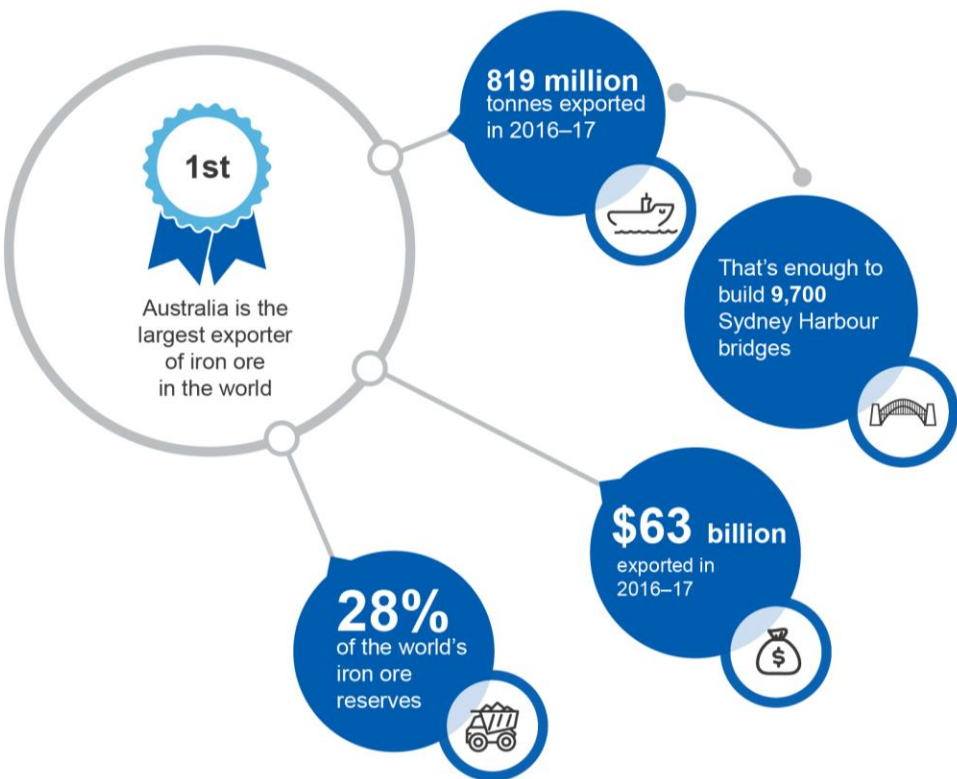


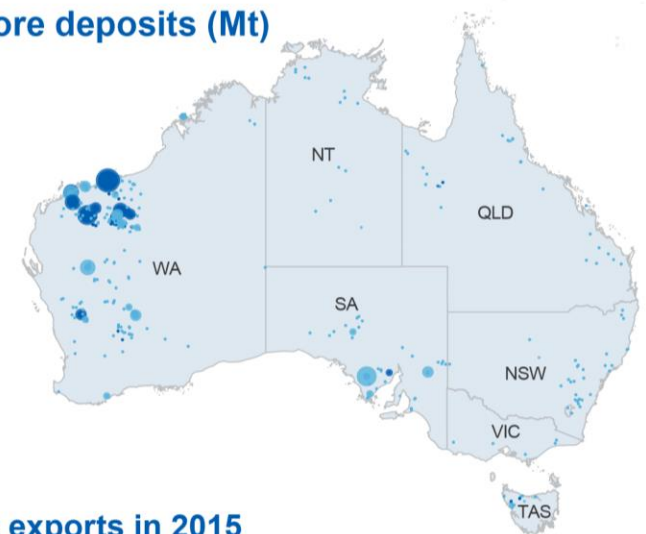
Iron ore

Resources and Energy Quarterly September 2017

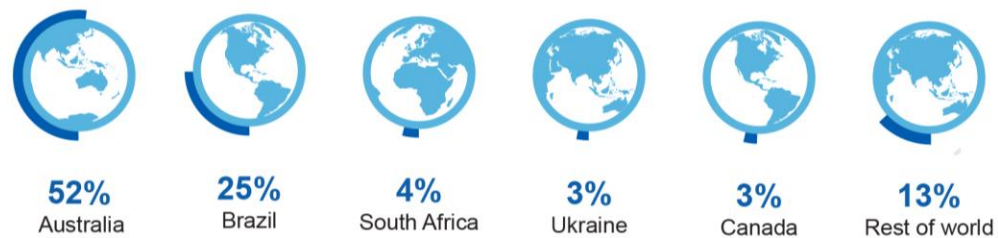


Major Australian iron ore deposits (Mt)

- <229
- 230–813
- 814–1,777
- 1,778–3,042
- 3,043–5,446
- >5,447
- Deposit
- Operating mine



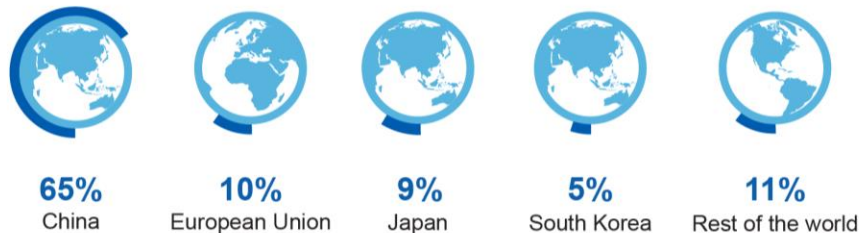
Global share of iron ore exports in 2015



Australia's iron ore key export destinations, 2016–17



Global share of iron ore imports in 2015



Summary

- Australia's iron ore export earnings increased by 32 per cent to \$63 billion in 2016–17, driven in large part by higher prices. The value of Australia's iron ore exports is forecast to decline to \$54 billion in 2018–19, as the impact of forecast lower prices offsets volume gains.
- The iron ore price is forecast to decline to US\$49 a tonne (FOB Australia) in 2019, due to growing low-cost supply from Australia and Brazil and moderating demand from China.
- Australia's iron ore export volumes are forecast to rise from 819 million tonnes in 2016–17 to 887 million tonnes in 2018–19, as a result of ongoing productivity gains and new additions to capacity.

Prices

Rebound in the iron ore price supported by high steel margins in China

The iron ore price has rebounded from a low of US\$47 a tonne (FOB Australia) in mid-June, to average an estimated US\$65 a tonne in the September quarter. The iron ore price has been boosted by strong steel margins in China (see the Steel chapter), which has resulted in increased steel production and mill restocking of inputs.

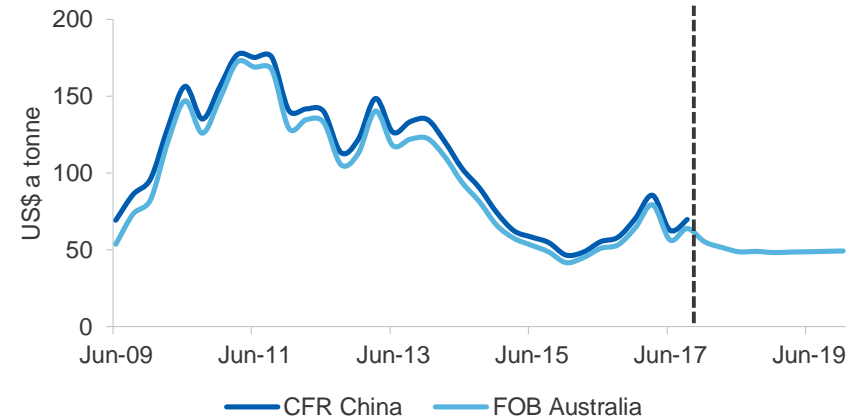
The iron ore price is forecast to average US\$64 a tonne in 2017, with the price forecast to gradually decline in the December quarter. China's steel production is expected to remain strong in the lead up to China's winter months, providing some short-term support to the iron ore price, before the impact of inventory builds and weaker demand take effect.

Iron ore price forecast to decline

The iron ore price is forecast to decline to US\$50 a tonne and US\$49 a tonne in 2018 and 2019, respectively, broadly unchanged from the outlook in the June 2017 *Resources and Energy Quarterly*. Growing low-cost supply from Australia and Brazil and moderating demand from China, are expected to weigh on the iron ore price.

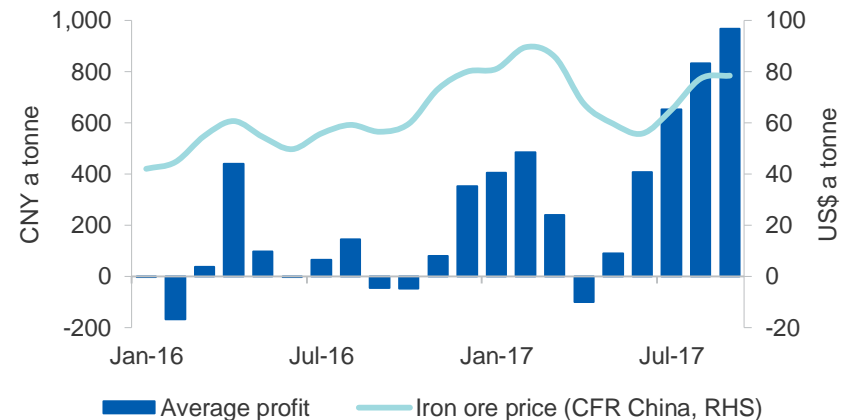
There are several uncertainties impacting the outlook for the iron ore price. The first is the pace and magnitude of the decline in China's steel production, which in turn largely depends on government policy. Second, companies have benefited from the recent price rally, and thus may be able to continue to produce at cash losses for a longer period of time. The resultant oversupply may bring on exaggerated price weakness.

Figure 4.1: Iron ore price, FOB Australia and CFR China, quarterly



Source: Bloomberg (2017) *Metal Bulletin*; Department of Industry, Innovation and Science (2017)

Figure 4.2: China steel margins and iron ore price, monthly



Notes: Profit is average monthly profit at integrated basic oxygen furnace steel plants in China.

Source: Bloomberg (2017) *BBG*; Bloomberg (2017) *Metal Bulletin*

Widening gap between prices received for high and low grade iron ore

The gap between prices received for high and low grade ores has widened in the September quarter. This rising differential reflects a range of factors, including a growing supply of lower grade ore, and a preference for high grade ore from China's steel mills. The use of higher grade ores improves the efficiency of steel mills. There has been a drive to improve efficiency in China's steel sector, due both to government anti-pollution initiatives, and mills trying to maximise output while steel prices are high. In addition, there is a push underway to make high quality steel products, which require higher grade ore. While Australia generally produces high quality iron ore (close to the 62 per cent benchmark), some producers of lower grade ore may be affected if prices received are relatively low on an ongoing basis.

World trade

World trade in iron ore is forecast to grow at an average annual rate of 1.7 per cent over the outlook period, to reach 1.6 billion tonnes in 2019. Supply growth will be driven by increased production from low-cost producers, particularly in Australia and Brazil, who will eventually displacing high-cost producers as prices decline. Despite an expected decline in consumption, China's iron ore imports are forecast to remain broadly steady, due to declining domestic production. Robust steel production from the rest of the world is also expected to support import demand.

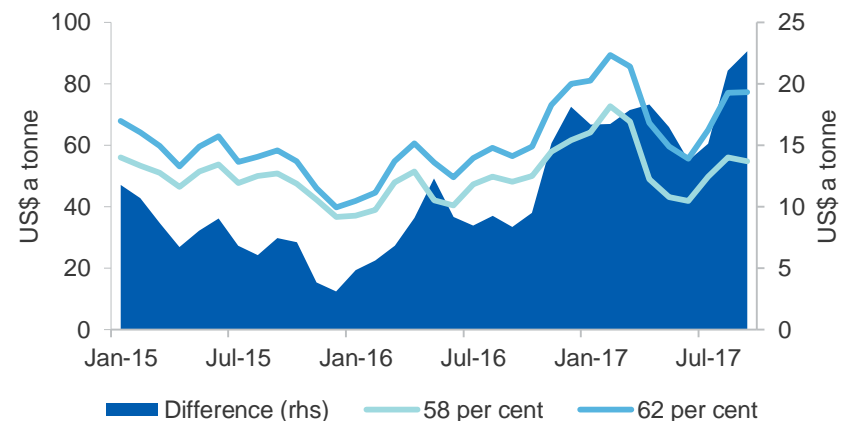
The outlook for growth in world trade is characterised by a number of uncertainties, in particular, the role of government policy in countries like China and India, and the length of time that mines can sustain operating losses as prices decline.

China's iron ore imports forecast to remain steady

China's iron ore imports increased by 4.6 per cent year-on-year in the three months to August. Iron ore import demand is expected to continue to be supported by robust steel production growth in the lead up to winter. China's iron ore imports are forecast to increase by 4.9 per cent to total 1.1 billion tonnes in 2017.

China's iron ore imports are forecast to be broadly stable, at 1.1 billion tonnes, over the outlook period to 2019. While consumption is forecast to decline in line with steel production over the same period, imports are

Figure 4.3: Iron ore prices for 58 and 62 per cent iron ore grades



Notes: Prices are for CFR China. Difference is in terms of absolute US\$ a tonne.
Source: Bloomberg (2017) Custeel

expected to remain high because of a forecast decline in domestic output. The grades at China's iron ore mines are declining, making domestically-produced iron ore less competitive against imported ore.

There is potential for domestic iron ore production to decline slower than forecast, which would result in lower import demand than what has been forecast. China's iron ore operations tend to be highly responsive to prices, reflected in the 11 per cent increase in domestic iron ore production (adjusted for quality) in the year to July.

India's iron ore exports surge in 2017 but are forecast to moderate

India's iron ore exports are forecast to reach 38 million tonnes in 2017 — almost double the volume from the previous year, but well below the peak of 101 million tonnes in 2008. Exports have surged on the back of increased domestic production, which has come about in response to higher prices and more supportive government policies (including the easing of mining and export restrictions).

India's iron ore exports are forecast to moderate over the rest of the outlook period, with India's rapidly growing steel industry expected to consume more domestic iron ore.

While domestic iron ore production is forecast to increase, the pace of growth is expected to slow, due to a number of challenges. A forecast decline in prices will weigh on the profitability of some producers. Further, a 30 per cent export duty is still in place for ore with iron content of 58 per cent and above. This has resulted in large stockpiles building up at mines this year, discouraging further exploration and development.

Australia and Brazil to continue to dominate seaborne trade

All three of the world's major iron ore producers — Rio Tinto, BHP and Vale — have indicated that iron ore production will be at the lower end of the range of their initial guidance this year. Vale have indicated that production will be at the lower end of the initial 360–380 million tonne guidance range in 2017. Rio Tinto have downgraded Australia's iron ore shipments to 330 million tonnes in 2017 (previously a range of 330–340 million tonnes). BHP produced 268 million tonnes in 2016–17, hitting the lower end of guidance of 268–272 million tonnes.

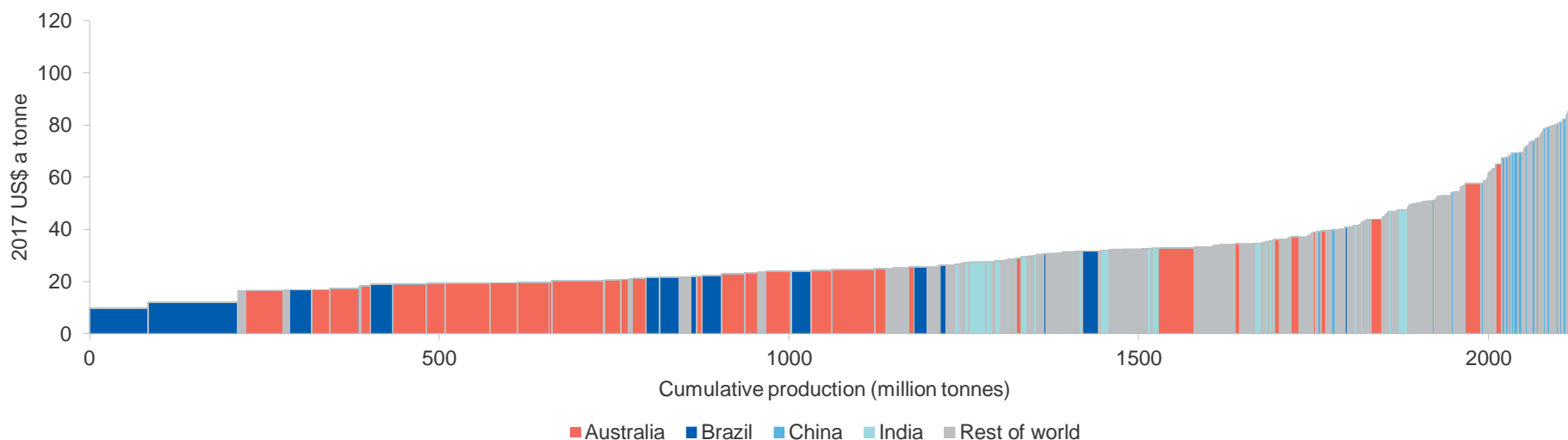
Nevertheless, iron ore exports from low-cost producers in Australia and Brazil are forecast to continue to grow through the outlook period, displacing supply from high-cost producers and supporting an increase in both countries' share of global seaborne trade. Australia is forecast to increase its market share from an estimated 52 per cent in 2016 to 55 per cent in 2019, while Brazil is forecast to increase its market share from 24 per cent in 2016 to 26 per cent in 2019. Brazil's iron ore export growth will be supported by the ongoing ramp up of Vale's S11D mine.

Australia

Iron ore exploration expenditure remained steady in 2016–17

After consecutive years of large declines since 2012, exploration expenditure has stabilised, remaining unchanged from 2015–16 levels. Australia's iron ore exploration expenditure totalled \$291 million in 2016–17. Growing global supply and expectations of low prices have discouraged a rebound in exploration activity.

Figure 4.4: Forecast iron ore cash costs by mine and country in 2019



Notes: Based on FOB cash costs in 2017 terms, including on-site and off-site costs.

Source: AME Group (2017)

Iron ore export values forecast to decrease but volumes forecast to rise

Australia's iron ore export earnings increased by 32 per cent to \$63 billion in 2016–17. This was driven by higher prices in 2016–17 and, to a lesser extent, growth in export volumes. Despite weather-related impacts at the start of the year and rail maintenance at Rio Tinto's operations, export volumes rose by 4.2 per cent to 819 million tonnes in 2016–17, while production rose by 4.5 per cent to 873 million tonnes.

Australia's iron ore exports earnings are forecast to decline over the next two years, by 5.1 per cent in 2017–18 to \$60 billion, and by 9.2 per cent in 2018–19 to \$54 billion. The decline in export earnings will be driven by a forecast decline in the iron ore price.

Export volumes are forecast to grow by 5.3 per cent in 2017–18 to 862 million tonnes, and by 2.8 per cent in 2018–19 to 887 million tonnes. Growth in export volumes is expected to be supported by ongoing productivity improvements and additions to capacity.

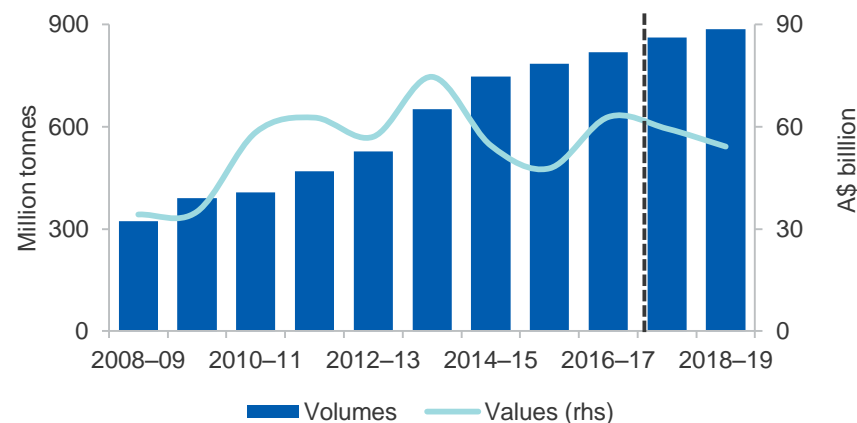
Rio Tinto's 10 million tonne a year Silvergrass mine was officially opened in August. Iron ore mined at Silvergrass will be used to maintain the ore grades in Rio Tinto's Pilbara blend. It is the first of several replacement operations — currently being scoped by all major producers — that are expected to come online beyond 2018–19 for depleting mines in the Pilbara.

There are relatively small risks to the outlook for production growth, with an estimated 95 per cent of Australia's iron ore production expected to remain profitable at the forecast prices in 2019. However, margins will be tight or even negative in some of the smaller, high-cost mining operations, and some producers may be exposed to persistently low prices or large discounts for lower grade ore.

The forecast for export values have been revised down for 2018–19

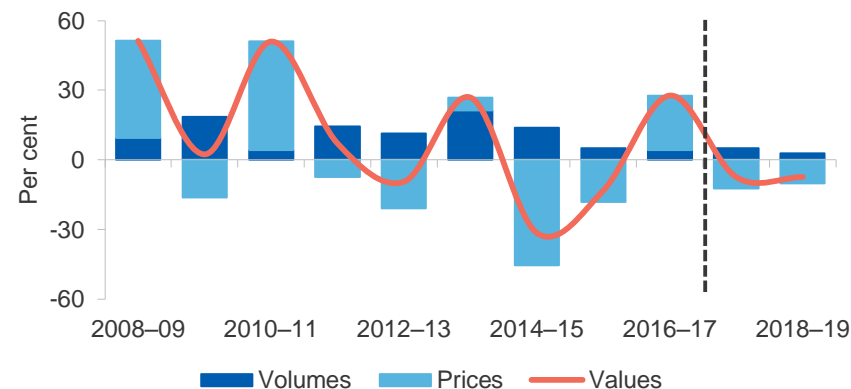
The forecast for Australia's iron ore export values in 2017–18 is broadly unchanged from the June *Resources and Energy Quarterly*, but has been revised down by \$2.9 billion for 2018–19, driven by minor downwards revisions to production. The downwards revision to production reflects slower than expected production growth at several operations. Higher prices in the second half of 2017 are expected to offset the impact of lower production, while the price forecast for 2018 and 2019 is largely unchanged.

Figure 4.5: Australia's iron ore export volumes and values



Source: ABS (2017) *International Trade, Australia, 5465.0*; Department of Industry, Innovation and Science (2017)

Figure 4.6: Annual growth in Australia's iron ore export values, contributions from prices and export volumes



Source: ABS (2017) *International Trade, Australia, 5465.0*; Department of Industry, Innovation and Science (2017)

Table 4.1: World trade in iron ore

| World trade in iron ore | Unit | 2016 s | 2017 f | 2018 f | 2019 f | Annual percentage change | | |
|-------------------------|------|--------|--------|--------|--------|--------------------------|--------|--------|
| | | | | | | 2017 f | 2018 f | 2019 f |
| World trade | Mt | 1,545 | 1,567 | 1,599 | 1,626 | 1.4 | 2.1 | 1.7 |
| Iron ore imports | | | | | | | | |
| European Union 28 | Mt | 137 | 141 | 144 | 145 | 2.9 | 2.4 | 0.5 |
| Japan | Mt | 130 | 126 | 133 | 134 | -3.2 | 5.3 | 1.4 |
| China | Mt | 1,024 | 1,074 | 1,068 | 1,066 | 4.9 | -0.6 | -0.2 |
| South Korea | Mt | 72 | 75 | 78 | 79 | 4.6 | 3.4 | 2.1 |
| India | Mt | 4 | 4 | 5 | 6 | 0.2 | 28.1 | 26.0 |
| Iron ore exports | | | | | | | | |
| Australia | Mt | 808 | 839 | 872 | 895 | 3.8 | 3.9 | 2.7 |
| Brazil | Mt | 374 | 384 | 403 | 419 | 2.7 | 4.9 | 3.9 |
| India | Mt | 22 | 38 | 36 | 33 | 75.0 | -4.5 | -8.8 |
| Ukraine | Mt | 37 | 48 | 44 | 42 | 31.9 | -8.2 | -5.3 |

Notes: *s* Estimate; *f* Forecast

Source: World Steel Association (2017); International Trade Centre (2017); Department of Industry, Innovation and Science (2017)

Table 4.2: Iron ore outlook

| World | Unit | 2016 | 2017 f | 2018 f | 2019 f | Annual percentage change | | |
|-----------------|------|---------|---------|-----------|-----------|--------------------------|-----------|-----------|
| | | | | | | 2017 f | 2018 f | 2019 f |
| Prices bc | | | | | | | | |
| – nominal | Mt | 53.5 | 64.0 | 49.5 | 49.0 | 19.7 | -22.7 | -0.9 |
| – real d | Mt | 54.6 | 64.0 | 48.5 | 47.0 | 17.3 | -24.3 | -3.1 |
| Australia | Unit | 2015–16 | 2016–17 | 2017–18 f | 2018–19 f | 2016–17 s | 2017–18 f | 2018–19 f |
| Production | | | | | | | | |
| – Steel hs | Mt | 5.05 | 5.35 | 5.26 | 5.26 | 6.1 | -1.7 | -0.1 |
| – Iron ore | Mt | 836.0 | 873.3 | 902.5 | 929.1 | 4.5 | 3.3 | 3.0 |
| Exports | | | | | | | | |
| Steel | Mt | 0.77 | 1.00 | 0.98 | 0.98 | 30.5 | -2.1 | -0.1 |
| – nominal value | A\$m | 598 | 872 | 740 | 739 | 45.8 | -15.1 | -0.1 |
| – real value hi | A\$m | 621 | 891 | 740 | 722 | 43.4 | -16.9 | -2.4 |
| Iron ore | Mt | 785.8 | 818.9 | 862.3 | 886.7 | 4.2 | 5.3 | 2.8 |
| – nominal value | A\$m | 47,799 | 62,861 | 59,663 | 54,185 | 31.5 | -5.1 | -9.2 |
| – real value i | A\$m | 49,673 | 64,229 | 59,663 | 52,921 | 29.3 | -7.1 | -11.3 |

Notes: **b** fob Australian basis; **c** Spot price, 62 per cent iron content basis; **d** In 2017 US dollars; **h** Crude steel equivalent; Crude steel is defined as the first solid state of production after melting. In ABS Australian Harmonized Export Commodity Classification, crude steel equivalent includes most items from 7206 to 7307, excluding ferrous waste and scrap and ferroalloys; **i** In 2017–18 Australian dollars; **f** Forecast; **s** Estimate

Source: ABS (2017) International Trade in Goods and Services, Australia, 5368.0; Bloomberg (2017) Metal Bulletin; World Steel Association (2017); AME Group (2017); Company Reports; Department of Industry, Innovation and Science (2017)