Box B

Measuring the Mining and Non-mining Sectors

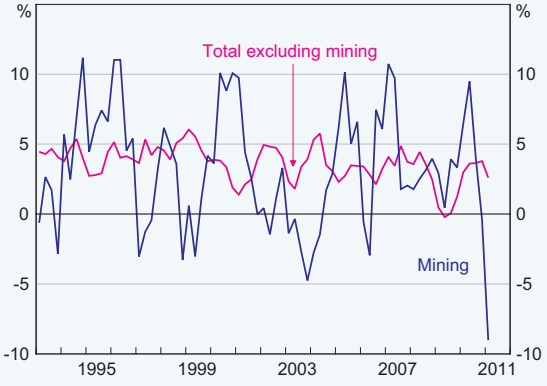
Traditionally, fluctuations in agricultural production have contributed to significant short-term volatility in overall GDP, especially when the farm sector represented a large share of the economy. Accordingly, analysis of developments in the broader economy frequently focuses on non-farm GDP.

In a similar vein, the sharp weather-related falls in mining production around the start of the year are contributing to volatility in overall GDP. For example, on the expenditure side of GDP, while domestic demand growth was quite robust in the March quarter, the falls in exports of coal and (to a lesser extent) iron ore were estimated to have subtracted 1¾ percentage points from GDP growth, resulting in a fall of 1.2 per cent in quarterly GDP.[1] This effect will be reversed in subsequent quarters, with coal expected to provide a significant boost to GDP growth as water is removed from flooded pits and production recovers. In addition, the expected run-up in mining investment, most notably in the LNG and iron ore sectors, will significantly boost GDP growth over coming years.

This suggests that for some purposes it may be desirable to focus on separate measures of activity in the mining and non-mining sectors, with the mining sector defined reasonably broadly to include both current production and investment for future production. While there is at least one example of a country that does this – Norway estimates 'mainland' GDP, which excludes the 'offshore' economy comprising production of oil and gas, and shipping – at present, data are not published along these lines for Australia.

Measuring the output of any particular sector is difficult because of the numerous interconnections between sectors. In the production side of the national accounts, the ABS estimates gross value added (GVA, defined as gross output less non-labour intermediate inputs) for the mining sector, which, at around 9 per cent of GDP, is the second-largest single sector after finance and insurance (Graph B1). However, this estimate does not include the value of output in sectors closely linked to mining production: for example, when Queensland coal production fell around the start of this year, so too did output of rail transportation and port services partly because coal exports had fallen. Furthermore, this measure does not include most investment in mining, which is typically attributed to the value added of the construction (and other) sectors.

Graph B1
Growth in Gross Value Added
Year-ended



Sources: ABS; RBA

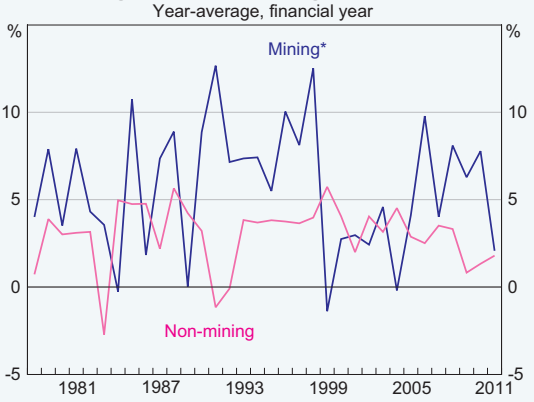
1 The subtraction from growth implied by the measure of gross value added (GVA) on the production side of the accounts was, however, much smaller, at 0.6 per cent, though this does not include the effect of the wet weather on the GVA of other sectors providing 'inputs' to the mining sector, such as the transport sector.

Another approach uses data from the expenditure side. Based on a number of assumptions, it is possible to come up with alternative estimates of output in the mining and non-mining sectors, at least at the annual frequency. This is broadly the approach used by Statistics Norway in estimating 'offshore' and 'mainland' GDP. A simple estimate of output related to the mining sector can be obtained as follows[2]:

- the volume of resource exports, which is available at a quarterly frequency
- *plus* real investment by the mining sector, which is available on an annual basis in the annual national accounts
- *less* an estimate of the imported component of mining investment. Given that there are no official data for this, the estimates that follow are RBA staff estimates, based on data for total capital imports and information from liaison with mining companies.

Given the uncertainties, any results are best treated as illustrative. Overall, the estimates suggest that activity in the broadly defined mining sector represented around 14¾ per cent of GDP at current prices in 2010/11, with mining exports of 12½ per cent of GDP and 'net' mining investment (excluding the imported component) around 2¼ per cent. These estimates also suggest that activity in the mining sector has grown at a faster pace than in the non-mining sector over the past three decades. Activity related to the mining sector has grown in real terms at an annual rate of about 5½ per cent over this period, while activity in the non-mining sector has grown at an annual rate of about 3 per cent. The gap between growth in the mining sector and the rest of the economy has increased somewhat in recent years after narrowing in the first half of the 2000s. Over the six years to 2010/11, annual growth in non-mining sector activity is estimated at around 2¼ per cent, versus growth in mining activity of 6¼ per cent (Graph B2). There has also been significant divergence in the experience of industries outside the mining sector, with growth in some services sectors quite strong, but weaker growth in some trade-exposed sectors.

Graph B2
Mining and Non-mining GDP Growth
Year-average, financial year



* Resource exports plus mining investment, less RBA estimate of the imported component of mining investment
Sources: ABS; RBA

It should be stressed that these estimates are based on that part of output that is directly related to the mining sector and do not capture the broader income effects throughout the economy. As the Bank has noted frequently, recent developments in the mining sector and in commodity prices have had a range of flow-on effects throughout the economy, including via wealth effects, higher dividend flows to households, higher tax and royalty payments to governments, and effects on the exchange rate (which have reduced the price of imported goods and services for households and businesses).

2 This abstracts from changes in mining inventories, which can probably be ignored at the annual frequency, although not at the quarterly frequency (for example, it is likely that there was a run-down in coal inventories in the December quarter 2010, so that the fall in coal exports was smaller than the fall in coal production). It also abstracts from mining production for domestic use, which – in national accounts terms – will mostly represent an intermediate good rather than a final good. In principle, it would be possible to obtain exact data for monthly or quarterly physical production of mineral commodities such as coal, iron ore and LNG, which would include domestic consumption and changes in inventories, but such data are not currently available on a timely basis.

Looking ahead, as mining investment and exports continue to increase, growth in the non-mining economy is likely to remain slower than growth in overall GDP. As the structure of the economy adjusts to the large change in global relative prices, the increased size of the mining sector means that overall GDP will be more affected by any volatility in mining sector activity. This highlights the importance of data that will allow more detailed analysis of the mining and non-mining sectors.