

## Box A

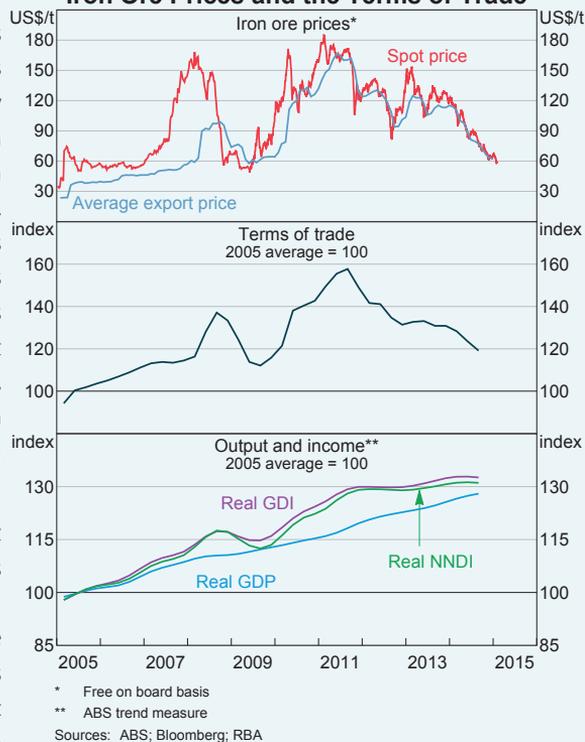
# The Effects of Changes in Iron Ore Prices

The US dollar spot price for iron ore has fallen by around 50 per cent over the past year and by over 65 per cent since its peak in early 2011 (Graph A1). This follows a very large increase in prices over the 2000s as the growth in global demand for iron ore, particularly from China, exceeded the growth in global supply. In time, this led to a substantial expansion of global iron ore capacity and production, including in Australia. While the iron ore price was expected to decline as additional supply came on line, the size of the fall has been larger than most forecasters anticipated. This reflects larger-than-expected increases in lower-cost supply over the past few years and, more recently, a smaller-than-expected reduction in supply from higher-cost producers and some unexpected slowing in the growth of Chinese demand.

As a result of the rapid expansion of investment and production in Australia, iron ore now accounts for close to one-fifth of the value of Australia's total exports. This means that the large falls in iron ore prices have driven a significant decline in Australia's terms of trade. The impact of this on the domestic economy has been offset to some extent by a depreciation of the Australian dollar.

One way of gauging the effects of changes in the terms of trade on the domestic economy is to compare different measures of economic activity. Changes in the terms of trade represent changes in relative prices, so will not *directly* affect the most commonly used measure of real output (real GDP). However, changes in the terms of trade directly affect the purchasing power of domestic income. This effect is commonly measured by comparing the change in real GDP with the change in real gross domestic income (real GDI), which deflates nominal exports by import prices rather than export prices.

**Graph A1**  
**Iron Ore Prices and the Terms of Trade**



Real GDI grew at a faster pace than real GDP over most of the 2000s, consistent with a rise in Australian living standards in response to the sharp increase in the terms of trade. However, this measure overstates the increase in purchasing power of national income over this period as some of the benefit from the rising terms of trade accrued to foreign investors (e.g. through dividend payments to non-resident owners of resource companies operating in Australia), and a greater share of gross income was used to offset depreciation of the mining capital stock as it increased in size. Real net national disposable income (real NNDI) attempts to adjust real GDI for

these effects. While it is difficult to gauge the share of foreign ownership of the iron ore industry, it is estimated to be fairly high. This suggests that a sizeable portion of iron ore profits over this period flowed to foreign investors.

The fall in the iron ore price over recent years has weighed on real GDI and (indirectly) real GDP, and is expected to continue to do so over the forecast period. This reflects the unwinding of the effects that operated when the terms of trade increased over the decade to 2011.<sup>1</sup> In particular, the fall in iron ore prices has placed downward pressure on national income, which has weighed on consumption and government revenue. To the extent that some of the fall in iron ore prices reflected weaker-than-expected demand, it would also have detracted from mining investment.

The magnitude and timing of these effects depend on a number of factors, including changes in the exchange rate, the responses of monetary and fiscal policies and the extent to which households and businesses respond to the changes in relative prices they face. A depreciation of the exchange rate mitigates the size of the change in prices in Australian dollar terms and offsets some of the economic effects of the decline in the terms of trade by stimulating demand in other trade-exposed sectors of the economy, such as manufacturing, tourism and education. The trade-weighted exchange rate has depreciated by 15 per cent since the peak in iron ore prices in 2011 and by 7 per cent over the past year. Monetary policy has also responded to the balance of these, and other, forces; the current accommodative stance is providing support to demand as the economy adjusts to a large decline in mining investment and the exchange rate remains above most estimates of its fundamental value.

Falling iron ore prices can reduce household income, and therefore household expenditure, through

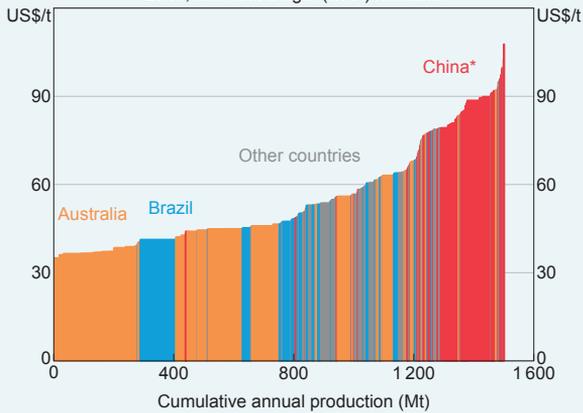
several different channels. Lower resource equity prices and/or dividend payments reduce household wealth and income, although this effect is mitigated to some degree by the high level of foreign ownership of iron ore companies. A lower tax base from falling royalties and company tax receipts could lead to lower transfer payments to households, higher taxes and/or lower public expenditure if governments choose not to allow their budget position to deteriorate (see below). A decline in mining investment reduces demand for labour and exerts downward pressure on wages.

The impact of falling household disposable income on real GDP depends on how households respond. To the extent that the saving ratio increased over the decade to 2013 because households viewed at least some of the increase in the terms of trade as temporary, as suggested by Downes, Hanslow and Tulip (2014), this would imply that the saving ratio will fall somewhat in response to the decline in the terms of trade. This would support consumption growth relative to a scenario in which the earlier rise in the saving ratio was driven by more permanent factors.

The bulk of Australian iron ore producers are at the lower end of the global iron ore cost curve, which means that most Australian production remains profitable at current iron ore prices (Graph A2). Producers have responded to the decline in their profitability by reducing costs, such as labour. Producers have also reduced their expenditure on sustaining the existing capital stock and on exploration. To date, there has been a negligible response of export volumes to the fall in iron ore prices; in fact, the major producers are still planning to expand production a little further. Typically, new mining investment would also be expected to decline in response to lower prices; however, with the exception of planned capacity increases from major producers, existing commitments for major new projects were already limited.

<sup>1</sup> See Downes P, K Hanslow and P Tulip (2014), 'The Effect of the Mining Boom on the Australian Economy', RBA Research Discussion Paper No 2014-08.

**Graph A2**  
**Global Iron Ore Production Costs**  
 2015, cost and freight (CFR) to China



\* Includes freight costs within China  
 Sources: AME Group; RBA

The fall in the iron ore price over recent years has reduced royalties for the Western Australian Government and company tax receipts for the Australian Government. During the mining boom, governments responded to the increase in the tax base by lowering the average tax rate for households, and increasing expenditure and transfer payments. As the iron ore price has fallen from its peak, governments have chosen to offset lower tax and royalty receipts partly through fiscal restraint on current expenditures, such as transfer payments to households, and partly by increasing borrowing over the next few years. ❖

