interests of the nation.

The corporate power of the mining industry, especially to lobby governments, state and commonwealth to influence policy making in Australia is alarming. As Cleary points out, “Not only did the miners change the prime minister and change government policy, they went on to brag about how their coup had stopped similar schemes from spreading around the world.”

The gaze of most state politicians in particular has been transfixed on the short-term economic benefits shared by so few.

The Queensland government’s endorsement of the BHP Billiton Mitsubishi Alliance proposal at Moranbah to allow up 100 per cent of workers to be non-resident is a more recent example of Cleary’s complaint about the impact of corporate power. It even contradicts Queensland’s own resource sector housing policy that workers should be allowed the choice where they live and work in the industry. The Moranbah mining community, with its long history of communal solidarity, is now destined to become surrounded by thousands of non-resident workers housed in dongas.

While the Queensland government introduced social impact assessment processes as part of the Environmental Impact Assessment approval process in September 2010 in part to address these concerns, it has failed to regulate the long-term cumulative impacts of resource development.

Why? State governments have a fundamental conflict of interest in setting themselves up as the arbiters in disputes over access to agricultural land, the granters of exploration licenses and the approvers of environmental and social impact statements, precursors to project development consent from which royalty payment to the state flow.

Cleary’s book offers a much needed critique of the collision of self-interest between state governments and mining companies which both profit handsomely from the speedy extraction of resources.

Given the state governments’ conflict of interest and susceptibility to being courted by corporate power, the need for a commonwealth power to override state powers in the interest of the more effective long-term regulation of the mining industry is long overdue. This week, Australia got one, thanks to the insistence of independent MPs Tony Windsor and Rob Oakeshott, who supported the Mineral Resources Rent Tax (MRRT) in return for the overhaul of the environmental approval processes and legislation.

The passing of the MRRT tax through the lower house this week, and along with it amendments to the environmental legislation and the establishment of an Independent Expert Scientific Committee, gives some hope for optimism that Australians may share more of the benefits and the less of the burdens from the boom.

Too Much Luck can be credited for fanning the shift in public opinion and political climate in support of the MRRT. We are at a critical moment in the boom, when strong, not weak, Australian Government leadership through the policy-making processes of federalism are absolutely vital, if, to use one of Cleary’s metaphors, Australia is not to look like Nauru, “but on a continental scale”.

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Australia is in the midst of the most remarkable resources boom in its history: both mining investment and the terms of trade are at record levels and investment is continuing to increase further. But the domestic economy is slowing: real GDP rose by only 1.4 per cent over the past year, while employment has been virtually flat in the first nine months of 2011, with unemployment rising a little. How can both of these things be happening at the same time? The answer to this question is of real importance for monetary and fiscal policy, which are both set to offset the expansionary effects of the resources boom. The continuing uncertainty about the world economy further clouds the issue.

The current mining boom has been reshaping Australia, and has made most of us much better off. Imports of all types are much cheaper, and the value of shares in superannuation portfolios has risen. But the boom also has negative effects, hitting trade-exposed industries such as manufacturing, tourism and educational services, and the communities and regions that depend on them.

For eight years, leaving aside the brief period of the global financial crisis, the mining boom has delivered increased net benefits each year. The Australian economy and its policy-makers have coasted along in the wake of these benefits. But now the situation has changed. While the boom continues, its net benefits have peaked. On a year-on-year basis it is no longer boosting growth in the Australian economy nor contributing to improved welfare for Australian citizens.

Australia must find new sources of growth, and adjust to a new reality of a high exchange rate but without further stimulus from mining. The boom has underwritten the economy for almost a decade. The new challenge is to shape policy in quite different circumstances for the next decade.

In the immediate future this will mean further interest rate cuts and a shift to a more expansionary fiscal policy. The once laudable goal of achieving a budget surplus in 2012-13 is now inappropriate. The federal government should move to a more expansionary fiscal policy rather than pursuing an outdated commitment for political reasons. But the longer-term challenges will be more complex.

Understanding the resources boom

Traditionally, Australia has been said to be experiencing a resources boom if either the level of resource investment as a share of GDP or the terms of trade (the ratio of export prices to import prices) were at high levels. In the current boom both variables are at record levels simultaneously, for the first time in Australia’s history. This means that the analysis of this unique episode is complex, with interweaving price and volume effects at work.

The net impact of the resources boom can be analysed as the overall effect of four key factors: (i) the impact of lower import prices on the real value of domestic incomes; (ii) the impact of higher $A export prices on the incomes and financial assets of Australian owners of resource companies; (iii) the impact on domestic economic activity and employment of the Australian content of resource investment; and (iv) the negative impact of the higher real exchange rate on trade-exposed sectors such as manufacturing, tourism and educational services. While most focus has been on mining investment, the first of these has probably been the most important in macroeconomic terms.

In analysing the overall impact of the boom it is also necessary to distinguish between level and change effects. The level effect has been building over eight years, with an increasing impact each year except for the period of the global financial crisis. But the incremental effect – the change in the impact from year to year – is more important for policy formulation, and it is widely assumed that the boom will have a continuing positive incremental impact.
on the economy in the years ahead. By contrast, it seems that the net incremental effect has now peaked – the level effect, while still positive, is no longer increasing.

The reason for this change is that the positive effects of the boom have ceased or become more muted, while the negative effects are becoming more pronounced.

First, the rise in the exchange rate has boosted the real incomes of all Australians who use imported goods and services, as we all now do to varying degrees. We can buy more imported cars, foodstuffs, electrical and electronic goods and overseas trips, or save on our spending on imports and use the money elsewhere. As a result of these and other factors real household income per capita increased by 2.8 per cent per annum over 2002-11, nearly three times the rate of the previous twenty years. It 2011 it is about 18 per cent higher than it would have been had the earlier trend prevailed. But the sharp rise in the exchange rate has come to an end, as has real income growth from this source.

Secondly, the mining boom is so massive that, even though the sector is now about 80 per cent foreign owned, the rise in mining incomes has flowed through to the value of assets held by many Australians. Reflecting this and other factors, between 2002 and 2007 the real per capita assets of Australian households increased by 8 per cent per annum, about three times the long run rate. But this source of benefit has also come to an end. Share prices are well below their earlier peak, real house prices are falling and many of the biggest new mining projects are effectively 100 per cent foreign owned.

Thirdly, mining investment continues to increase, and the Reserve Bank predicts that it could reach 7 per cent by 2013-14. But what matters for the stimulus is the local content of this huge investment, which appears to be falling quite sharply. The emphasis is shifting to large LNG projects, often offshore, and the high $A is reducing the competitiveness of Australian suppliers.

An extreme case of the shift in composition is the $12 billion Prelude LNG project, being built by Shell for drilling offshore in Western Australia. This involves the construction in Korea of a platform three times the size of the MCG, which will contain the drilling rig, the liquefaction plant and docking facilities. It will be towed to the gas location and all aspects of production and export will be undertaken at that location. The local content implications of such a project are minimal indeed.

Finally, as the Australian dollar stabilises at or above parity with the US dollar the position of trade-exposed local industries is becoming more difficult. Producers and customers do not respond much to volatility in the exchange rate. But when a major change becomes entrenched more serious decisions are made to change the source of supply or spending. This is most evident in manufacturing, tourism and international education.

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Implications for policy

Monetary policy has been “mildly restrictive,” in the words of the Reserve Bank, for some time now, being directed to offset the presumed incremental expansionary impact of the resources boom and by concern about inflation running above the target band. Neither of these concerns are still relevant, the first for the reasons outlined above and the second because it is clear that there is now no inflationary problem in Australia that needs to be addressed by a restrictive monetary policy.

Over the three years to the June quarter of 2011, five sub-groups, out of a total of ninety in the CPI and accounting for about 12 per cent of the index, have provided 40 per cent of the growth in the CPI, and 44 per cent of the growth over the past year. The five groups are lamb and mutton, fruit, vegetables, utilities and tobacco. These five groups in total have risen by 11.9 per cent per annum over the past three years, while the rest of the CPI rose by 1.8 per cent; over the past year the five groups rose by 16.7 per cent and...
the rest of the index by 2.2 per cent. Excluding these items, inflation has been well within the Reserve Bank’s target range of 2-3 per cent on average over the cycle.

There is no reason for thinking that the rapid growth in prices for these items can be significantly influenced by monetary policy. Prices for the food items reflect seasonal supply conditions, while increases in tobacco prices are driven by regular increases in tax rates. The reasons for the rapid growth of utility charges (11.5 per cent per annum over three years) are far from clear, but it is unlikely that price changes for this group would be greatly affected by a restrictive monetary policy. On 1 November 2011 the Bank recognised that the economy was slowing and the threat of inflation was easing, and cut interest rates accordingly, moving to a more neutral stance.

Fiscal policy is currently severely rather than mildly restrictive, with the federal government overseeing the most rapid process of fiscal consolidation for over 40 years.

Fiscal policy is currently severely rather than mildly restrictive, with the federal government overseeing the most rapid process of fiscal consolidation for over 40 years. In the context of a perceived powerful continuing stimulus from the resources boom and in pursuit of a balanced budget by 2012-13, the government proposes to take $50 billion or 3.6 per cent of GDP out of the economy (on an underlying cash basis) over 2011-12 and 2012-13. Again, neither of these concerns is currently relevant to Australia’s economic situation. Partly reflecting the considerations outlined above and ongoing issues in the European Union and the United States, the outlook for the Australian economy is now much weaker than that presented in May in the 2011-12 Budget Papers, in spite of the continuing resources boom. Real GDP has grown by 1.9 per cent per annum over the last three years, and GDP growth for 2011-12 is now likely to be closer to that figure than to the forecast 4 per cent, while employment growth will fall well short of the 1.75 per cent forecast.

Australia’s fiscal position is very strong, with Australian government net debt at only 6.1 per cent of GDP at the end of 2010-11. It will be strengthened further over the next decade, even under the current taxation regime, as tax revenue from higher resource prices and from projects currently under construction begins to flow in. This revenue has been delayed by capital losses incurred in the global financial crisis and by depreciation allowances being generated by high levels of capital investment. The scale of both the investment and the depreciation allowances being generated is massive, but tax revenues from the resources sector will rise strongly when these allowances are used up.

It is no longer appropriate for the government to pursue a budget surplus in 2012-13. It should move away from this target and adopt a much less restrictive fiscal policy, more supportive of economic growth. Unfortunately the government continues to reiterate its commitment to this target, and has foreshadowed further cuts to this end in the context of the Mid-Year Economic and Fiscal Outlook to be released before the end of the year. This could prove to be a serious mistake, based on political rather than economic judgements.

Peter Sheehan is Director of the Centre for Strategic Economic Studies at Victoria University.
EXPLORING ISSUES

ABOUT THIS SECTION

‘Exploring issues’ features a range of ready-to-use worksheets relating to the articles and issues raised in this book.

The activities and exercises in these worksheets are suitable for use by students at middle secondary school level and beyond.

As the information in this book is gathered from a number of different sources, readers are prompted to consider the origin of the text and to critically evaluate the questions presented.

Does the source have a particular bias or agenda? Are you being presented with facts or opinions? Do you agree with the writer?

The types of ‘Exploring issues’ questions posed in each Issues in Society title differ according to their relevance to the topic at hand.

‘Exploring issues’ sections in each Issues in Society title may include any combination of the following worksheets: Brainstorm, Research activities, Written activities, Discussion activities, Quotes of note, Ethical dilemmas, Cartoon comments, Pros and cons, Case studies, Design activities, Statistics and spin, and Multiple choice.

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WORKSHEETS AND ACTIVITIES
Brainstorm, individually or as a group, to find out what you know about mining in Australia.

1. What is a 'mining boom'?

2. How does Australia regulate mining?

3. What is the Minerals Resource Rent Tax?

4. What are the 22 significant minerals mined in Australia?
Brainstorm, individually or as a group, to find out what you know about mining in Australia.

5. What is a ‘resources curse’?

6. What are some of the barriers to ongoing mining in Australia?

7. What are some of the proposed solutions to skilled labour shortages in Australia’s mining industry?

8. How has the Native Title Act affected mining in Australia?
Complete the following activities on a separate sheet of paper if more space is required.

Consider the following five mineral resources and their importance to Australian mining. List at least 4 key points for each of these minerals:

**Iron ore:**

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**Coal:**

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**Bauxite:**

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**Uranium:**

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**Gold:**

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DISCUSSION ACTIVITIES

Are you for or against the current mining boom in Australia? Form two opposing groups and compile a list of points with which to debate the negative and positive impacts that the latest mining boom is having on Australia.

NEGATIVE IMPACTS

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POSITIVE IMPACTS

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After reading each of the following statements, consider your own position on the opinions expressed and explain why you agree or disagree. You may wish to discuss the statements in pairs, or use them as starting points for group debates.

1. We believe that if the skilled migration processes were made more efficient and effective, that we could help ease the burden of the skills shortage to the resources industry, particularly in those areas that we’ve identified may not be able to be filled by the current supply from Australia. (Tom Reid, Australian Mines and Metals Association, p.16)

2. We need to put our minds to doing the things that will soften the blow when the minerals boom ends. Now. While we still can. Rather than just blowing the dough. Hence the importance of a resources tax to prepare the economy for the end of the boom. (Dr Frank Gelber, BIS Shrapnel, p.18)

3. At the risk of sounding like a broken record, the rise in Australia’s terms of trade over the past five years is the biggest such event in a very long time. It reflects powerful forces at work in the global economy to which our country is more favourably exposed than most. It presents opportunities and challenges. With a large boost to income, we need to think about the balance between saving and spending, because we do not know the permanent level of the terms of trade. I argue for erring on the side of saving for the time being, and I think this is by and large what is happening so far. With a large change in relative prices, we should also expect to see a good deal of structural change in the economy. (Glenn Stevens, Governor of the Reserve Bank of Australia, p.31)

4. Australia’s stark comparative advantage in mining is both a boon and a bane to our economic development. Investment in the mining industry as a share of Australia’s GDP has already reached unprecedented levels and looks set to double in coming years. The mining industry is almost single-handedly responsible for Australia experiencing close to trend annual growth while the rest of the developed world languishes. (Professor Ian Harper, p.32)

5. Australia remains in a strong position to continue to mine almost anything virtually anywhere to meet growing Asian demand – the mineral resources are certainly known. The trick will be managing increasingly complex social issues and environmental impacts, especially the move away from fossil fuels and uranium. (Dr Gavin Mudd, p.35)

6. The massive growth in the profits of the mining industry delivers only trivial benefits to those who are not directly involved in the industry. Mining employs just 217,000 people directly and creates around that many jobs again indirectly. For the other 20 million Australians the mining boom is delivering more pain than gain. (Dr Richard Denniss, p.39)

7. The profit margin of mining is, on average, 37 per cent. Compare this to manufacturing, which enjoys a 6 per cent profit margin, or retail, which sits at 4 per cent. By now, the fairytale story of mining is less about happily ever after, and more about the Haves and the Have-Nots. (Senator Larissa Waters, Australian Greens, p.41)

8. The resource investment stampede is squandering Australia’s precious non-renewable fossil fuels, leading to a high dollar, inflation and interest rates, at the expense of manufacturing, education and tourism industries. (Professor Kerry Carrington, p.44)

9. The current mining boom has been reshaping Australia, and has made most of us much better off. Imports of all types are much cheaper, and the value of shares in superannuation portfolios has risen. But the boom also has negative effects, hitting trade-exposed industries such as manufacturing, tourism and education, and the communities and regions that depend on them. (Professor Peter Sheehan, p.46)
Complete the following multiple choice questionnaire by circling or matching your preferred responses. The answers are at the end of the next page.

1. Australia is the world's leading producer of which four of the following minerals:
   a. Iron ore
   b. Alumina
   c. Zircon
   d. Gold
   e. Uranium
   f. Rutile
   g. Bauxite
   h. Nickel

2. What percentage of the Australian continent is affected by mining:
   a. .02%
   b. .25%
   c. 2%
   d. 12%
   e. 20%
   f. 22%

3. Which of the following areas were not the source of major gold deposits during the Australian gold rushes:
   a. Ballarat
   b. Bathurst
   c. Bendigo
   d. Broken Hill
   e. Coolgardie
   f. Glen Osmond
   g. Kalgoorlie
   h. Kapunda
   i. Mount Isa
   j. Newcastle

4. What percentage of Australian mining is foreign-owned:
   a. 8%
   b. 18%
   c. 38%
   d. 83%
   e. 98%

5. In which Australian State or Territory is there no mining (apart from aggregate quarrying):
   a. Australian Capital Territory
   b. New South Wales
   c. Northern Territory
   d. South Australia
   e. Queensland
   f. Tasmania
   g. Victoria
   h. Western Australia
MULTIPLE CHOICE

Complete the following multiple choice questionnaire by circling or matching your preferred responses. The answers are at the end of this page.

6. Respond to the following statements by circling either ‘True’ or ‘False’:

a. Gold was the first metal mined in Australia.  
   True / False

b. Australia is one of the world’s leading mineral resource nations.  
   True / False

c. Minerals are Australia’s largest export.  
   True / False

d. The population of Western Australia grew from 48,000 to 180,000 during the 1890s because of mining.  
   True / False

e. Japan is Australia’s largest trading partner.  
   True / False

f. The current mining boom is the only mining boom Australia has ever experienced.  
   True / False

g. As a result of mining, wages rose by 250% in Victoria between 1850 and 1853.  
   True / False

h. ‘Dutch disease’ is a term that refers to an illness which first affected the mining industry in Holland.  
   True / False

i. FIFO stands for fly in/fly out employment.  
   True / False

j. The main industries in Australia being negatively affected by the current mining boom are manufacturing, tourism and education.  
   True / False

MULTIPLE CHOICE ANSWERS

1 = b, c, f, g; 2 = a; 3 = d, f, h, i, j; 4 = d; 5 = a; 6 – a = F, b = T, c = T, d = T, e = F, f = F, g = T, h = F, i = T, j = T.

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Australia is a leading producer of minerals for the world and produces some 22 minerals in significant amounts from more than 300 operating mines. (p.1, 4)

Australia is in the top mineral producers and has a large inventory of resources of most of the world’s key minerals commodities. (p.1, 5)

Australia has the largest identified resources of lead, nickel, rutile, silver, uranium, zinc and zircon. (p.2)

Mining in Australia dates back to around 1800 when coal was mined near Newcastle. (p.2)

Gold mining played a major role in Australia’s development following the initial gold rushes in the 1850s-1860s, and in the 1890s. (p.2)

By the 1850s, Australia was producing almost 40% of the world’s gold. (p.3)

In the early years of the 20th century, mining activity in Australia began to decline despite a continued rise in the value of mineral production. (p.3)

Australia is the largest producer of gem and industrial diamonds. (p.4)

Less than 0.02% of Australia is affected by mining. (p.4)

The minerals industry is Australia’s largest export earner with mineral exports accounting for nearly 50% of the annual value of total exports of goods and services. (p.6)

The value of Australian mineral exports (excluding petroleum, natural gas and petroleum refinery products) increased from $45.9 billion in 2002-03 to a record level of $139.4 billion in 2008-09. (p.6)

In 2009-10, mining had the highest capital expenditure ($45.6 billion), highest wages and salaries per employee ($177,500), highest sales and service income per person employed ($1.06 million) and profit margin (33.4%). (p.7)

Australian exploration expenditure in 2010-2011 rose by $718 million to $2,951 million, an increase of 32%. (p.8)

In the period 2006-07 to 2010-11, the value of exports from the mining industry more than doubled. (p.10)

In 2009-2010, more than 85% of Australian merchandise exports to China comprised primary products. (p.11)

In 2009-10, China was Australia’s largest market for iron ore and concentrates – accounting for almost 72% of all Australian ore exports. (p.14)

Australia’s daily shipments of iron ore exceed 1 million tonnes and the figure is forecast to climb to 2 million tonnes a day within the next 5 years. (p.14)

In Australia, approximately 2.2% of the workforce are in the mining industries. (p.16)

The distinguishing features of a mining boom are significant increases in mining investment and/or mining output, which go on to have important macroeconomic consequences. (p.22)

Measured in terms of value added to GDP, the gold mining boom greatly exceeded all subsequent mining booms. At its peak in 1852, mining comprised about 35% of GDP. (p.23)

Wages rose sharply, at first in mining, then across the country as labour flowed to the diggings. Between 1850 and 1853, wages in Victoria rose by 250%. (p.23)

The population of WA increased from 48,000 to 180,000 during the 1890s; and the population of Broken Hill grew from 6,000 in 1888 to almost 20,000 in 1891. (p.24)

Mining investment rose from about 1/2% of GDP in 1960 to a peak of almost 3% in the early 1970s. (p.25)

Investment in mining started to pick up in the late 1970s and increased sharply in 1981 and 1982. (p.25)

Past mining booms have lasted approximately 15 years before resource depletion, or international or domestic developments, acted to slow economic activity and bring the boom to an end. (p.26)

Global consumption of coal has increased by about 50% over the past decade and consumption of iron ore has increased by 80% since 2003. (p.29)

Coal shipments have been running at a rate of around 300 million tonnes a year. (p.29)

Australia’s terms of trade have risen sharply, to be about 65% above the 20th century average level. (p.29)

Mining sector capital investment has risen from an average of around 2% of GDP over the past 25 years to about 4%. (p.29)

Investment in the mining industry as a share of Australia’s GDP has already reached unprecedented levels and looks set to double in coming years. (p.32)

Australia and Brazil have both found massive iron ore resources and now dominate seaborne global iron ore exports. (p.34)

The transition away from fossil fuels to meet the climate change challenge will remain a key global test of mining’s environmental performance. (p.35)

A significant global downturn, particularly one that affects China and commodity prices, is a key risk to Australia. (p.36)

The Australian economy is now in its 20th year of continuous growth. (p.37)

The biggest productivity-enhancing reforms in Australia’s history occurred largely in the 1980s and 1990s with the reduction of barriers to international trade, labour market reforms, deregulation of financial markets, and the floating of the Australian dollar. (p.37)

Mining employs just 217,000 people directly and creates around that many jobs again indirectly. (p.39)

Mining represents about 9.2% of GDP, roughly the same as manufacturing. (p.40)

Mining will realise $600 billion in profit over the next decade. (p.41)

83% of Australian mining is foreign-owned, and these profits will be sent back overseas. (p.41)

The profit margin of mining is, on average 37%. Manufacturing has a 6% profit margin, and retail is 4%. (p.41)

There are estimated to be around 150,000 non-resident workers directly employed by the resources sector, anticipated to rise to around 200,000 by 2015. (p.44)

State governments who grant mining licenses and regulate the industry earn a share of the minerals extracted through royalties. (p.45)
Commodities
In relation to stock trading, a commodity is any unprocessed or partially processed good, such as grain, fruits, and vegetables – or in the case of mining, a commodity is a precious metal.

‘Dutch disease’
This term refers to the deindustrialisation of an economy as a result of the discovery of a natural resource, as occurred in Holland with the exploitation of North Sea Oil, which raised the value of the Dutch currency, making its exports uncompetitive and causing its industry to decline.

Gross domestic product
GDP refers to the market value of all officially recognised final goods and services produced within a country in a given period. GDP per capita is often considered an indicator of a country’s standard of living.

Gross national product
GNP is the market value of all products and services produced in one year by labour and property supplied by the residents of a country. Unlike GDP, which defines production based on the geographical location of production, GNP allocates production based on ownership.

Mineral
A naturally occurring substance which has a definite chemical composition and crystal structure. There are many thousands of types of minerals found on Earth and also a few found in lunar rocks and meteorites. Minerals affect every aspect of our lives – the cars we drive, the paint on our walls, the electronic devices we use are all or in part made of minerals. As our biggest export earner, minerals are also vital to Australia’s economy.

Mineral exports
The minerals industry is Australia’s largest export earner. Mineral exports account for nearly 50% of the annual value of total exports of goods and services in recent years. In current dollar terms, Australian mineral exports (excluding petroleum, natural gas and petroleum refinery products) increased in value from $45.9 billion in 2002-03 to a record level of $139.4 billion in 2008-09, dominated by coal, iron ore, bauxite/aluminiun, copper, nickel and gold. The overall increased value of mineral exports in this period reflects increases in both production and commodity prices. For some years Australia has been the world’s largest exporter of black coal, iron ore and gold.

Mining tax
The Minerals Resource Rent Tax (MRRT) is a tax on profits generated from the exploitation of non-renewable resources in Australia. The tax, levied on 30% of the “super profits” from the mining of iron ore and coal in Australia, was introduced amid controversy in 1 July 2012. A company will only have to pay the tax when its annual profits reach $75 million, a level designed so as not to burden small business. Around 320 companies are affected by the tax.

Mining boom
Australia is richly endowed with natural resources, and its economy is currently growing partly in response to strong demand for minerals from emerging countries, particularly China. Features of the latest mining boom include: the terms of trade are high and are expected to remain so for a considerable period; appreciation of the real exchange rate as commodity exports rise; pressure on some domestic manufacturing and trade-exposed sectors; parts of the non-tradeable services sector such as road transport are likely to grow relatively slowly, and sectors aligned with mineral resources are showing promising signs of growth.

Mining booms
The distinguishing features of a mining boom are significant increases in mining investment or mining output, usually both, which go on to have important macroeconomic consequences. Australia has experienced five major mining booms during the past two hundred years: the 1850s gold rush; the late 19th century mineral boom; the 1960s/early 1970s mineral and energy boom; the late 1970s/early 1980s energy boom; and the current boom, which is again both a mineral and energy boom.

Natural resource royalties
Natural resource royalties paid by mining businesses are collected by State and Northern Territory governments for mining onshore and up to three nautical miles offshore, and by the Australian Government outside that area. The basis of the mineral royalties varies between States. Some royalties are based on the value of production at mine site, others on sales value, gross proceeds or profit. The rates imposed also vary between commodities.

Patchwork economy
The use of this term alternates with ‘two-speed’ and ‘multi-speed economy’. The term ’patchwork economy’ and its variants is used by some observers to describe how the benefits of the mining boom haven’t reached everyone. Most notable is the mineral wealth currently generated by Western Australia, which far exceeds other parts of the country. The differences aren’t just between States or towns or industries, but also at a micro level between businesses, households and individuals.

Resources curse
Resources curses can manifest in many forms. One form is the so-called ‘Dutch disease’ (see above). Another ‘curse’ of having natural resources is that it can put a country at the whim of often very volatile international commodity markets, which can lead to increased income volatility. Resource wealth can also lead to policy complacency, as do many other unearned windfalls. This can manifest in a stymied reform agenda – after 20 years of continuous growth, Australia has had little impetus for reform. In some cases, government mismanagement of resources, extractive practices by governments, or even conflicts can occur as a result of resource wealth.

Skills shortage
When there are not enough skilled workers to meet employers’ demands. Unprecendted labour demand in the resources sector has resulted in the poaching and diversion of trained workers from other industries to the mining industry, and also prompted plans by Australian mining and construction companies to embark on an overseas recruitment drive with Australian Government support.
Websites with further information on the topic

Australian Mining: This is our Story  www.thisisourstory.com.au
Australian Bureau of Statistics  www.abs.gov.au
Australian Coal Association  www.australiancoal.com.au
Department of Agriculture, Fisheries and Forestry  www.daff.gov.au
Geoscience Australia  www.ga.gov.au
Minerals Council of Australia  www.minerals.org.au
The Australia Institute  www.tai.org.au

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