92

INFORMATION PAPER

# The contribution of foreign direct investment and the mining industry to the welfare of Australians

committee for economic development of australia

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**Steve Brown**, BEc (ANU), MBA (Melbourne Business School), has been a Director of Access Economics since 2006. He has extensive experience in quantitative economic analysis, economic and public policy analysis at both the domestic and international levels. He is an expert in general equilibrium modelling and sectoral analysis, having worked in the field for over 15 years in both the government and private sectors. Steve was formerly the head of global economic modelling at the Australian Bureau of Agricultural and Resource Economics (ABARE) and Manager of Economic Modelling at Tasman Economics then ACIL Tasman. He has also worked in the Industry Commission (now the Productivity Commission) and the Bureau of Industry Economics.

# foreword

CEDA's latest information paper outlines the contribution of foreign direct investment (FDI) to the Australian economy, particularly in relation to mining. It is authored by Dr Brian Fisher, Paul Newton and Steve Brown from Concept Economics.

The paper continues a theme CEDA last explored in its 2007 *Growth Report 58: Competing from Australia*. That report listed the key elements for the future success of the Australian economy. Among them was the need to encourage economic openness and flexibility and support inward and outward FDI. Participation in global supply chains was identified as a significant challenge in Competing from Australia. On this point, Fisher *et al*. support the view that one of the advantages of FDI by multinational firms is that it increases the probability of a country's participation in global supply networks.

The paper acknowledges that Australians remain sceptical of foreign investment, with 90 per cent of them agreeing that the government has a responsibility to ensure that major Australian companies are kept in majority Australian control. The paper addresses, head on, historical concerns about the potential negative impact of FDI on the Australian economy.

It conducts an empirical analysis of additional FDI in coal bauxite and iron ore to assess the impacts of increased mining activity on the Australian economy. The results show that under each scenario considered, there is a net economic benefit conferred on the Australian economy as measured by increases in GDP and household consumption.

The paper's release coincides with today's CEDA Forum on Foreign Investment, being held in Canberra. CEDA convened this forum to discuss the role of foreign investment in Australia's economic development.

While the paper does not aim to review government policy but simply illustrate the importance of FDI, it provides an important empirical basis for those who do wish to advance ideas for improving Australia's openness and flexibility.

We would like to thank Dr Fisher, Paul Newton and Steve Brown for their work. It makes an important contribution to business and policy debate. It is particularly important in the current global environment, where concerns about a return to a more protectionist sentiment are on the rise in the wake of the global financial crisis.

David Byers
Chief Executive, CEDA

# 1 introduction

Economic growth and development are a function of many factors. Typically, to produce a good or service that some other member of society wants to purchase, the producer needs access to some land, labour, capital (equipment or perhaps a factory for example) and skills (human capital). There are six main sources of growth in an economy.

**First**, output might grow following an increase in effort. In other words, labourers might work more hours per week or a greater proportion of the population might enter the workforce (labour market participation increases).

**Second**, output might also grow as a consequence of reducing current consumption and increasing savings in order to invest in new capital equipment so that the total stock of capital grows thus enhancing labour productivity. In an open economy the source of savings may be either domestic or foreign. If foreign savings are utilised the economy has the potential to grow faster than it otherwise would have.

**Third**, output may grow as a consequence of foregoing current consumption in order to invest in education, thus enhancing the stock of human capital and therefore raising labour productivity.

**Fourth**, an economy might become more efficient in the way capital, labour and land are combined through for example economies of scale or specialisation and international trade.

**Fifth**, growth might be enhanced by acquiring new knowledge and production techniques again increasing the productivity of the basic factors of production.

**Finally**, an economy might grow following the discovery of new mineral and energy resources. This growth arises not only as a result of the growth of the mining sector but also because of the stimulus provided to related domestic industries. For example, following the discovery of gold at Ophir in New South Wales in 1851, 'the blacksmiths could not turn off the picks fast enough, and the manufacture of cradles was the second quickest business of the place' (Doran 1984, p.39).

> The fortunes of a country are also influenced by the terms of trade that it faces where the terms of trade is defined as the prices received for exports divided by the prices paid for imports. If, for example, a country is in a position to take advantage of high export prices for some commodities in which it specialises in production by quickly expanding output when prices are strong then it will be better off then a competitor who is slow to respond because of capital shortages or infrastructure constraints.

Positioning an economy to take full advantage of each of these factors will lead to relatively high rates of growth. Of the six main sources of growth, this document emphasises the importance of investing in the capital stock and the irrelevance of the source of this investment. Central to the Australian story of investment and growth has been the role of foreign capital, which regularly supplements investment by Australians in our nation.

Despite the role and importance of foreign direct investment in Australia's development to date Australians typically remain concerned about 'selling the farm' to foreign entities. For example, the Lowy Institute (2008, p.6) found that 'An overwhelming majority (90 per cent) said they either 'strongly agree' or 'agree' that 'the government has a responsibility to ensure major Australian companies are kept in majority Australian control'. Further, those surveyed also 'distinguished between foreign private investment in Australia and investment by foreign government-controlled companies, widely believing the latter requires stricter regulation'. A majority of Australians opposed a foreign government controlled entity taking a controlling stake in a major Australian firm. While Australians were less opposed to an entity controlled by the governments of the United Kingdom (UK) or the United States (US) compared with a Chinese entity, the opposition remained significant.

Despite the importance of foreign investment to the economy, Australian policy appears to reflect the electorate's views. ITS Global (2008, p.29) describes the present situation:

> While regularly described by a long line of Treasurers as liberal, Australia's foreign investment regime is rated by the OECD [as] the sixth most restrictive of the 43 economies it monitors (only China, India, Russia, Iceland and Mexico are more restrictive). We estimate that the regime inherited by the Rudd Government probably costs Australia a minimum of $5.5 billion a year, equivalent to 0.6 per cent of GDP.

The aim in this paper is not to review government policy but simply to illustrate the importance of foreign direct investment, particularly in the mining industry, to Australians.

This paper is organised as follows. In the next chapter the role of foreign investment in stimulating growth is explored. In chapter 3 a brief history of the role of foreign direct investment in Australian development is provided, while in chapter 4 the importance of foreign investment in Australia today is outlined. In chapter 5 some of the common concerns about foreign investment are outlined and each is addressed in turn. Finally, in chapter 6 some empirical estimates are presented of the contributions that additional foreign investment can make to the wellbeing of Australians.

# 2 foreign investment and growth

The task of explaining why it is that some economies grow faster than others, leading to citizens of different countries experiencing vastly different standards of living, has preoccupied political philosophers (and later economists) since at least the mid to late eighteenth century. Broadly, the classical approach to the problem emphasised the importance of the *quantity* of physical capital available to an economy, whereas modern growth theory gives explicit consideration to the *quality* of physical and human capital available also, as well to the role of technical progress arising from the growth process itself (Abelson 2002). To these can be added institutional factors such as the structure of government and property rights, as well as cultural factors and openness to international factor flows.

Few would argue that having a more educated workforce could be detrimental to a country's growth prospects, or that an economy would suffer by having access to low cost funds for investment. However, in the minds of many there is a strongly-held qualification in the latter case that the *source* of the funds for investment is important, and that domestic funds are preferable to foreign funds. This paper attempts to dispel some of these concerns by drawing on the conclusions of recent research and outlining the key contributions that foreign investment has made to Australia over the past 150 years.

## 2.1 Some definitions

Broadly speaking, investment takes place when an individual forgoes consumption in the present in order to have a claim over a share of output in the future. Purchasing physical goods capable of producing goods and services in the future is one way of investing. Another way is to purchase financial assets such as shares or bonds that give the holder the right to a stream of returns as either interest payments or dividends.

*Foreign direct investment* refers to foreign firms investing in the equity of a firm in a host nation with the objective of obtaining a significant degree of influence over how the firm in the host nation is managed. The Australian Bureau of Statistics defines 'significant' as being' a 10 per cent or more holding of ordinary shares or voting stock. Subsequent transfers of capital to the subsidiary in the host country are also considered

foreign direct investment. Another important type of foreign investment is portfolio investment, which comprises remaining equity investment not treated as direct investment and debt investment such as bonds. Most of Australia's foreign liabilities are in the form of portfolio investments. Financial derivatives investment includes investment in swaps and forward contracts of various types. Finally, a category of other investment captures those investments that cannot be classified elsewhere (ABS 2001). Information about the levels and annual flows of foreign investment is discussed in chapter 5.

## 2.2 Why foreign investment is a good thing

### 2.2.1 Foreign investment increases the 'pool' of savings

In a closed economy (where the international trade in goods, services and capital is prevented), investment is limited by the amount the domestic citizenry saves. The growth in such an economy is limited by the availability of domestic savings to fund investment.

In a country like Australia where savings are low relative to other countries, without access to foreign savings competition among borrowers for funds would bid up the interest rate, causing only those projects with the highest expected present value to go ahead. Many useful projects would go unfunded.

Savers and investors in other nations are likely to have different preferences toward saving and face a different set of available investment projects. If their interest rate is lower than elsewhere in the world then domestic savers in those economies will benefit from being able to invest in overseas economies where returns are relatively high.

In the past the combination of relatively low domestic savings and a large number of profitable opportunities has led to Australia being a net importer of capital. Other nations, such as some of the major oil producers, are net exporters of capital at present.

Whether the capital inflow is used to purchase existing assets or to create new ones is not especially important. Competition among investors will ensure that the same rates of return apply for a given level of risk whether the returns come from the building of a new factory or the purchase of existing assets. Whatever form the influx of foreign funds takes it will reduce the rate of interest for each level of risk. This makes more investments in productive capacity possible.

### 2.2.2 Foreign investment facilitates portfolio management

Tying one's investment returns exclusively to the fate of a single country is not sound portfolio management. Diversifying your portfolio to include assets that are not strongly correlated with one another can lead to higher expected returns. It may be that there are positive expected present value projects available in Australia that are not taken up by Australian capital because existing domestic portfolios would require too-high returns to offset the increased risk to their portfolio of taking these investments on. Similarly, it is easy to imagine that a foreign investor may be looking to diversify their own portfolio of local assets to include something with relatively low correlation, perhaps in a foreign country. So even when two projects have the same objective rates of risk and return, different types of investors may find them more or less attractive depending on how the returns are correlated with the assets they already hold. As Hartley (1984) stresses, the very fact that Australians voluntarily hold foreign assets suggests that they consider themselves better off by having exposure to returns in other markets. Similarly, investors from overseas countries see advantage in taking positions in the Australian market.

### 2.2.3 Foreign investment encourages specialisation

Apart from portfolio considerations, another reason why various firms might view the same opportunity differently is that all firms, whether foreign or domestic, are likely to have a set of unique capabilities or specialisations. Mining firms are expert at extracting minerals at least cost, and software firms are adept at producing software.

A given investment opportunity in Australia may be unattractive to an Australian firm either because it lacks the appropriate skills to undertake the project profitably, or because there are opportunities elsewhere that will grant it a higher return by virtue of being more suited to its skills. If there is a foreign firm willing to take up the project because it is a good match to their capabilities then Australia benefits from the accompanying stream of economic activity and tax revenue.

The fact that many of the firms seeking to take up projects in other countries are large and multinational is not a surprise. Businesses grow by meeting consumer demand at less cost than their competitors, so their size is related to how effectively they have run their business in the past. Borensztein *et al*. (1998) emphasise that multinational enterprises are among the world's most advanced firms and the heaviest investors in research and development. By allowing these skilled multinational firms to invest in their areas of expertise, Australia can focus its own capital resources on those pursuits that exploit its comparative advantage.

### 2.2.4 Foreign investment creates spillovers

Dosi, Pavitt and Soete (1990, pp.129-30) and Barro and Sala-i-Martin (2004, pp.368-70) outline some of the spillovers associated with foreign investment. The diffusion of technology and managerial expertise is central to growth, particularly while economies are developing. In a study covering almost 70 developing economics across two decades Borensztein *et al*. (1998) find that foreign capital flows contribute more to growth than domestic investment because foreigners already familiar with new technologies can introduce them and adapt them at less cost. They identify a 'robust relationship between economic growth, foreign direct investment and human capital'. Furthermore, their findings include that a one-dollar increase in foreign direct investment increases domestic investment by more than one dollar, meaning that some domestically-owned firms are motivated to invest more heavily as foreign investment arrives.

There are likely to be spillovers from foreign investment for developed economies such as Australia as well. For example, there is evidence that past foreign direct investment has exposed Australian firms to greater competition, particularly in the services industry (Howe 1994, p.111). Krause (1984, p.307) suggests that foreign direct investment in Australia was often attracted to industries with high barriers to entry and differentiated products where pricing at marginal cost was not typical. His findings based on data from the 1960s are consistent with the idea that industries more heavily populated with foreign subsidiaries adopt technologies faster and are more technically-efficient. Commonwealth Treasury (1997) notes that greater integration of world factor flows means that new technologies spread rapidly among industrialised nations. Furthermore, labour movements associated with foreign direct investment are likely to lead to the transfer of managerial know-how. It stands to reason that foreign investors will be keen to have specialist managers overseeing a new venture.

### 2.2.5 Foreign investment can increase taxation revenue

Foreign investors are not excused from paying taxes to the government of the nation hosting their investments. Therefore, the host nation stands to benefit from taxation revenue raised from projects that would not have gone ahead without foreign investment or that would have gone ahead but would have earned smaller profits because they were not undertaken by the world's most skilled firms. Set against the revenue should be any tax concessions given to the foreign firm to attract their investment in the first place (these have been common in Australia's past) as well as the provision of any public services to the foreign investor's project.

The Australian Tax Office (ATO) has strong rules about the prices that foreign subsidiaries can charge their foreign parents for resources produced in Australia to prevent profits being realised in nations with lower company tax rates. One of the cornerstones of the ATO's approach to preventing international profit shifting is the principle of arm's length transactions whereby the ATO (2005) considers a firm's behaviour in light of an objective view of what a truly independent firm would have done. The ATO (2007) identifies international profit shifting as one of the tax issues it examined specifically in 2007–08.

### 2.2.6 Foreign direct investment increases global integration

One of the advantages of foreign direct investment by multinational firms is that it increases the probability of a country's participation in global supply networks (UNCTAD 2000, p.12) and its access to world markets (Howe 1994, p.137). As noted by Lall (1998) countries with access to foreign direct investment are more integrated in the global economy.

Greater global engagement can have numerous benefits for a firm. Ergas and Wright (1994, p.76) note three particularly important points. First, the likelihood that a firm closely monitors the performance of rivals is positively related to the firm's engagement in the international economy, suggesting that competition is greater when borders are open. Second, being engaged in international markets is the principal way that firms can access information and learning. Third, internationally-engaged firms are more likely to focus on consumer satisfaction, including in terms of product quality.

While Hanratty (1996) cites a widely-held concern that foreign ownership increases overseas cultural and political influence over the host nation, Krause (1984, p.305) imagines that an Australia with a suite of inwardly-focused policies would be a political 'hostage' to domestic vested interests, including monopolistic firms and unions.

### 2.2.7 Increased factor flows increase global standards of living

Stepping back from the benefits to a particular country of capital openness and engagement with the world economy, it is worth considering that if a society is interested in extracting the greatest possible benefits for living standards from each unit of a scarce resource, then it should want to be as productive as it can be with each unit. Interestingly, many people who hold strong views about the likelihood of the world's resources being one day exhausted and who feel compassion for people in other countries with lower standards of living also oppose 'globalisation'. What the integration of labour and capital markets does is to allocate the production of a good or service to whoever can utilise it at least cost. 'At least cost' means that as few as possible of the world's scarce resources are used in the production of the good or service. By having each firm – and more broadly, each nation – specialise in what it does most productively, the world's scarce resources can be stretched further, bringing the benefits of higher living standards to more of the world's population. Economic integration and openness to overseas capital is central to this process.

# 3 benefits to Australia from foreign investment

The discussion to now has dealt broadly with the benefits of foreign direct investment, irrespective of the host country. This chapter draws attention to the significant contribution foreign direct investment has made to economic growth in Australia since the mid-nineteenth century.

## 3.1 The colonies

The gold rushes beginning in the 1850s did more than lead to rapid population growth through immigration. They also changed the attitude of potential foreign investors to the prospects of a strong return on investment in Australia. Doran (1984) argues that the prevailing view before the gold rushes of the continent largely as a group of penal colonies was enough to deter British investment. She states that 'the inflow of overseas funds allowed Australia to overcome the most difficult impediment to further development which it had confronted in the 1840s: the dearth of capital equipment' (Doran 1984, p. 45). Moreover, the timing of this change of sentiment was fortuitous for Australia, as British investors were looking for new opportunities during and after the American civil war.

The new funds were needed to provide for a rapidly-growing population. Both public and private sectors sought and received foreign investment for the construction of effective transport links (both road and rail) between major centres of population (Cain 1970). The main line from Melbourne to Ballarat was financed by the Victorian Government by issuing bonds in London to the value of 8 million pounds (Doran 1984). Foreign funds were also important to the construction of urban infrastructure and accommodation as population grew.

Rural investment was mostly financed by fixed-interest loans through London and this investment allowed Australia to take advantage of relatively high prices for wool. Doran (1984, p.47) states that 'the experience of the pastoral industry showed how an industry can expand without causing severe problems for the rest of the economy if international flows of [capital and labour] are relatively elastic'. Cain (1970) argues that foreign labour, capital and 'know how' were important to extending the resource base of Australia more generally.

## 3.2 Drought, depression and war

A lot of the need for funds disappeared with the onset of the 1890s depression and drought. Public and private investment in the wool industry had generally lost its attraction (Sinclair 1970, p.16), and the investment that did take place was focused instead on building branch railway lines to open up new agricultural areas through the provision of irrigation and roads. This made it possible for new rural industries such as extensive cropping of wheat to develop.

In the years around the turn of the twentieth century, the focus for British capital inflows was mining (Butlin *et al*. 1982, p.18). In fact, mining was the only industry capable of sustaining the interest of foreigners during a period of net capital outflow that began in 1904 and lasted until the lead up to the first world war.

But foreign capital was again attracted to Australia just prior to the first world war by higher rates of interest in Australia relative to similar overseas countries.

Higher rates of interest on bonds issued by federal and state governments and semi government bodies continued to be important to attracting foreign funds in the 1920s (Sinclair 1970, p.13; Corden 1968, p.41) when there was a strong impetus to resettle returned soldiers.

In regards to private investment, Corden (1968) suggests that about 25 per cent of the private investment in commercial and industrial uses in the 1920s was financed by foreign funds, mostly raised in London.

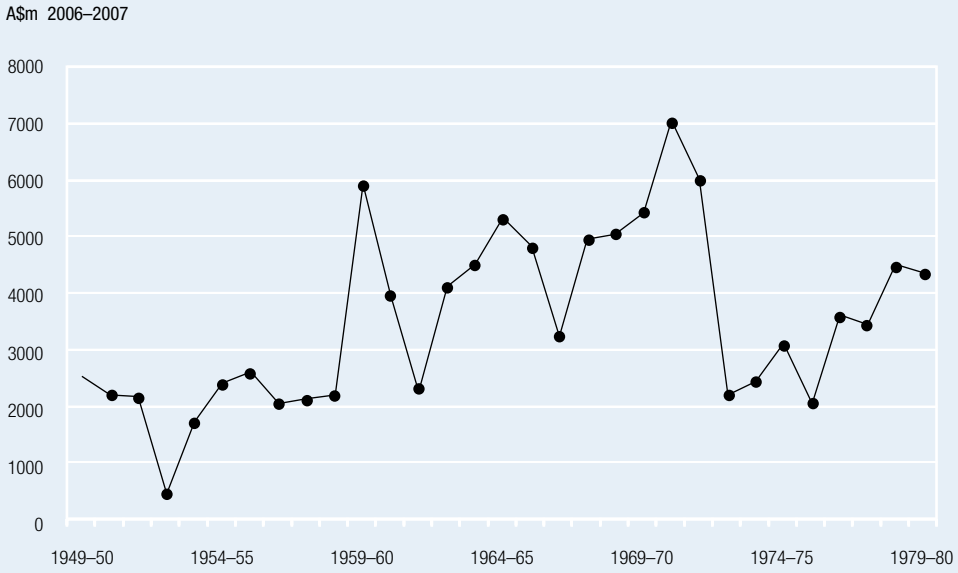
## 3.3 A post-second world war boom in foreign investment

Following the second world war, state governments competed actively with one another to attract foreign funds, offering various concessions and facilities. Restrictions on capital inflows were relaxed and there were no limits to the level of foreign ownership except in the areas of banking and media. Corden (1968, p.41) suggests that state governments prided themselves on their ability to attract the interest of foreign investors, 'encourag[ing] it as a keystone of Australian development'. There were plenty of attractions for foreign firms seeking to expand in the Australian industry and many investment opportunities could be taken up with foreign funds. Sinclair (1970) argues that capital formation in the aggregate is likely to have made an important contribution to economic growth. Corden (1968, p.41) estimates that about 10 per cent of Australian capital formation in the 20 years following 1949 was financed by foreign funds, predominantly from the UK and the US.

Two decades of strong US investment followed the end of the Korean war in 1953. Australian economic historian Noel G Butlin and his coauthors argue that these flows were the 'basic factors in leading not merely to rapid sustained growth in aggregate real output but also to …relatively high rates of growth of output per head' and that the US investment brought with it a great deal of technology and managerial skills (Butlin *et al.* 1982, p.112).

High barriers to imports prevented foreign firms from producing goods overseas and shipping them to Australia, but policies of capital openness ensured that these same firms could establish local operations behind the tariff walls (Krause 1984, p.300). Much of the funds took an equity form and was predominantly directed at import-replacing manufacturing projects (Cain 1970, p.71). Overall, Butlin *et al.* (1982, p.44) argue that the policy of government support for foreign investment appears to have reaped considerable benefits for Australian residents in the area of manufacturing. Investment in oil and petrol distribution was also important.

**FIGURE 3.1:**
**FOREIGN DIRECT INVESTMENT, NET INFLOWS, 1949–50 TO 1979–90**




Source: Krause (1984, p.301).

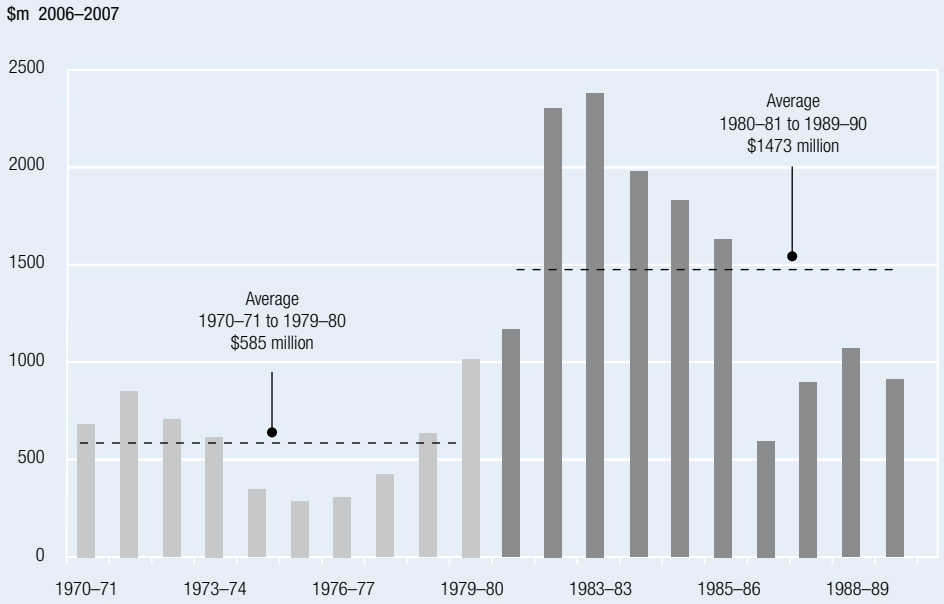
At the same time, Australian investment overseas was curtailed by the fact that the Australian government hindered outflows through exchange rate controls to protect foreign exchange reserves under a policy enacted prior to the second world war (RBA 2002). The effect of promoting inflows and restricting outflows from the second world war to the early 1970s was to increase the net inflow position substantially (Figure 3.1).

## 3.4 A change of attitude to the detriment of Australia

Growing political concern about foreign direct investment was formalised in legislation by the McMahon government in 1972. By that time, it began to emerge that some of the tax concessions offered in the past to attract foreign investment may have been overly generous. Some expressed concerns that Australia was 'selling off the farm' to foreigners more generally but this was not the first time misgivings about foreign ownership had been raised – high profits earned by Holden and passed to its US parent in the 1950s had gained attention previously (Corden 1968). government restrictions were extended later by the Whitlam and Fraser Governments, the last of which established the Foreign Investments Review Board (FIRB) that still oversees foreign investment today. Krause (1984, p.303) argues that the tightening of controls in the 1970s led to a serious reduction in minerals exploration. ABARE (2007) reports that private expenditure on petroleum exploration was about two-thirds lower in real terms in 1975–76 than it had been only four years earlier (Figure 3.2). Furthermore, average real expenditure in the decade beginning 1970–71 was $585 million, 40 per cent of its value in the following decade when restrictions were eased.

**FIGURE 3.2:**

**PRIVATE PETROLEUM EXPLORATION EXPENDITURE, 1970–71 TO 1989–90**




Source: ABARE (2007).

## 3.5 Post-float: Approaching the current era

The pendulum swung back toward liberalisation of foreign investment in the 1980s. Foreign banks were invited to apply for new banking licences in 1984 and various thresholds that triggered the need for government approval were increased in 1985. In 1986, proposals for investments in manufacturing and tourism were automatically approved unless they were not in the national interest (Hanratty 1996). From 1987, foreign takeovers of less than $5 million no longer required notification of the Australian Government, let alone approval, although greater restrictions were placed on foreign investment in residential real estate.

In 1992, thresholds were raised again and greater foreign investment was permitted in the financial sector. A requirement that new mines have 50 per cent Australian equity ownership was abolished and takeover of existing mines could take place unless it was deemed to be not the national interest (Hanratty 1996).

# 4 the current context

In 2008, the approach by the Australian government is to review all proposals for direct investment in vacant land, residential real estate, accommodation facilities, urban land corporations or trust estates and all direct investments by foreign governments (FIRB 2008). Threshold values above which projects require review apply to other asset types, starting at $5 million for heritage-listed, developed commercial real estate and rising to $913 million in the case of US private investment in sectors not prescribed as sensitive under the Australia–US Free Trade Agreement.

In addition, in February 2008 the Treasurer released a set of six principles that are 'considered in determining, on a case-by-case basis, whether particular investments by foreign governments and their agencies are consistent with Australia's national interest'. The application of these principles has relevance to any investment made by state-owned enterprises such as those in China and sovereign wealth funds. The principles are as follows (Swan 2008).

1. **An investor's operations are independent from the relevant foreign government.**
   In considering issues relating to independence, the Government will focus on the extent to which the prospective foreign investor operates at arm's length from the relevant government.

   It also considers whether the prospective investor's governance arrangements could facilitate actual or potential control by a foreign government (including through the investor's funding arrangements).

   Where the investor has been partly privatised, the Government would consider the size and composition of any non government interests, including any restrictions on governance rights.

2. **An investor is subject to and adheres to the law and observes common standards of business behaviour.**
   To this end, the Government considers the extent to which the investor has clear commercial objectives and has been subject to adequate and transparent regulation and supervision in other jurisdictions.

   The Government will examine the corporate governance practices of foreign government investors. In the case of a sovereign wealth fund (SWF), the Government would also consider the fund's investment policy and how it proposes to exercise voting power in relation to Australian companies.

   Proposals by foreign government owned or controlled investors that operate on a transparent and commercial basis are less likely to raise additional national interest concerns than proposals from those that do not.

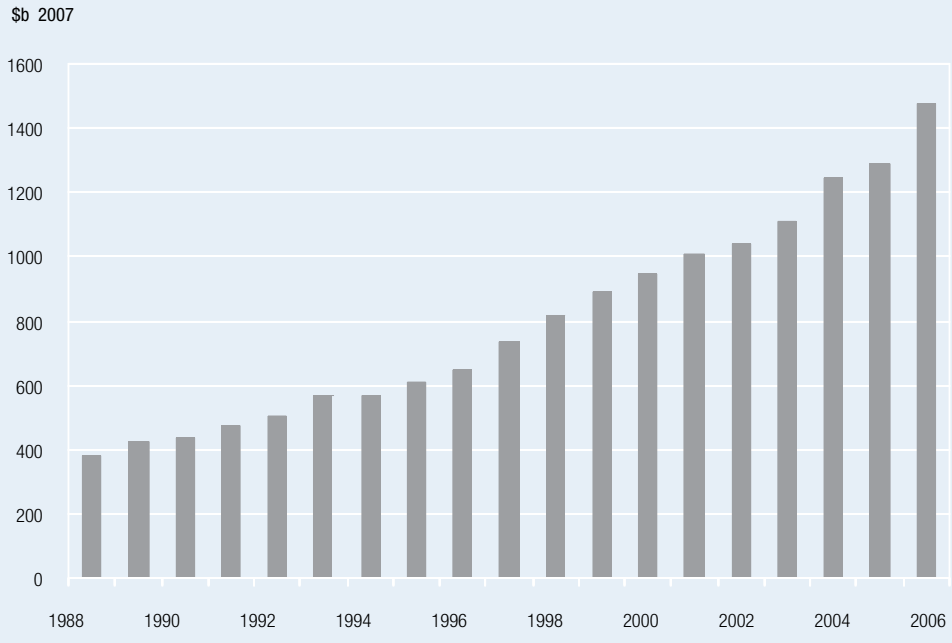
3. **An investment may hinder competition or lead to undue concentration or control in the industry or sectors concerned.**
   These issues are also examined by the Australian Competition and Consumer Commission in accordance with Australia's competition policy regime.
4. **An investment may impact on Australian Government revenue or other policies.**
   For example, investments by foreign government entities must be taxed on the same basis as operations by other commercial entities. They must also be consistent with the Government's objectives in relation to matters such as the environment.
5. **An investment may impact on Australia's national security.**
   The Government would consider the extent to which investments might affect Australia's ability to protect its strategic and security interests.
6. **An investment may impact on the operations and directions of an Australian business, as well as its contribution to the Australian economy and broader community.**
   The Government would consider any plans by an acquiring entity to restructure an Australian business following its acquisition. Key interests would include impacts on imports, exports, local processing of materials, research and development and industrial relations.

   The Government would also consider the extent of Australian participation in ownership, control and management of an enterprise that would remain after a foreign investment, including the interests of employees, creditors and other stakeholders.

While the application of these principles need not restrict the flow of foreign investment into Australia, it does add another set of hurdles for the flow of funds from parts of the world that are rapidly accumulating savings.

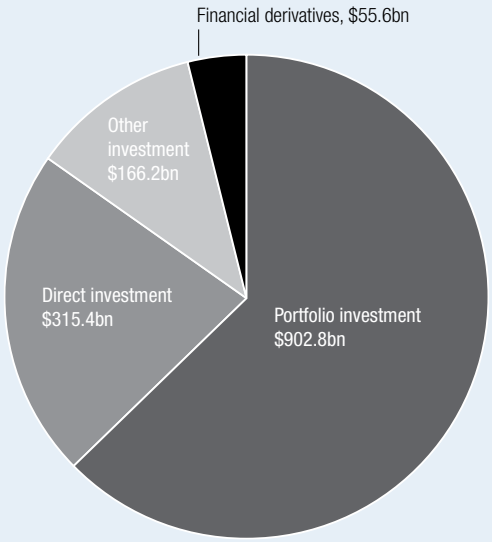
## 4.1 Australia's international investment position

**FIGURE 4.1:**
**FOREIGN INVESTMENT IN AUSTRALIA, 1988 TO 2006**




Source: ABS cat. no. 5302.0, table 29.

**FIGURE 4.2:**
**LEVEL OF FOREIGN INVESTMENT, BY TYPE, 2006**




Source: ABS cat. no. 5352.0, table 29.

### 4.1.1 Foreign investment in Australia

The value of Australian-based assets held by foreigners in Australia in December 2006 was $1.43 trillion (Figure 4.1). As shown in Figure 4.2 this was comprised largely of portfolio investment (63 per cent), followed by direct investment (22 per cent).

### 4.1.2 Composition of foreign liabilities by country

The most recent available country-level data pertain to 2006 when the level of foreign investment was $1.44 trillion. The ABS data do not reveal the origin for a very large portion of the total investment. Figure 4.3 shows the level of foreign investment for all nations whose investors held more than $20 billion. The vast majority of foreign investment in Australia is by US investors (who held about $363 billion of assets in 2006) and UK investors who held about $353 billion. In 2006 Japan held only about 7 per cent of the combined value of the US and the UK.

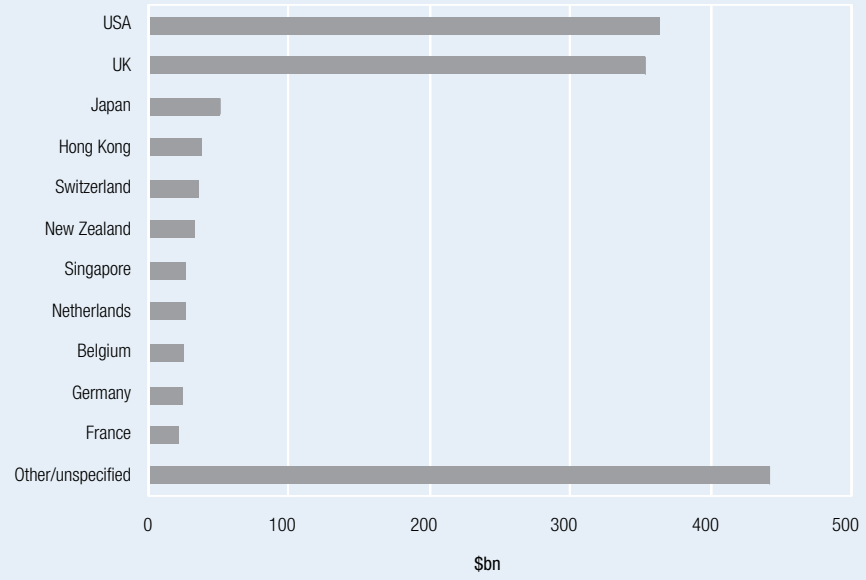
### 4.1.3 Composition of foreign liabilities by industry

In 2006, about 57 per cent of Australia's total foreign liabilities were held in the finance and insurance industry, about 10 per cent in the manufacturing industry and about 7 per cent in the mining industry (Figure 4.4).

In terms of *direct* foreign investment, the mining sector is the industry with the greatest amount of investment by foreigners (Figure 4.5). The ABS estimated that the level of direct foreign investment in mining was $77 billion in 2006. The manufacturing sector has the next highest level of foreign investment with $59 billion followed by the wholesale/retail trade and finance and insurance industries which have about $50 billion each.

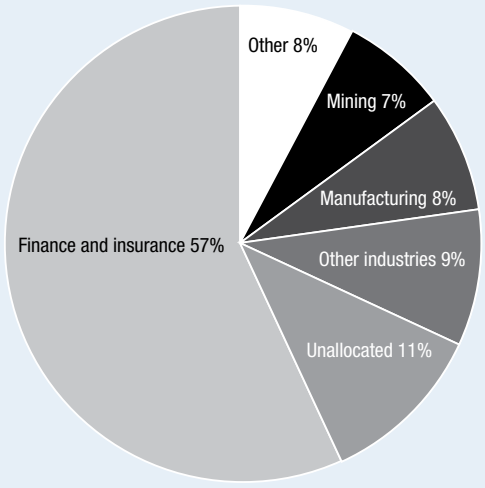
Foreign direct investment in mining has grown strongly from 2001 to 2006 (Figure 4.6). It grew at a real average annual rate of 10.5 per cent over the period, faster than wholesale and retail trade (at 10.1 per cent per year) and construction (at 9.5 per cent per year). The level of foreign direct investment in agriculture, forestry and fishing; and accommodation, cafes and restaurants fell at a real average annual rate of 8.4 per cent and 18 per cent respectively, although both contribute less than 1 per cent of total foreign investment.

**FIGURE 4.3:**
**LEVEL OF FOREIGN INVESTMENT IN AUSTRALIA, BY COUNTRY, 2006**




Source: ABS catalogue number 5352.0, table 2.

**FIGURE 4.4:**
**CONTRIBUTION TO TOTAL FOREIGN LIABILITIES BY INDUSTRY, 2006**



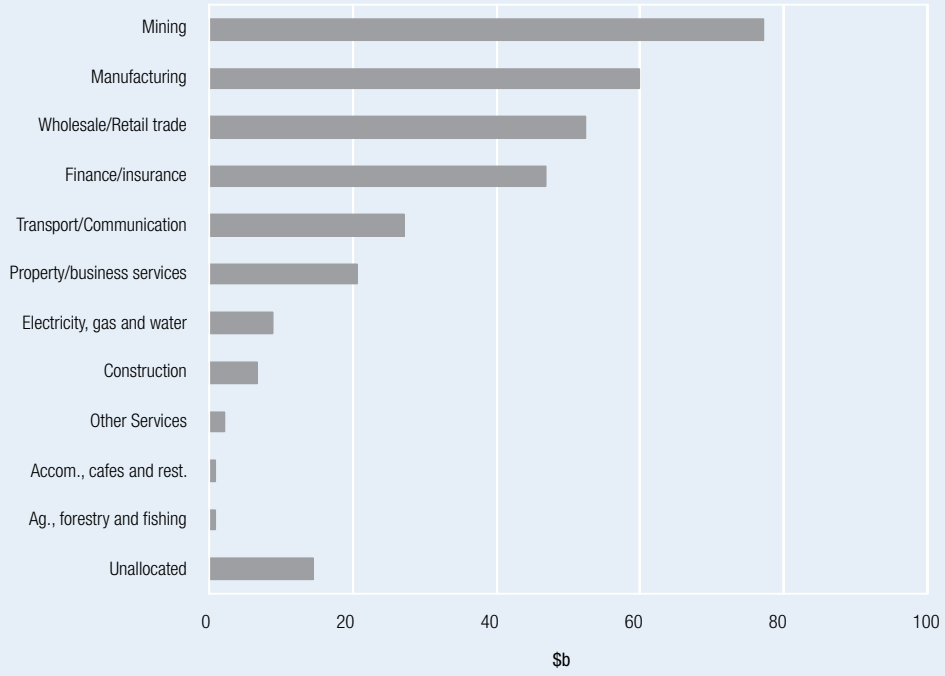

Source: ABS cat. no 5302.0 table 34

### 4.1.4 The importance of foreign investment in mining

The ability of Australia to attract foreign investment to its mining sector has positioned Australia to take advantage of current world prices for minerals commodities. Foreign investment was, and remains, crucial to discovering and assessing Australia's mineral reserves. Thirty years ago, foreign-owned firms were responsible for almost 85 per cent of offshore petroleum expenditure and more than half of all non-petroleum expenditure (Table 4.1).

In 2000–01, almost 45 per cent of mining industry value-added, equivalent to $15.3 billion, was contributed by foreign-owned firms operating in Australia (Table 4.2). The US, the

**FIGURE 4.5:**
**LEVEL OF DIRECT FOREIGN INVESTMENT IN AUSTRALIA, BY INDUSTRY, 2006**




Source: ABS catalogue number 5352.0, table 21a.

**FIGURE 4.6:**
**REAL AVERAGE ANNUAL GROWTH RATES IN THE LEVEL OF FOREIGN DIRECT INVESTMENT, BY INDUSTRY, 2001–2006.**


Source: ABS catalogue number 5352.0. These are the five industries with the greatest absolute average annual growth rates.

UK and Japan were major investing nations. Furthermore, foreign-owned firms employed 19,600 workers, or about 28 per cent of all workers in the industry.

Foreign-owned mining firms operating in Australia make a strong contribution to export income. In 2002–03, foreign-owned mining firms earned $15.5 billion of export income compared with $20.3 billion by Australian-owned firms (Table 4.3). In the same year, the number of identifiable foreign-owned exporting entities actually outnumbered identifiable Australian-owned exporters.

**TABLE 4.1:**
**MINERALS EXPLORATION BY FOREIGN FIRMS, 1975–76**

| Exploration category | Share of total exploration expenditure met by foreign-owned firms % |
|---|---|
| Non-petroleum | 54.4 |
| Production leases | 45.8 |
| Non-production leases | 55.8 |
| Petroleum | 74.4 |
| Onshore | 56.9 |
| Offshore | 84.6 |

Source: Hartley (1984), p. 162

**TABLE 4.2:**
**MINING EMPLOYMENT AND INDUSTRY VALUE ADDED, 2000–01**

| | Employment 000s | Industry value added $m |
|---|---|---|
| *Australia* | *46.4* | *18,457* |
| *Total foreign* | *19.6* | *15,286* |
| Canada | 1.3 | 304 |
| Chile | n.p. | 64 |
| Japan | 1 | 2,574 |
| South Africa | 2.5 | 474 |
| Switzerland | 1.7 | 397 |
| UK | 6.3 | 4,573 |
| USA | 6.4 | 6,397 |
| Other countries | 0.3 | 503 |
| *Unknown* | *3.3* | *337* |
| **Total** | **69.2** | **34,079** |

Source: ABS (2004); n.p. – not available for publication.

Overall, foreign direct investment (which can be used to fund new capital expenditure as well as purchase existing capital stock) is large relative to the quantum of private new capital expenditure, but especially for mining (Figure 4.7).

**TABLE 4.3:**

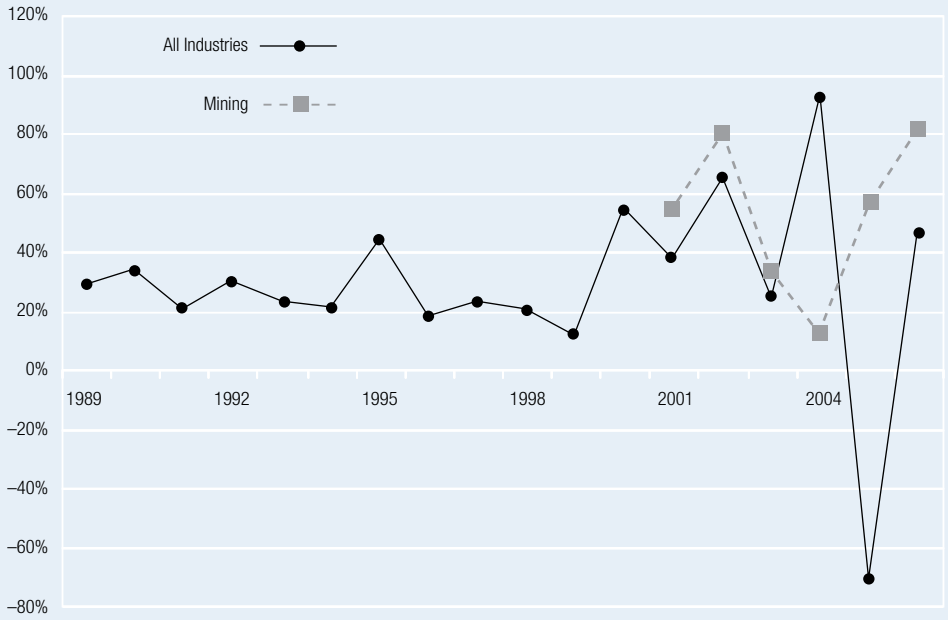
**MINING COMPANY EXPORTS, BY OWNERSHIP, 2002–03**

| | Value of mining exports ($m) | Number of mining exporters |
|---|---|---|
| Australian-owned firms | 20,301 | 77 |
| Foreign-owned firms | 15,532 | 79 |
| Unknown | 63 | 30 |
| **Total** | **35,896** | **186** |

Source: ABS cat. no. 5496.0.55.001; relates to exporters exporting goods valued at more than $1m.

**FIGURE 4.7:**

**FOREIGN DIRECT INVESTMENT RELATIVE TO PRIVATE NEW CAPITAL EXPENDITURE**




Sources: ABS cat. no. 5625.0 table 1a for private new capital expenditure, ABS cat. no. 5352.0 table 20 for mining foreign direct investment and 5302.0 table 25 for all industries foreign direct investment.

Note: The large foreign direct outflow in 2005 was almost certainly related to the reincorporation of News Corporation from Australia to the US (NSWDSRD n.d.).

# 5 concerns about foreign investment

Over the years there have been a number of concerns raised about the potential negative impact of foreign direct investment on the Australian economy and on Australians more generally. In this section each of these concerns is addressed in turn.

## **Concern 1:** Foreign firms may flout local rules

It is sometimes suggested that foreign firms disregard various Australian rules – such as those regarding environmental pollution or taxation – because they are assumed to not have a cultural affinity with the community or the country. But the reality is that most foreign entities employ Australians in their management teams and the workforce consists largely of Australians.

A foreign entity operating in Australia must meet the same strict laws and regulations as any other firm. Domestic cultural attitudes toward foreign investment may mean that poor behaviour by foreign subsidiaries will attract extra scrutiny. Foreign subsidiaries aware of their status as a 'guest' (in the sense that the government legislation could conceivably makes their operations more difficult) may even have an incentive to perform better than Australian counterparts.

## **Concern 2:** Foreign investment is shifting domestic production toward low-value activities

Ross Perot, US presidential candidate in 1992 and 1996, famously (and mistakenly) said that is was better to make computer chips than potato chips. A similar unease is often expressed in Australia – that a too-strong reliance on exporting untransformed minerals commodities and agricultural products is impoverishing the nation.

The importance to growth of a country specialising in activities that it can do at least cost has been emphasised in previous chapters. Australia's natural resources, location and access to physical and human capital allow it to undertake primary production efficiently.

Australia *could* engage in transforming these commodities before they are sold but would Australia be competitive? Why are minerals firms in Australia (whether foreign or

domestically controlled) not 'value-adding' now? The fact is that overseas customers prefer to undertake some transformation themselves because they can do it more cheaply. In many instances capital is cheaper in many of the countries that buy Australian commodities and it is often advantageous to locate manufacturing plants together and close to the point of final demand. Because Australia constitutes such a small local market far from the major sources of world demand there is often no economic reason to manufacture final consumer products in Australia.

## **Concern 3:** Unlike foreign investment in physical capital, nothing useful happens when an Australian firm is purchased by a large multinational firm

Some believe that the sale of an Australian owned asset to an overseas purchaser only has negative aspects. But this cannot be the case. First, the Australian owners receive a payment for the asset that is considered to be fair, otherwise they would not have engaged in the voluntary trade. The buyers consider that the asset has a higher value in their hands perhaps because they have a special set of skills that will allow them to make the most of the asset, or because the asset suits their existing portfolio. In other words, the sellers are better off because they have realised the value of their asset and now have financial capital that they can put to higher value uses and the buyers have an asset in their hands that they can put to better economic use.

Second, the foreign firm is likely to introduce the technology and managerial expertise to its new subsidiary that made it a large multinational in the first place. In addition, Australian governments can expect higher tax income because the new firm is likely to be capable of earning higher profits than the previous owner.

## **Concern 4:** Australians would be better off if transactions took place only among Australians

Many Australians benefit from the ability to buy foreign-made software, drive a car made overseas or have some portion of their superannuation diversified in a foreign financial market. Asking whether Australians would be better off if they only traded with Australians is much the same as asking whether Victorians would be better off if they only traded only with Victorians.

Another way of approaching the concern is to think about whether any of the current commercial dealings between people in different states would be less wealth-enhancing if Australia were not a federation. The benefits from trade explain why countries are drawn into customs unions and other free trade arrangements.

## **Concern 5:** Foreign labour will displace Australian jobs

In a tight domestic labour market, some firms find it difficult to retain and attract staff at pay rates that make the firm viable. Rather than this preventing continued growth, Australian firms are fortunate to have access to a large pool of skilled foreign workers who can take

up positions in Australia. Recently, a domestic airline operating in Australia has expressed a strong interest in employing foreign pilots to ensure flight schedules and growth targets can be met (Palan 2008). Also, the Australian government has suggested that 20,000 skilled workers are needed nationwide in the housing industry (ABC 2008). A continued lack of these workers is likely to be contributing to low levels of housing affordability.

It is unlikely that the skills and work experience of Australians would ever be perfectly matched with the demands of firms operating in Australia. By having access to foreign workers, firms in Australia can draw the ideal candidate for a position from a much larger 'pool'.

Of course, the benefits of finding employees at the right price and with the appropriate skills are not available only to firms with foreign linkages. Wholly Australian-owned firms can benefit too.

Foreign investment in Australia will create new jobs for Australians. Not counting the economic activity directly associated with new projects financed using foreign savings, a range of goods and services would still need to be purchased from other Australian businesses (such as accommodation, food, entertainment and travel) leading to an increase in economic growth and higher employment overall. The model results discussed in the next chapter find this to be the case.

Many Australians seek work visas which allow them to work overseas, perhaps to fund travel or to gain international experience. Having Australians spend time in other countries learning new languages and customs could easily lead to new links being established between Australian businesses and foreign consumers. If having these opportunities is considered advantageous to Australians, it is hard to see on what grounds foreign workers should be prevented from having the same opportunity in Australia.

## **Concern 6:** Foreign investment causes profits to leave the country

It is not an uncommon view that profits that revert to an overseas company are a 'drain' on the welfare of Australians.

The profit flows which revert to an overseas firm are rightly seen as a return on a large initial outlay that at some stage was paid to an Australian firm, individual or government. A foreign firm that purchases an asset from an Australian does so with the aim of securing the flow of returns that the asset can generate and the only way a purchase can go ahead is if the purchase price is sufficiently high to compensate the Australian for the loss of the flow of returns. Provided the trade was voluntary, the Australian must have considered it worthwhile.

An example of a similar situation is the process of negotiating a mortgage. A prospective homeowner is likely to commit to many years of repayments to a financial institution, where the repayments are likely to represent a substantial share of the mortgagee's income. Are the repayments a 'drain' on the mortgagee? In a sense, they are. But they are not so much of a drain that the mortgagee does not consider the transaction worthwhile overall. In this case the mortgagee exchanges a commitment to repay the loan for the up front use of the housing services of the residence purchased with the help of the bank. In the case of the sale of an Australian asset, the Australian owner converts an uncertain future income flow into a certain cash asset and in addition, the facilities that are sold usually continue to operate in Australia and continue to generate jobs for Australians.

# 6 an empirical analysis of the potential impact of additional foreign direct investment

## 6.1 The context

Quantitative analysis of the impacts of additional foreign direct investment (FDI) in metallurgical coal, bauxite and iron ore is described in this section. The aim is to assess the impacts of increased mining activity arising as a result of increased FDI on the Australian economy.

The model used was a variant of Access Economics' CGE model called AE-GEM. This model identifies the Australia economy explicitly in a global context. The model and the analytical framework are outlined in section 6.2 and Appendix A. The structure of the model was enhanced to allow for FDI at the sectoral level for this particular project.

In conducting the type of assessment set out here it is necessary to construct both a reference case – a description of what the world and the Australian economy would have looked like in the absence of the increased FDI assumed in the policy case – and the policy case itself. A description of the reference case, together with some underlying model assumptions, is set out in Appendix B.

The specifications of the scenarios in which FDI is increased are set out in section 6.3. The results of the analysis are presented in section 6.4.

## 6.2 Analytical framework

The quantitative analysis undertaken in this report is based on Access Economics' general equilibrium model called AE-GEM. General equilibrium models like AE-GEM are a widely accepted tool for estimating the direct and indirect impacts of large-scale changes in economic conditions, such as increases in FDI, at the economy-wide level.

AE-GEM is a dynamic, multi-region, multi-commodity computable general equilibrium model of the world economy. The model allows policy analysis in a single, robust, integrated economic framework. The model projects changes in macroeconomic aggregates such as GDP, employment, export volumes, investment and private consumption that are estimated to arise from a given policy change.

For this application, the model has been enhanced in two key areas. First, the investment function in the model is specified at the industry level, rather than the economy-wide level as is common for most global general equilibrium models. Second, the industry specific investment structure accounts explicitly for FDI. In other words, each country in the model can own some assets (and therefore receive the returns from those assets) in each other country represented in the model. For example, this allows for iron ore production in Australia to be undertaken by Chinese investors. Similarly, Australian investors could theoretically undertake iron ore production in China.

## 6.3 Scenario design

In this study, two alternative scenarios are considered.

For each scenario an increase in FDI has been assumed in Australia's iron ore, metallurgical coal and bauxite mining sectors. Accompanying these increases in capital expenditure are increases in production capacity and potentially exports from each industry. The assumed increases in capital expenditure under each scenario are summarised in Table 6.1.

**TABLE 6.1:**
**NET PRESENT VALUE OF ADDITIONAL CAPITAL EXPENDITURE UNDER EACH SCENARIO (REAL 2008 $MILLION)**

| | Scenario 1 | Scenario 2 |
|---|---|---|
| Iron ore | 3879 | 6060 |
| Metallurgical coal | 946 | 1241 |
| Bauxite | 844 | 1447 |
| **Total** | **5669** | **8747** |

Total capital expenditure under each scenario ranges from just under $5.7 billion in scenario 1 to just over $8.7 billion in scenario 2. For this study it is assumed that the key focus of FDI is in Australia's iron ore mining sector. The total increase in capital expenditure in each sector each year is summarised in Table 6.2. The increases in capital expenditure in each sector under each scenario are shown in Table 6.3. The cumulative investment levels flowing from the increases in foreign direct investment are presented in Figure 6.1. As can be seen from Figure 6.1 there is an increase in capital expenditure from scenarios 1 to 2.

The increases in production capacity associated with the increases in capital expenditure outlined above are summarised in Table 6.4.

**TABLE 6.2:**
**TOTAL ADDITIONAL CAPITAL EXPENDITURE UNDER EACH SCENARIO (REAL 2008 $MILLION)**

| Year | Scenario 1 | Scenario 2 |
|---|---|---|
| 2008 | - | - |
| 2009 | - | - |
| 2010 | 100 | 100 |
| 2011 | 100 | 100 |
| 2012 | 100 | 200 |
| 2013 | 100 | 100 |
| 2014 | 100 | 100 |
| 2015 | 3,850 | 3,950 |
| 2016 | 850 | 850 |
| 2017 | 100 | 100 |
| 2018 | 100 | 3,200 |
| 2019 | 100 | 100 |
| 2020 | 3,100 | 850 |
| 2021 | 100 | 3,950 |
| 2022 | 100 | 100 |
| 2023 | 100 | 100 |
| 2024 | 100 | 3,200 |
| 2025 | 3,100 | 100 |
| 2026 | 100 | 100 |
| 2027 | 100 | 3,200 |
| 2028 | 100 | 100 |
| 2029 | 100 | 100 |
| 2030 | 100 | 200 |

## 6.4 Results

A summary of the key macroeconomic results is presented in Table 6.5. The results show that each scenario confers a net economic benefit on the Australian economy as measured by the increases in economic output (real GDP) and real household consumption compared with what otherwise would have occurred. The projected benefits are a function of a number of factors. First, economic activity is stimulated by the ongoing additional investment required under each scenario. Increased capital expenditure, or investment, stimulates economic activity through demand for construction services which is an important sector in the economy in terms of employment (as well as the importation of machinery and equipment).

**TABLE 6.3:**
**ADDITIONAL CAPITAL EXPENDITURE IN IRON ORE, METALLURGICAL COAL AND BAUXITE MINING UNDER EACH SCENARIO (REAL 2008 $MILLION)**

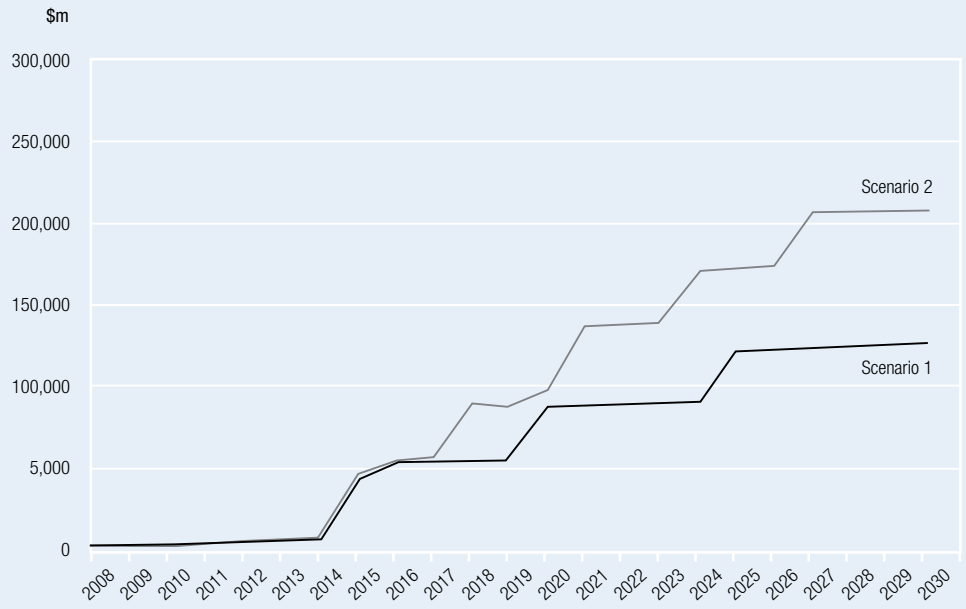
| | Iron ore | | Metallurgical coal | | Bauxite mining | |
|---|---|---|---|---|---|---|
| Year | Scenario 1 | Scenario 2 | Scenario 1 | Scenario 2 | Scenario 1 | Scenario 2 |
| 2008 | - | - | - | - | - | - |
| 2009 | - | - | - | - | - | - |
| 2010 | - | - | 100 | 100 | - | - |
| 2011 | - | - | 100 | 100 | - | - |
| 2012 | - | - | 100 | 200 | - | - |
| 2013 | - | - | 100 | 100 | - | - |
| 2014 | - | - | 100 | 100 | - | - |
| 2015 | 3000 | 3000 | 100 | 200 | 750 | 750 |
| 2016 | - | - | 100 | 100 | 750 | 750 |
| 2017 | - | - | 100 | 100 | - | - |
| 2018 | - | 3000 | 100 | 200 | - | - |
| 2019 | - | - | 100 | 100 | - | - |
| 2020 | 3000 | - | 100 | 100 | - | 750 |
| 2021 | - | 3000 | 100 | 200 | - | 750 |
| 2022 | - | - | 100 | 100 | - | - |
| 2023 | - | - | 100 | 100 | - | - |
| 2024 | - | 3000 | 100 | 200 | - | - |
| 2025 | 3000 | - | 100 | 100 | - | - |
| 2026 | - | - | 100 | 100 | - | - |
| 2027 | - | 3000 | 100 | 200 | - | - |
| 2028 | - | - | 100 | 100 | - | - |
| 2029 | - | - | 100 | 100 | - | - |
| 2030 | - | - | 100 | 200 | - | - |

Second, the increased output of iron ore, metallurgical coal and bauxite and the subsequent increase in exports of those products directly contributes to increased economic activity and welfare (through wages paid as well as taxes and royalties collected).

Third, apart from the direct increases in economic activity, there are flow on effects as a consequence of increased demand for the products from those sectors that supply goods and services to construction and mining.

The additional investment and economic activity, direct and indirect, result in a projected increase in real GDP above reference case levels. Under scenario 1, the net present value of

**FIGURE 6.1:**
**CUMULATIVE INCREASE IN CAPITAL EXPENDITURE UNDER EACH SCENARIO (REAL 2008 $MILLION)**




the increase in real GDP is estimated to be just over $21.7 billion in 2008 dollars (for the period 2008 to 2030 using a 7 per cent real discount rate). The extent of the projected benefits are directly related to the level of investment, and hence the increases in production.

While production effects are captured in real GDP, the flow on effects to national income (real GNP) and household consumption are also important to consider because these summarise the projected impacts on economic benefit. Economic benefit, in this case, is calculated net of the additional outflows of returns to foreign investors from iron ore, metallurgical coal and bauxite production. Under scenario 1, the net present value of the increase in real GNP and real consumption are estimated to be just over $22.7 billion and $16 billion, respectively, in 2008 dollars (calculated over the period 2008 to 2030 using a 7 per cent real discount rate). These figures equate in today's terms to $2848 dollars in GNP per household and $2005 in real consumption per household. Under scenario 2, the increases in real GNP per household and consumption per household above what they otherwise would have been are projected to be $3965 and $2825 respectively.

A major source of the gains under each scenario is the projected increases in both employment and wages that are stimulated by additional investment and output. Employment under scenario 1 is projected to increase by 4560 full time equivalents in 2030, or a 0.05 per cent increase in employment over reference case levels (Table 6.6). This rises to 7150 full time equivalents (or an 0.07 per cent increase) under scenario 2. Note that the employment response in percentage terms is relatively small. This is a function of the labour market specification in the model. In this case, the supply elasticity of labour has been chosen to be sufficiently small to reflect constraints in the labour market. On the flip side, the projected increases in real wages relative to reference case levels are higher than the supply response (in both the labour market and in aggregate as measured by real GDP). Higher real wages manifest themselves in increased household consumption in Australia, despite the remittance of returns on capital to overseas owners.

**TABLE 6.4:**
**ADDITIONAL IRON ORE, METALLURGICAL COAL AND BAUXITE PRODUCTION CAPACITY UNDER EACH SCENARIO (MT, 2008–2030)**

| | Iron ore | | Metallurgical coal | | Bauxite mining | |
|---|---|---|---|---|---|---|
| Year | Scenario 1 | Scenario 2 | Scenario 1 | Scenario 2 | Scenario 1 | Scenario 2 |
| 2008 | - | - | - | - | - | - |
| 2009 | - | - | - | - | - | - |
| 2010 | - | - | 1 | 1 | - | - |
| 2011 | - | - | 2 | 2 | - | - |
| 2012 | - | - | 3 | 4 | - | - |
| 2013 | - | - | 4 | 5 | - | - |
| 2014 | - | - | 5 | 6 | - | - |
| 2015 | 20 | 20 | 6 | 8 | 7.5 | 7.5 |
| 2016 | 20 | 20 | 7 | 9 | 15 | 15 |
| 2017 | 20 | 20 | 8 | 10 | 15 | 15 |
| 2018 | 20 | 40 | 9 | 12 | 15 | 15 |
| 2019 | 20 | 40 | 10 | 13 | 15 | 15 |
| 2020 | 40 | 40 | 11 | 14 | 15 | 22.5 |
| 2021 | 40 | 60 | 12 | 16 | 15 | 30 |
| 2022 | 40 | 60 | 13 | 17 | 15 | 30 |
| 2023 | 40 | 60 | 14 | 18 | 15 | 30 |
| 2024 | 40 | 80 | 15 | 20 | 15 | 30 |
| 2025 | 60 | 80 | 16 | 21 | 15 | 30 |
| 2026 | 60 | 80 | 17 | 22 | 15 | 30 |
| 2027 | 60 | 100 | 18 | 24 | 15 | 30 |
| 2028 | 60 | 100 | 19 | 25 | 15 | 30 |
| 2029 | 60 | 100 | 20 | 26 | 15 | 30 |
| 2030 | 60 | 100 | 21 | 28 | 15 | 30 |

**TABLE 6.5:**
**SUMMARY OF KEY MACROECONOMIC RESULTS FOR THE PERIOD 2008 TO 2030 (RELATIVE TO REFERENCE CASE) (NET PRESENT VALUE IN 2008 DOLLARS UNLESS STATED)**

| Indicator | Scenario 1 | Scenario 2 |
|---|---|---|
| Real GDP | 21,716m | 30,146m |
| Real GNP | 22,785m | 31,723m |
| Real consumption | 16,036m | 22,606m |
| Real GDP per household | 2715 | 3768 |
| Real GNP per household2 | 2848 | 3965 |
| Real consumption per household | 2005 | 2825 |
| Employment in 2030 (FTE) | 4560 | 7150 |

Source: AE-GEM; Net present value using a 7 per cent real discount rate. Based on 8 million Australian households.

**TABLE 6.6:**
**PROJECTED MACROECONOMIC IMPACTS ON THE AUSTRALIA ECONOMY FOR EACH SCENARIO AT 2030 (PER CENT DEVIATION FROM THE REFERENCE CASE)**

| Variable | Scenario 1 | Scenario 2 |
|---|---|---|
| Real GNP | 0.32 | 0.47 |
| Real GDP | 0.32 | 0.49 |
| Investment | 0.56 | 0.89 |
| Real consumption | 0.35 | 0.53 |
| Employment | 0.05 | 0.07 |
| Exports | 0.47 | 0.70 |
| Imports | 1.25 | 1.98 |
| Terms of trade | 1.10 | 1.74 |
| Return on capital | 0.10 | 0.15 |
| Real wage: post tax | 0.48 | 0.77 |

Source: AE-RGEM, 2008 prices

# 7 conclusion

The past importance of foreign direct investment in Australia's development is unquestionable. Equally, overseas investment in Australia and the further development of strong trade linkages with our Asian neighbours, particularly China and India, will be crucial for Australia's future prosperity. Today China and India contribute around 14 per cent of world output. By 2030 these two countries alone will contribute about one-third of world output so it is clear that Australian attitudes and policies will need to change to accommodate the coming massive change in economic importance and influence of these two countries.

The analysis in ITS Global (2008) illustrates that the six principles that govern investment by government owned or controlled entities announced by the federal Treasurer on 17 February 2008 (outlined at the start of chapter 4) are likely to further restrict foreign investment.

The paper illustrates the extent of the contribution that relatively small increases in foreign investment in the mining industry could make to the household incomes of Australians. An additional three iron ore mines, three new coking coal mines and a new bauxite mine constructed between 2010 and 2030 could add almost half a percentage point to Australia's GDP in 2030, generate over 7000 new jobs and, in net present value terms, lift every Australian household's real consumption by over $2800. That is surely reward enough, from just one part of the export sector, to encourage governments and the community to take a closer look at the rules and guidelines that unnecessarily restrict foreign investment and therefore growth in Australia.

APPENDIX A

# some details about AE–GEM

## A.1 Key components of the model

The model is based upon a set of key underlying relationships between the various *components* of the model, each which represent a different group of agents in the economy. These relationships are solved simultaneously, and so there is no logical start or end point for describing how the model actually works. Figure A1 shows the key components of the model for an individual region (say, Australia). The components include a representative household, producers, investors and international (or linkages with the other regions in the model). Below is a description of each component of the model and key linkages between components. Some additional, somewhat technical, detail is also provided.

AE-GEM is based on a substantial body of accepted microeconomic theory. Key assumptions underpinning the model are as follows.

The model contains a 'regional consumer' that receives all income from factor payments (labour, capital, land and natural resources), taxes and net foreign income from borrowing (lending).

Income is allocated across household consumption, government consumption and savings so as to maximise a Cobb-Douglas (C-D) utility function.

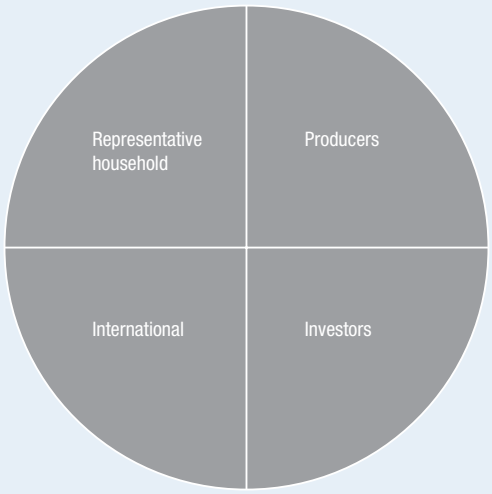
Household consumption for composite goods is determined by minimising expenditure via a CDE (Constant Differences of Elasticities) expenditure function. Households can source consumption goods only from domestic and imported sources. In all cases, the choice of commodities by source is determined by a CRESH (Constant Ratios of Elasticities Substitution, Homothetic) utility function.

Government consumption for composite goods, and goods from different sources (domestic and imported), is determined by maximising utility via a C-D utility function.

All savings generated in each region are used to purchase bonds whose price movements reflect movements in the price of creating capital.

Producers supply goods by combining aggregate intermediate inputs and primary factors in fixed proportions (the Leontief assumption). Composite intermediate inputs are also combined in fixed proportions, whereas individual primary factors are combined using a CES production function.

**FIGURE A1:**
**KEY COMPONENTS OF AE-GEM**




Producers are cost minimisers, and in doing so choose between domestic and imported intermediate inputs via a CRESH production function.

The model contains a more detailed treatment of the electricity sector that is based on the 'technology bundle' approach for general equilibrium modelling developed by ABARE (1996).[1]

The supply of labour is positively influenced by movements in the real wage rate governed by an elasticity of supply (assumed to be 0.2).

Investment takes place in a global market and allows for different regions to have different rates of return that reflect different risk profiles and policy impediments to investment. A global investor ranks countries as investment destinations based on two factors: global investment and rates of return in a given region compared with global rates of return. Once the aggregate investment has been determined for Australia, aggregate investment in each Australian sub-region is determined by an Australian investor based on Australian investment and rates of return in a given sub-region compared with the national rate of return.

Once aggregate investment is determined in each region, the regional investor constructs capital goods by combining composite investment goods in fixed proportions, and minimises costs by choosing between domestic and imported sources for these goods via a CRESH production function.

Prices are determined via market-clearing conditions that require sectoral output (supply) to equal the amount sold (demand) to final users (households and government), intermediate users (firms and investors) and foreigners (international exports).

For internationally-traded goods (imports and exports), the Armington assumption is applied whereby the same goods produced in different countries are treated as imperfect substitutes. But in relative terms imported goods from different regions are treated as closer substitutes than domestically-produced goods and imported composites.

The model accounts for greenhouse gas emissions from fossil fuel combustion. Taxes can be applied to emissions, which are converted to good-specific sales taxes that have an impact on demand. Emission quotas can be set by region and these can be traded, at a value equal to the carbon tax avoided, where a region's emissions fall below or exceed their quota.

[1] Australian Bureau of Agricultural and Resource Economics (ABARE), 1996, *MEGABARE: Interim Documentation*, Canberra.

## A.2 The representative household

Each region in the model has a so-called *representative household* that receives and spends all income. The *representative household* allocates income across three different *expenditure* areas: private household consumption; government consumption; and savings.

Going clockwise around figure A1, the representative household interacts with producers in two ways. First, in allocating expenditure across household and government consumption, this sustains demand for production. Second, the representative household owns and receives all income from factor payments (labour, capital, land and natural resources) as well as net taxes. Factors of production are used by producers as *inputs into production* along with intermediate inputs. The level of production, as well as supply of factors, determines the amount of income generated in each region.

The *representative household's* relationship with investors is through the supply of investable funds – savings. The relationship between the *representative household* and the international sector is twofold. First, importers compete with domestic producers in consumption markets. Second, other regions in the model can lend (borrow) money from each other.

### A.2.1 Some detail

The representative household allocates income across three different expenditure areas – private household consumption; government consumption; and savings – to maximise a Cobb-Douglas utility function.

Private household consumption on composite goods is determined by minimising a CDE (Constant Differences of Elasticities) expenditure function. Private household consumption on composite goods from different sources is determined is determined by a CRESH (Constant Ratios of Elasticities Substitution, Homothetic) utility function.

Government consumption on composite goods, and composite goods from different sources, is determined by maximising a Cobb-Douglas utility function.

All savings generated in each region is used to purchase bonds whose price movements reflect movements in the price of generating capital.

## A.3 Producers

Apart from selling goods and services to households and government, producers sell products to each other (intermediate usage) and to investors. Intermediate usage is where one producer supplies inputs to another's production. For example, coal producers supply inputs to the electricity sector.

Capital is an input into production. Investors react to the conditions facing producers in a region to determine the amount of investment. Generally, increases in production are accompanied by increased investment. In addition, the production of machinery, construction of buildings and the like that forms the basis of a region's capital stock, is undertaken by producers. In other words, investment demand adds to household and government expenditure from the representative household, to determine the demand for goods and services in a region.

Producers interact with international markets in two main ways. First they compete with producers in overseas regions for export markets, as well as in their own region. Second, they use inputs from overseas in their production.

### A.3.1 Some detail

Sectoral output equals the amount demanded by consumers (households and government) and intermediate users (firms and investors) as well as exports.

Intermediate inputs are assumed to be combined in fixed proportions at the composite level. As mentioned above, the exception to this is the electricity sector that is able to substitute different technologies (brown coal, black coal, oil, gas, hydropower and other renewables) using the 'technology bundle' approach developed by ABARE (1996).

To minimise costs, producers substitute between domestic and imported intermediate inputs is governed by the Armington assumption as well as between primary factors of production (through a CES aggregator). Substitution between skilled and unskilled labour is also allowed (again via a CES function).

The supply of labour is positively influenced by movements in the wage rate governed by an elasticity of supply as (assumed to be 0.2). This implies that changes influencing the demand for labour, positively or negatively, will impact both the level of employment and the wage rate. This is a typical labour market specification for a dynamic model such as AE-GEM. There are other labour market 'settings' that can be used. First, the labour market could take on long-run characteristics with aggregate employment being fixed and any changes to labour demand changes being absorbed through movements in the wage rate. Second, the labour market could take on short-run characteristics with fixed wages and flexible employment levels.

## A.4 Investors

Investment takes place in a global market and allows for different regions to have different rates of return that reflect different risk profiles and policy impediments to investment. The global investor ranks countries as investment destination based on two factors: current economic growth and rates of return in a given region compared with global rates of return.

### A.4.1 Some detail

Once aggregate investment is determined in each region, the regional investor constructs capital goods by combining composite investment goods in fixed proportions, and minimises costs by choosing between domestic and imported sources for these goods via a CRESH production function.

## A.5 International

Each of the components outlined above operate, simultaneously, in each region of the model. That is, for any simulation the model forecasts changes to trade and investment flows within, and between, regions subject to optimising behaviour by producers, consumers and investors. Of course, this implies some global conditions must be met such as global exports and global imports are the same and that global debt repayments equals global debt receipts each year.

APPENDIX B

# model data and reference case

## B.1 Base data

The base data of the model is derived from the Global Trade Analysis Project (GTAP),[2] which is based in Purdue University in the US. GTAP produces a global database for general equilibrium modelling used by over 700 researchers worldwide. The database produced by the GTAP describes bilateral trade patterns, production, consumption and intermediate use of commodities and services and it represents the most detailed and comprehensive database of its type in the world. The Australian component of the database is provided by the Productivity Commission, and is based on Australian input-output tables produced by the Australian Bureau of Statistics.

The model is primarily based on input-output or social accounting matrices, as a means of describing how economies are linked through production, consumption, trade and investment flows. The model incorporates direct linkages between industries and countries through purchases and sales of each other's goods and services and indirect linkages through mechanisms such as the collective competition for available resources, such as labour, that operates in an economy-wide or global context.

AE-GEM is based on Version 6.0 of the GTAP database. This has a 2001 base year covering 87 countries and 57 industry sectors. Not all regions and sectors are relevant to this study, so the database is aggregated to the 28 sectors and 18 countries/regions shown in table B1. For the modelling described here the Australian economy is divided into Western Australia and the Rest of Australia.

Consistent with the national accounts, the model is commodity or industry based rather than being a firm level model. That is, the commodities and industries represent nation-wide aggregates, or the accumulation of individual firms, rather than firm specific data. In other words, a production function is specified for each sector, rather than representing each or any particular firm's operations in detail.

In the original GTAP database iron ore and bauxite are aggregated into the sector 'Other minerals'. For the purposes of this study iron ore and bauxite are specified as separate industries. In addition, coal has been disaggregated into three types: brown coal, thermal coal and metallurgical coal.

[2] Key references are: Hertel, T.W. (1997) *The Global Trade Analysis: Modeling and Applications*; Dimaranan, B.V. and McDougall, R.A (2005) Global Trade, Assistance and Production: The GTAP 6 Data Base and www.gtap.agecon.purdue.edu.

**TABLE B1:**
**SECTORS AND REGIONS IN AE-GEM**

| Number | Sectors | Number | Regions |
|---|---|---|---|
| 1 | Primary and processed agriculture | 1 | Australia |
| 2 | Brown coal | 2 | China (incl. Hong Kong) |
| 3 | Thermal coal | 3 | Japan |
| 4 | Metallurgical coal | 4 | South Korea |
| 5 | Oil | 5 | Taiwan |
| 6 | Gas | 6 | India |
| 7 | Iron ore | 7 | Rest of Asia |
| 8 | Bauxite | 8 | Canada |
| 9 | Other minerals | 9 | US |
| 10 | Light manufacturing | 10 | Venezuela |
| 11 | Petroleum and coal products | 11 | Brazil |
| 12 | Chemicals, rubber and plastics | 12 | Rest of South America |
| 13 | Other non-metallic mineral products | 13 | European Union |
| 14 | Iron and steel | 14 | Russian Federation |
| 15 | Alumina | 15 | Rest of the Former Soviet Union |
| 16 | Aluminium | 16 | South Africa |
| 17 | Other non-ferrous metals | 17 | Rest of Africa |
| 18 | Fabricated metal products | 18 | Rest of the World |
| 19 | Motor vehicles and parts | | |
| 20 | Other transport equipment | | |
| 21 | Other machinery and equipment | | |
| 22 | Other manufacturing | | |
| 23 | Electricity | | |
| 24 | Gas and water | | |
| 25 | Construction | | |
| 26 | Sea and air transport | | |
| 27 | Road and rail transport | | |
| 28 | Other services | | |

[a] Electricity is generated using brown coal, black coal, gas, oil-fired, nuclear, hydropower and other renewables.

## B.2 Dynamics

AE-GEM is a recursive dynamic model that solves year-on-year over a specified timeframe. The model is then used to project the relationship between variables under different scenarios, over a predefined period. The first step in any analysis is to generate a reference case. The reference case represents the model projections of investment growth in metallurgical coal, iron ore and bauxite together with the rest of the economy. Each scenario modelled represents an increase in the level of investment in the specified mining sectors, over and above the reference case.

## B.3 Reference case projections

As described above, AE-GEM requires a reference case projection against which to compare the various scenarios representing the increase in foreign investment and the resulting increases in metallurgical coal, bauxite and iron ore sales on the export market. The reference case scenario is based on a set of input assumptions made about economic and population growth.

**TABLE B2:**
**MACROECONOMIC ASSUMPTIONS IN THE REFERENCE CASE (AVERAGE FOR THE PERIOD 2008-2030)**

| Region | GDP % | Population % | Employment % |
|---|---|---|---|
| Australia | 2.61 | 0.60 | 0.37 |
| China (incl. Hong Kong) | 5.19 | 0.46 | 0.30 |
| Japan | 0.92 | -0.34 | -0.87 |
| South Korea | 3.94 | 0.28 | 0.23 |
| Taiwan | 3.76 | 0.28 | 0.31 |
| India | 6.00 | 1.12 | 1.44 |
| Rest of Asia | 5.01 | 1.25 | 1.64 |
| Canada | 2.65 | 0.72 | 0.37 |
| US | 2.71 | 0.82 | 0.43 |
| Venezuela | 2.54 | 1.19 | 1.66 |
| Brazil | 3.34 | 1.04 | 1.15 |
| Rest of South America | 3.49 | 1.01 | 1.32 |
| European Union | 2.08 | 0.07 | 0.14 |
| Russian Federation | 2.99 | -0.26 | -1.32 |
| Rest of the former Soviet Union | 4.55 | -0.21 | 0.27 |
| South Africa | 1.74 | -1.07 | -0.58 |
| Rest of Africa | 5.24 | 1.78 | 2.01 |
| Rest of the World | 3.82 | 1.56 | 1.58 |

Source: Access Economics forecasts

In terms of the input assumptions, the reference case runs over the period 2008 to 2030. Key macroeconomic assumptions are shown in Table B2, including assumed regional output growth, population and employment growth. These are consistent with Access Economics' June 2008 Business Outlook publication.

## B.4 Key pricing assumptions

The export price assumptions for the mineral commodities analysed in this modelling are summarised in Table B3. These prices are maintained in each scenario. The assumptions are based on high iron ore and metallurgical coal prices in 2008 that decline over the period to 2013 and 2014. Real prices are then held fixed to 2030. Real bauxite prices are held constant over the scenario period.

**TABLE B3:**
**KEY COMMODITY PRICES ASSUMPTIONS CONTAINED IN THE REFERENCE CASE (REAL $2008)**

| Year | Iron Ore USc/dmtu[a] | Metallurgical coal $US/tonne | Bauxite $US/tonne |
|---|---|---|---|
| 2008 | 162.8 | 300.0 | 35.0 |
| 2009 | 156.6 | 218.3 | 35.0 |
| 2010 | 139.8 | 164.3 | 35.0 |
| 2011 | 118.7 | 131.0 | 35.0 |
| 2012 | 96.9 | 115.8 | 35.0 |
| 2013 | 75.1 | 100.6 | 35.0 |
| 2014 | 75.1 | 85.4 | 35.0 |
| 2015 | 75.1 | 85.4 | 35.0 |
| 2016 | 75.1 | 85.4 | 35.0 |
| 2017 | 75.1 | 85.4 | 35.0 |
| 2018 | 75.1 | 85.4 | 35.0 |
| 2019 | 75.1 | 85.4 | 35.0 |
| 2020 | 75.1 | 85.4 | 35.0 |
| 2021 | 75.1 | 85.4 | 35.0 |
| 2022 | 75.1 | 85.4 | 35.0 |
| 2023 | 75.1 | 85.4 | 35.0 |
| 2024 | 75.1 | 85.4 | 35.0 |
| 2025 | 75.1 | 85.4 | 35.0 |
| 2026 | 75.1 | 85.4 | 35.0 |
| 2027 | 75.1 | 85.4 | 35.0 |
| 2028 | 75.1 | 85.4 | 35.0 |
| 2029 | 75.1 | 85.4 | 35.0 |
| 2030 | 75.1 | 85.4 | 35.0 |

[a] Dry metric ton unit

APPENDIX C

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