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Introduction
For much of the past decade economists have been studying the effects of the massive mining investment boom on the Australian economy. High rates of economic growth in China, and some of the other emerging economies of Asia, created an unprecedented increase in demand for Australia’s mining exports and, with supply unable to be increased quickly, led to an increase in commodity prices that will probably never be repeated. It also led to a massive investment boom in mining in Australia as the companies tried to increase production and get the benefit of the high prices.

During this period Australia experienced what has been called a two-speed economy. All sectors of the economy associated with the mining boom were growing rapidly, whereas others stagnated or went into decline. The states with a high proportion of mining output grew while the others performed poorly.

Now commodity prices have fallen and the investment boom has subsided. Mining investment’s share of Gross Domestic Product (GDP) has declined to about half its peak level. So we are now in another situation of a two-speed economy with levels of mining investment and employment falling. Other areas of the economy have been taking up the slack, but it is not a seamless transition by any means.

Unfortunately many political and business leaders could not see an end to the mining boom and could not envisage the many problems that are currently arising. The boom stimulated a property price boom which also was exacerbated by supply problems. Property prices are now falling in the mining states but still rising a little in the others. Housing construction has increased but there are now fears of too many apartments hitting the market in the near future.

Similarly, the income from the mining boom provided substantial support for the budgets of the federal and state governments. But now the revenue from the mining sector is falling and the federal government has a persistent structural problem with its budget. It lacks the money to embark on a stimulus package to revive some sectors of the economy, as was possible during the Global Financial Crisis (GFC). And the Reserve Bank of Australia (RBA) has reduced interest rates so much that lower rates are not likely to stimulate spending, whether it be consumption or investment. However, it has taken steps to contain the growth of borrowing for investment in certain types of real estate probably for financial stability reasons.

So now our new government is trying to maintain our record of 25 years of uninterrupted economic growth. It is rapidly running out of strategies to lift economic activity and improve people’s incomes. Expansionary fiscal policy is likely to reduce the country’s credit rating and expansionary monetary policy could just bring interest rates closer to zero. But many academic economists would like to see the Australian Dollar (AUD) fall even more and provide incentives for exporters to increase their sales and stimulate economic activity.

However, it appears that the main question is: Could the Australian economy withstand another major external economic shock like the Global Financial Crisis (GFC)? This shock could come from China, Europe, the United Kingdom or even the oil-producing countries or the United States.

National debt levels are at precarious heights and most of the international financial institutions have issued warnings about the dangers of quantitative easing in a low interest rate environment. It is an exciting time to be an economist and watch our political leaders issue economic plans that seem to avoid addressing the real economic problems and issues that we face as a nation.

Student activities
1. Briefly explain why the Australian economy is currently in a period of transition.
2. Explain what caused the structural problems that currently affect the federal budget.
3. What factors could interrupt Australia’s 25 years of continued economic growth?
An overview of the mining boom

It is widely accepted that the mining boom has consisted of three phases:

- the increased demand phase, when supply was fairly inelastic
- the investment phase, when companies completed projects to increase production and meet the increased demand
- the production phase, when output increased due to the increase in investment.

There is no doubt that each of the three phases have overlapped.

Prior to the boom, mining was a very significant sector of the Australian economy. Its output was about 5 percent of GDP and its exports were about 25 percent of total exports. But it only employed about 1.5 percent of the workforce and investment was about 2 percent of GDP. Low commodity prices and slow growth in output characterised the industry. Nevertheless, Australia had experienced mining booms previously. There were the gold rushes in the 1850s and smaller booms in the 1890s and the 1970s. But, in terms of increased output, none were as substantial as the current one has been.

The first phase started in 2003-04 when there was a sharp and unanticipated increase in demand from China and several other emerging economies in Asia. They were industrialising and urbanising and needed increasing amounts of iron ore, thermal coal, metallurgical coal and Liquified Natural Gas (LNG) plus other mineral and energy products. Since the mining companies did not have the capacity to increase production quickly through excess capacity, production only increased by small amounts. This led to a three-fold increase in mining commodity prices by their peak in 2011. Export revenue from mining rose from $50 billion and 25 percent of all exports in 2003 to $188 billion and 60 percent of exports in 2011. Tax revenues of the federal and some state governments rose substantially.

The second phase, which overlapped the first, saw mining investment rise from less than 2 percent of GDP in 2004 to 4 percent by 2010 and 8 percent in 2013. This phase also employed considerably more workers and they received relatively high wages. It led to a crowding out of the non-mining economy and a slowdown in the non-mining states. The overall effect was to create a two-speed economy, with the mining economy characterised by high growth and the non-mining economy characterised by low rates of economic growth.

In the third phase, the production phase, the investment boom enabled the constraints on supply to be lifted. But unfortunately, demand started to taper off and prices fell. Production and export volumes continued to rise but prices continued to fall as more projects reached completion. The mining companies worried about their profitability and are cutting costs as quickly as possible. Workers are losing their jobs and those businesses that helped complete investment projects are closing. Mining investment has fallen to about 4 percent of GDP and will continue to fall because not all of the extra capacity is needed.

It is now the mining investment boom that is in decline as are the revenues from the record high prices. We are headed back to a two-speed economy with this time the mining economy characterised by lower growth and some of the non-mining economy experiencing a return to higher growth rates. But not all parts of the economy are returning back to their former glory. Business investment is at very low levels despite the low interest rates, a substantially lower dollar and the promise of tax cuts for business. Until it returns to normal levels then there is the chance that the transition from the peak of the mining boom could be a particularly awkward one.

Student activities

4. Identify the main characteristics of:
   - the demand phase of the mining boom
   - the investment phase of the mining boom
   - the production phase of the mining boom.

5. How have the three phases of the mining boom overlapped?

6. Why is it likely that the economic transition from the peak of the mining boom could be an awkward one?
Main beneficial and adverse effects of the mining boom

So has it all been worthwhile?

Research by The Australia Institute (TAI) highlights some of the problems that have arisen:

• The mining investment boom drew resources away from the non-mining industries and caused them to contract. It identified manufacturing, tourism, agriculture and education as being adversely affected and claimed that many businesses were forced to close. The associated rise in the AUD exacerbated this problem by making imports cheaper relative to domestically produced goods and making exports of goods and services more expensive.

• In the long term mining is not a large employer, relative to other industries. It is highly mechanised when in the production phase. Many of the workers employed in the first two phases of the boom have had to go back and seek employment elsewhere.

• The mining industry does not really pay much tax in Australia. While it pays royalties to the states, The Australia Institute claims that the mining industry only pays an effective corporate tax rate of 13.9 percent; well below the average for all businesses of 21 percent and the nominal rate of 30 percent.

• The mining industry receives many different government subsidies. In recent years TAI claims that total subsidies have been about $4 billion per year.

• The mining sector is 83 percent foreign owned. It follows therefore that eventually a very large proportion of the profits after tax leave Australia.

• TAI claims that within six months of the GFC hitting, the mining industry had reduced its workforce by 15 percent. They claim that if all industries had done the same then Australia’s unemployment rate would have risen to close to 20 percent. Thus it was not the mining industry that saved Australia during the GFC, as is often claimed.

• It is not necessarily true that the faster new mines are developed the better off Australians will be. Especially in the coal industry, many established mines have had to close due to increased supply and falling prices. Some are being sold for as little as a dollar.

While the research by the TAI is interesting it does not have the precision expected by economists. In a paper published in the Reserve Bank Bulletin in December 2014, Peter Tulip has applied a large structural economic model of the Australian economy to compare two scenarios:

• How the economy progressed throughout the mining boom.

• How the economy might have progressed without the mining boom.

• By comparing these two scenarios Tulip concludes that by 2013 the boom had the following major benefits:
  • real per capita household disposable income rose by about 13 percent
  • real wages rose by 6 percent
  • the unemployment rate was lowered by 1.25 percentage points.

And by buying many inputs from Australia’s manufacturing industry the mining industry avoided the problem that has been called ‘Dutch Disease’. This occurs when manufacturing output shrinks considerably while the mining boom is in progress. Tulip’s figures indicate manufacturing output only fell by about 5 percent until 2013.

Student activities

7. Assess the claims made by The Australia Institute about the negative aspects of the mining industry.

8. Explain what is meant by ‘a large structural economic model of the Australian economy’.

9. What were the two scenarios that the Reserve Bank’s model compared?

10. Assess the main benefits of the mining boom for the Australian economy as shown by economic modelling.
Effects of the mining boom on the economic activity

The following data shows the extent of the mining boom and its effects on the Australian economy. Most of the data has been compiled by the RBA.

**Graph 1: RBA index of bulk commodity prices**

Most importantly, Graph 1, the Index of Bulk Commodity Prices shows the rise and the subsequent fall in the global prices for iron ore and coking coal, (which are used in the production of steel), and thermal coal, (which is used in the production of energy). It shows prices rising rapidly from 2004 until 2011, apart from the dip in the GFC, and then receding back to about the level of 2007 in 2015.

**Graph 2: Business investment**

In an article in the Reserve Bank Bulletin, September 2015, Gorajek and Rees traced the effect of these price fluctuations on the economy. The first link that they draw attention to is the level of Business Investment, Graph 2, which rose from about 13 percent of GDP in 2001 to over 18 percent in 2013. Much of the increase was from Capital Expenditure in Mining, Graph 3, which rose from less than $8 billion to about $100 billion in 2013. It then fell back to an estimated $60 billion in 2015/16 and about $40 billion in 2016/17. Clearly the rise in commodity prices led to massive increases in spending on construction, machinery and equipment while the decline in prices reduced the need for further investment. These changes in investment spending led to multiplied changes in the level of GDP.
The Australian Bureau of Statistics (ABS) figures, Graph 4, for the Average Annual Contributions to GDP Growth for the periods when bulk commodity prices were rising and then falling indicates the reversal in the impact of mining investment on the economy. There appears to be a direct relationship between the levels of mining investment and growth in GDP, consumption, non-mining investment and public demand. Much of this could be explained by the multiplier effect, the higher value of the AUD making imports cheaper and higher levels of tax collected from the mining companies. Higher levels of consumer spending arose from higher levels of disposable income being spread throughout the economy through higher wage rates, higher company dividends and higher transfer payments. The level of public demand rose for the federal government as the receipts of company taxes rose as the profits of the mining companies rose, and the levels of capital gains tax rose when people gained profits from the sale of their mining shares.

However, the decline in mining investment was associated with rising investment in dwellings (probably as a result of a fall in the cash rate to stimulate borrowing), higher volumes of exports (as a result of the investment) and a decline in imports (from the high levels when the miners were importing machinery and equipment). In terms of the effect on the economy, the greater investment in dwellings associated with the property price boom in the non-mining states provided a much needed contribution to GDP.

The effects of the mining boom on the economy were not just about the overall impact on business investment and GDP. Instead, to more fully understand the effects of the mining boom on the Australian economy it is also necessary to see the links between changes in:

- bulk commodity prices
- the terms of trade
- the value of the Australian dollar.

The massive increase in the price of our bulk commodity exports caused a steep rise in Australia’s Terms of Trade, Graph 5, with the index doubling between 2001 and 2013. In simple terms this gave Australians a greater ability to buy goods and services from overseas because the price of exports rose relative to the price of imports.

The value of the Australian Dollar, Graph 6, rises when the terms of trade rise and these rises increase Australia’s real national income. However, it does contribute to a two-speed economy by
increasing the price of exports and making some export industries less competitive in the global market. It also has adverse effects on domestic import competing industries since imports are cheaper. The reverse occurs when the AUD falls.

The RBA’s model of the economy shows that many of the effects of the mining boom arose from the increase in the real exchange rate. In 2013 it was estimated to be 44 percent higher than it would have been without the boom. After this peak it has also stayed much higher than many economists would have liked.

Graph 7: Australian dollar trade-weighted index

The higher AUD increased the purchasing power of households, along with higher wage rates, increased employment and higher levels of wealth. Purchasing power contributed most to the increase in real household disposable income per capita before the production phase of the boom kicked in. Then the RBA’s model predicted that the sheer volume of mining production would contribute most to income, relative to the scenario of not having a boom. The addition of both of these factors provided nearly all of the Effects of the Mining Boom on Income, Graph 7.

Similarly, the economic activity from the mining boom created stronger levels of employment and a lower Unemployment rate than would have otherwise been the case, Graph 8. In 2013 the unemployment rate was 1.25 percentage points less than it would have been without the boom.

Graph 8: Unemployment
Student activities

11. Examine Graph 1 and describe the extent of the rise and subsequent fall in the prices of bulk commodities.

12. Explain the relationship between bulk commodity prices and:
   • capital expenditure in mining
   • business investment in Australia.

13. Which economic aggregates contributed most to GDP growth when:
   • bulk commodity prices were rising?
   • bulk commodity prices were falling?

14. Explain the operation of the multiplier effect as it would have applied to fluctuations in the level of mining investment.

15. Using Graph 1 and Graph 5, explain the relationship between bulk commodity prices and the terms of trade.

16. Using Graph 5 and Graph 6, explain the relationship between the terms of trade and the value of the Australian dollar when expressed in terms of the trade-weighted index.

17. Examine Graph 7 and explain how the RBA’s modelling showed the purchasing power effect and the volume effect were likely to have influenced real household per capita disposable income in Australia as a result of the mining boom.

18. Discuss the likely effect of the mining boom on Australia’s unemployment rate.

Effects of the mining boom on the structure of the economy

Graph 9: Effects of the mining boom on industry output

The progress of the mining boom also changed the industrial structure of the economy, Graph 9, Effects of the Mining Boom on Industry Output. Many claimed that Australia was a two-speed economy.

Prior to 2013 there were large increases in the output of the mining and construction industries and moderate increases in electricity, gas and water as well as distributional services. Mining is a heavy user of electricity, gas and water and the employees of mining placed heavy demands on construction. The losers were those most affected by the higher AUD, such as agriculture, manufacturing and consumer services. The model shows them not picking up much around 2016 but the fall in the AUD over the last year has assisted these industries more than estimated. Tourism and education (international students) are also reviving. Over the last year, tourism from China has increased by 21 percent and education has emerged as our third biggest export industry, after iron ore and coal. Meanwhile government policies are attempting to stimulate the growth of small businesses and those businesses involved in innovation.
Geographically, the mining boom has been focussed in Western Australia (iron ore) and Queensland (coal). Both of these states increased their share of output in Australia while commodity prices rose, refer Graph 10, State Share of Output. The share of output of the other states fell, especially in the larger economies of New South Wales and Victoria. Again this led to claims of a two-speed economy. However, since the price of coal and iron ore started to fall both Queensland and Western Australia have suffered a fall in the share of output with New South Wales and Victoria on the rise again.

**Issues currently facing the Australian economy**

Australians now realise that the once in a generation mining boom was never going to last forever. The Chinese economy is now in a transition period from a high growth strategy based on industrialisation to a more moderate growth strategy based on consumer spending. The demand for iron ore and coal has dropped at a time when production is increasing and prices have fallen. The demand phase was definitely over by late 2013.

As a percentage of GDP, mining investment has fallen from 8 percent at its peak to about 4 percent at the moment. It is expected to fall to about 1.5 percent by late 2018. Thus there is still mining investment filtering into economic activity and there is likely to be further increases in mining output over the next few years. In other words, the mining investment phase still has a couple of years to run and the production phase is still expanding.

At its peak mining investment contributed to about two-thirds of the Australian economy’s economic growth. Now, with mining investment falling, the level of business investment is falling and Gross National Income, which takes into account the value of mining production, has been falling for about two years. The latest GDP growth figures, however, are up largely due to the increase in mining output.

**Student activities**

19. Using Graph 9, explain the likely effect of the mining boom on Australia’s main industry groups.

20. To what extent were the changes in industry output in Graph 9 related to fluctuations in the value of the Australian dollar.

21. Examine Graph 10 and explain how the course of the mining boom affected the share of output of each of Australia’s states.

22. Did the mining boom turn Australia into a two-speed economy? Why?
From March 2015 to March 2016:
• GDP growth was 3.1 percent
• Real Net National Disposable Income fell by 1.3 percent
• The Terms of Trade fell by 11.5 percent
• In the March Quarter 2016:
• GDP growth was 1.1 percent
• The main drivers of growth were Exports and Household Consumption
• The increase in exports arose from increased mining production and financial and insurance services
• The main detractor from growth was private gross fixed capital formation, which would have included the fall in mining investment.

Source: ABS 5206.0

What is of concern is that the overall share of business investment in GDP is falling, even for non-mining investment. However, there have been recent increases in investment in construction, agriculture and business services, refer Graph 11, Industry Share of Business Investment.

Graph 11: Industry share of business investment

So the decline in the mining investment boom is weighing heavily on economic growth in Australia. However, increases in mining production have tended to counter balance that effect and economic growth has risen recently, but not real disposable incomes.

Now the big question is - How will Australia continue its 25 years of uninterrupted economic growth as the investment and production phases of the mining boom slow down?

In his book, DOG DAYS: Australia after the Boom, Professor Ross Garnaut makes the following suggestions:
• If Australia fails to recognise the future problems that it faces and continues with a ‘business as usual’ approach then we will live in comfort for a while but soon enough it will end in a deep recession, probably like the 1982 recession.
• Alternatively if Australia chose to implement a discipline similar to the reform era, from 1983 to 2000, then the recession might be avoided. He calls this a ‘public interest’ approach to policy.
• Garnaut would like to see Australia:
  • Improve international competitiveness to restore the export levels of items such as, agriculture, services and high-value manufactures that had been expanding before the boom.
  • Use lower interest rates to lower the AUD to expand the economy rather than increasing government spending and increasing debt. He observed that:
    » it may take a while for the lower AUD to stimulate economic activity because business leaders would be worried that it may not stay at the low level
    » building productive infrastructure could be used to stimulate the economy.
  • Increase productivity to reduce the impact of a necessary cut in real incomes and spending so that our international competitiveness is improved.
  • Reduce incomes and spending when productivity gains do not cover the falls in the terms of trade.
  • Productivity reforms that bring down prices for consumers and businesses could involve:
    » promoting greater competition
    » reducing the high profit margins of businesses with monopoly power, including the utilities, tollways and airports
    » removing barriers to trade, including the
costs involved in international transactions

» tax reform, including the revision of the tax cuts and tax expenditures that occurred in the period of the boom

» greater stability in industrial relations.

• Implement new policies in an equitable manner without conceding to the demands of special interest groups that want to shift the burden on to others.

Student activities

23. Explain how changes in the Chinese economy have affected the path of the mining boom in Australia.

24. Using the data from the Australian National Accounts, March 2016, describe the current strengths and weaknesses in the performance of the Australian economy.

25. Examine Graph 11 and identify the industries whose share of business investment is rising after the peak of the boom.

26. Discuss the advantages and disadvantages of the ‘public interest’ approach to post-boom economic policy as proposed by Professor Garnaut.

27. Discuss the economic policies that Garnaut would like to see Australia adopt in the post-boom period.

28. Do the main federal political parties appear to be following Garnaut’s ‘public interest’ or ‘business as usual’ approach? In your answer refer to the economic plans of the main parties announced in the recent election campaign.
**Conclusion**

Many Australians, including public officials, could not see an end to the mining boom. Instead of money being put away to help with the structural adjustment required after the boom it was spent and many industries are now far from the growth path that they were on previously.

Instead the economy is in a period of transition, from the two-speed economy in which mining dominated many aspects of economic activity to one where it has a much lesser role and some industries are reviving.

But, now, after the boom, Australia seems vulnerable to international economic shocks. A recession in China or another financial crisis arising from the combined effect of quantitative easing and low interest rates could easily break our run of continued economic growth. Unfortunately, however, our major political parties seemed to be going about ‘business as usual’ when they released their economic plans for Australia during the recent election campaign. Let's hope that we remain the lucky country!

**Student activities**

29. Why, after the investment boom, is Australia still vulnerable to international economic shocks?

30. How could Australia have done more to ease the period of transition that it is experiencing after the mining investment boom?

**References:**

# BREXIT: THE PROS AND CONS

**By Ted Kramer**

## Arguments for Britain Leaving the European Union (EU)

<table>
<thead>
<tr>
<th>THE REFERENDUM RESULT</th>
<th>In favour of staying in the EU: 48%.</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE COSTS OF MEMBERSHIP</td>
<td>Britain receives back 4.5 billion pounds.</td>
</tr>
<tr>
<td>TRADE</td>
<td>Over 50% of British exports go to the EU. No tariffs are imposed on trade between member countries. Britain benefits from EU trade deals with other countries. Britain may not get a favourable trade agreement with the EU. Britain's GDP will fall.</td>
</tr>
<tr>
<td>INVESTMENT</td>
<td>International banks might leave Britain and set up their headquarters in the EU. Britain's car industry would be less competitive if it had to pay tariffs to sell in the EU.</td>
</tr>
</tbody>
</table>

## Arguments against Britain Leaving the EU

<table>
<thead>
<tr>
<th>SOVEREIGNTY</th>
<th>Britain will not be subject to many of the rules of the various bodies in the EU. Britons do not know how the processes of the EU work.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMMIGRATION</td>
<td>Britons can restrict the number of immigrants from EU member countries, especially from Eastern and Southern Europe. Many Britons have benefited from moving to EU countries for work or retirement. Britain has attracted some of the most skilled workers from EU countries.</td>
</tr>
<tr>
<td></td>
<td>Many Britons have benefited from moving to EU countries for work or retirement. Britain has attracted some of the most skilled workers from EU countries.</td>
</tr>
<tr>
<td></td>
<td>Britain will lose many of its links with Europe.</td>
</tr>
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</table>
Student activities

1. Explain the essential differences between the following with reference to the European Union (EU):
   - free trade area
   - customs union
   - single market
   - common currency.

2. Discuss the sovereignty and immigration arguments for Britain leaving the EU.

3. Discuss the trade and investment arguments against Britain leaving the EU.

4. How would you conduct a proper economic analysis of the proposition to leave the EU?

5. Given the uncertainty that has arisen, and will arise in the future if Britain goes ahead and leaves the EU, what could have been done to ensure a more seamless departure?

6. Examine the advantages that Britain has accrued by not adopting the common currency.

7. It seems that many Britons would like to return to trade relations with its former colonies, such as India, Australia, New Zealand, Singapore and Hong Kong, rather than rely on its regional trade agreement with the EU. How do you think that Australia would respond to such an idea? Should Australia promote with a trade agreement with Britain similar to our bilateral trade agreement with New Zealand? Why?