NAB ALUMINIUM OUTLOOK

NOVEMBER 2016

National Australia Bank

KEY POINTS:

- The aluminium market will continue to be shaped by significant capacity additions in China. A large portion of the new capacity will be based in the north western regions of Xinjiang and Inner Mongolia, with access to captive coal mines and lower cost electricity. The industry, however, has been singled out by the Chinese government in its new five year plan for the non-ferrous metals sector as 'severely over capacitated' and directions have been issued to control any capacity additions. A joint statement with the US was also issued post the G20 meeting in September to tackle global excess supply. If effective, these measures could see production expansions or restarts curbed, making the future aluminium supply glut less severe than previously anticipated.
- Demand growth will continue to slow in China, while growth from the rest of the world is unlikely to be fully offsetting for the market balance, particularly given anticipated supply increases. However, some positive long term trends exist for aluminium demand – the increasing use of aluminium sheets in car manufacturing, and aluminium wire instead of copper in the power sector, will support underlying demand.
- The spectacular run-up in aluminium premiums has now been reversed following the introduction of tough measures by the LME to tackle warehousing bottlenecks and high load-out charges. Inventory levels at various LME locations have been on the decline and premiums now more reflect underlying supply and demand factors.
- Popular inventory financing trades using the metal could face new challenges as forward curves shift and US interest rates rise. The reversing of such trades could potentially release large quantities of metal into the market, putting further downward pressure on prices.
- Overall, we forecast a well supplied market in 2016 and 2017, with prices averaging at USD $1595/tonne and $1670/tonne. In 2018, demand prospects could improve with a higher average price forecast of $1740/tonne.

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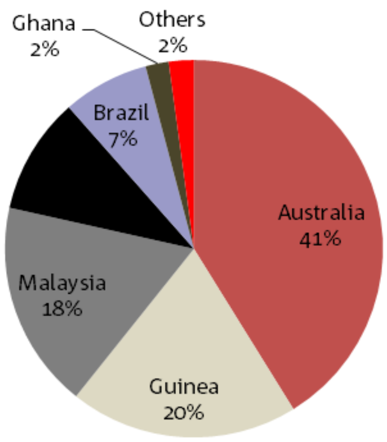
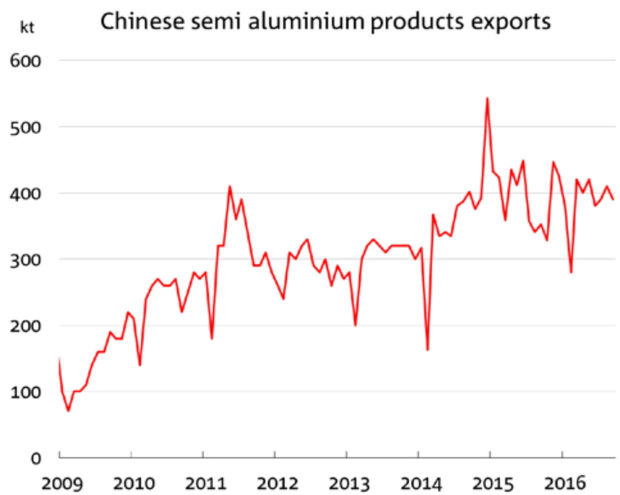
THE SUPPLY GLUT

CHINA SECURES BAUXITE IMPORTS



CHINA EXPORTS ITS DOMESTIC OVER SUPPLY



Sources: Bloomberg

- The global aluminium market continues to be driven by Chinese producers, which plan to add significant new capacity at lower costs. However, the government's recognition of the industry's over capacity and increasing global pressure to control production and exports could see Chinese firms' expansion efforts curbed and the supply glut may not be as bad as previously feared.
- Bloomberg Intelligence estimates global aluminium projects will add 3.2 million tonnes of capacity in 2016, of which 94% in China. Many of the new Chinese projects will be based in the north western regions of Xinjiang and Inner Mongolia, with access to captive coal mines and lower cost electricity. Data on fixed asset investment by the ferrous metals sector indicates investment peaked in 2015 at elevated levels. Given the estimated lag of two to three years from investment to production, the supply glut could occur in 2017 and 2018.
- China's reliance on ore imports has exposed it to policy changes at its major importing sources, but the country has flagged the importance of securing access to ore reserves, especially after export bans were imposed in Indonesia and subsequently Malaysia (see slide 4). Chinese firms have managed to secure bauxite supply from overseas and in some instances have invested in offshore refineries and port construction. China's bauxite imports volumes held up this year, despite Malaysia's export ban imposed back in January, which will last till the end of the year. More shipments from Africa are coming online as Chinese investment increases. Imports from Guinea have been increasing significantly, and Guinea is now the second largest import origin after Australia.
- A December 2015 agreement by 14 major Chinese producers to restrain project restarts in response to the low prices only lasted for a few months before smelters broke the agreement to fight for market share. The Chinese government recently identified the aluminium industry as 'severely over capacitated' and stated capacity needs to be capped. In early September following the Hangzhou G20 meetings, China issued a joint statement with the US, recognising the over capacity and committing to working together to address this issue.
- Overall, while the supply glut may not be as severe if the Chinese government is serious about implementing its cap on capacity, the downward pressure on prices will remain, as the industry goes through consolidation and could significantly shift down cost curves with lower power costs and secure access to bauxite reserves.

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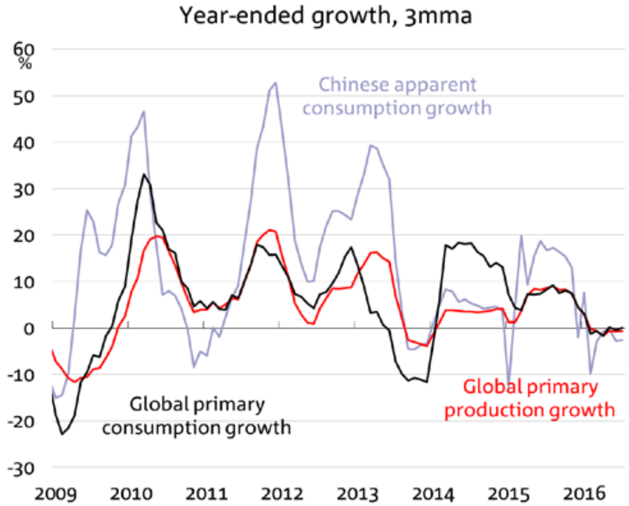
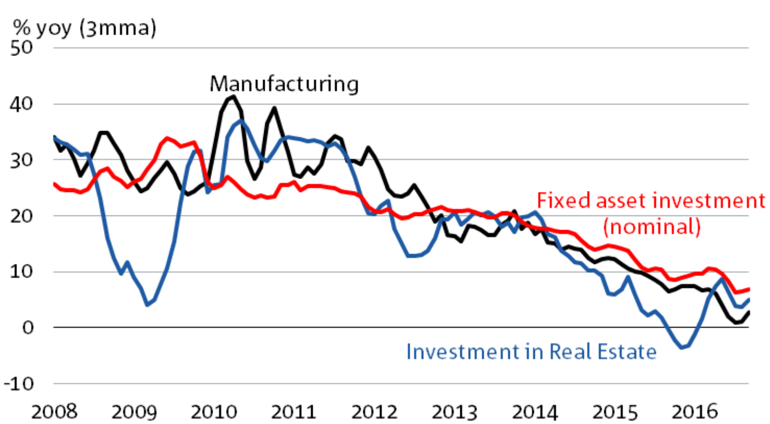
SLOWING DEMAND GROWTH BUT WITH LONG TERM POTENTIAL

CONSUMPTION GROWTH SLOWS



Sources: Bloomberg

CHINESE DEMAND IN TREND SLOWDOWN



Source: CEIC, NAB Economics

- Demand growth will continue to slow in China, while growth from the rest of the world unable to offset the slowdown at a time of significant supply increases. However, some positive long term trends exist for aluminium demand – the increasing use of aluminium sheets in car manufacturing and aluminium wire instead of copper in the power sector will support underlying demand.
- In the near term however, the latest Chinese data showed new construction starts fell in September, and this trend may be further exacerbated by tighter regulations around house purchases and mortgage lending. A range of tier two and tier three cities have introduced a fresh round of restrictions to cool markets. Similarly, the People's Bank of China has instructed banks to rein in mortgage credit and better manage risk. This may further slow overall investment in coming months, flowing through into weaker industrial production and commodity demand.
- The increasing use of lighter weight aluminium sheets in car manufacturing could see demand grow, especially as global car sales recover. The push towards more fuel efficient cars will support aluminium demand in the long term. According to Alcoa, the aluminium content per vehicle will rise 39% by 2025 to 547 pounds amid greater use in car frames and panels. As a result, aluminium producers are investing in new technology and boost capacity to meet this demand. The substitution from copper to aluminium wires in the power sector also bodes well for long term aluminium demand. It is also worth noting India's ambitious push to expand its electricity grid could also see demand increase for aluminium.

Aside from the underlying aluminium demand, it is believed there is significant invisible inventory in China, which could distort the demand picture. Smelters are increasingly taking in molten aluminium, which is in a non-exchange deliverable format, to reduce the need to remelt ingot metals. China Hongqiao, for example, reported generating 93% of revenue from molten aluminium in 1H 2016. It is unclear what quantity of the metal is tied up in the invisible inventory, which makes forecasting demand growth more challenging. In addition to the molten aluminium, there is significant inventory tied up in financing deals taking advantage of the forward contango and low interest rates. Should these trades reverse, substantial supply could be released while the financing demand declines (more details on pages 5 and 6).

CHINA'S NEW FIVE YEAR PLAN FOR NON-FERROUS METALS

CHINESE GOVERNMENT ALUMINIUM FORECASTS

Primary aluminium (kilo tonnes)	2010	2015	2020 p
Production	16,240	31,410	40,000
Apparent consumption	15,850	31,070	40,000
Annual compounding growth			
Production		14.1%	5.0%
Apparent consumption		14.4%	5.2%

2020 numbers are projections in the government's five year plan
Source: Ministry of Industry and Information Technology

- On 18 October, China's Ministry of Industry and Information Technology (MIIT) put forward a new five year plan (2016-2020) for the non-ferrous metals sector. In particular, it has singled out the aluminium smelting industry as 'severely over capacitated'. While demand is forecast to increase for light aluminium alloy sheets, overall demand growth is set to slow significantly as the country's industrialisation slows (see table). The lack of sufficient domestic ore reserves and the reliance on bauxite imports have also been identified as an issue. Overall, the government wishes to improve the efficiency of the industry and encourage innovation and higher value add manufacturing, while strictly prohibiting any increases in smelting capacity.
- In an assessment of the current state of its aluminium industry, the Ministry of Industry has concluded that significant smelting capacity has been added in the western regions, many of which have access to captive coal mines and lower cost electricity. In 2015, 67% of smelting capacity was based in the west and 70% of smelters nationally had access to off-grid power plants, a 40% increase from the 2010 level.
- However, a number of challenges have also been identified for the industry, including a lack of innovation, undifferentiated products on the mid to low end, increasing pressure for tighter environmental controls and securing access to ore reserves. At present, China's domestic supply of bauxite is insufficient to meet demand and the import reliance is about 45%, not as high as that of copper (73%) or nickel (86%), but deemed high by the government, and therefore exposing the industry to policy changes in the exporting countries. The overseas expansion efforts by Chinese firms in the past few years have tended to lack sufficient risk management and have suffered from high debt levels and poor financial performance.
- On the supply side, the MIIT has set forth a target for domestic bauxite reserves to be increased by 600 million tonnes by 2020, especially in Guizhou and Shanxi. Companies are also encouraged to secure access to overseas reserves by investing in south east Asia, Oceania, Africa, South America and the Caribbean's. The percentage of recycled aluminium in total production is to be lifted to 20% by 2020 as well from the current level of 15%. To address the overcapacity, the government is planning to cap aluminium smelting capacity at current levels and any construction or expansion projects need to be publicised online. Without increasing aluminium smelting capacity, the construction of off-grid power plants is to be encouraged to lower electricity costs for smelters, especially in north west and south west China.
- On its demand forecast, the MIIT forecasts that demand growth for aluminium will slow significantly, but identifies the need to invest in higher value add aluminium alloy production and innovation, especially for usage in larger airplanes and passenger vehicles. It estimates aluminium usage in construction and transport to increase by 6.5 million tonnes by 2020, representing most of the forecast increase.

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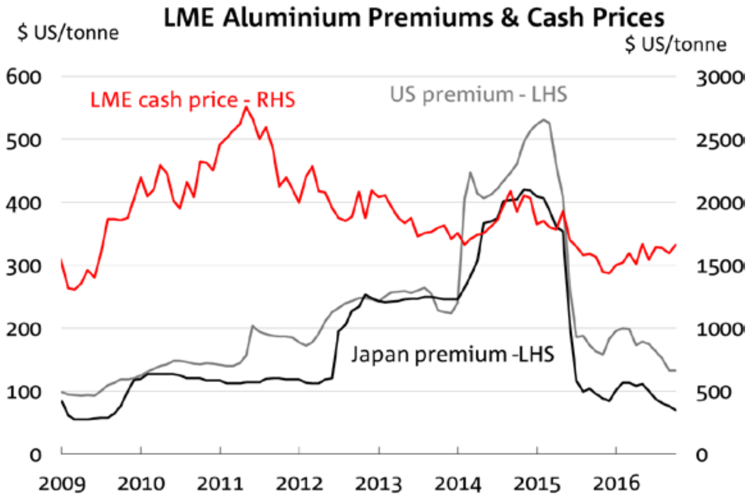
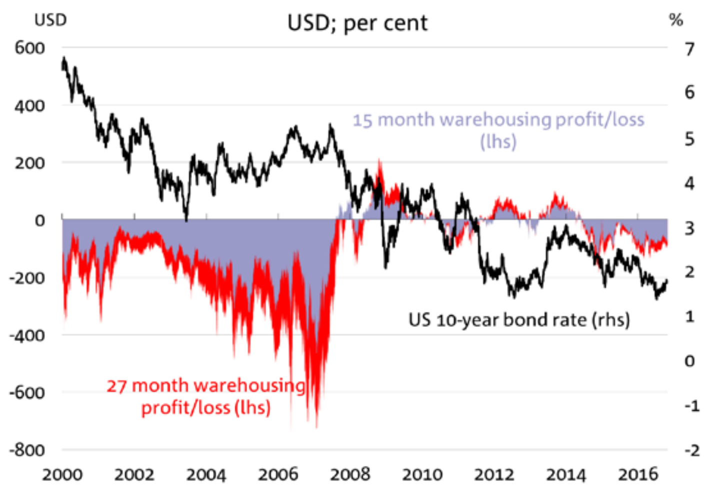
THE ALUMINIUM PREMIUM BUBBLE

DIVERGENCE FROM CASH PRICES



Sources: Bloomberg

INVENTORY FINANCING BECAME POPULAR

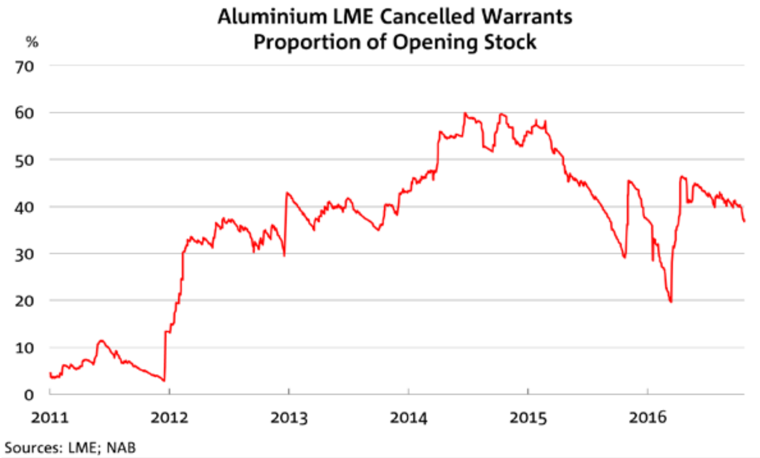


Sources: Bloomberg Industries; NAB

- While the forecasting of aluminium premiums is beyond the scope of this report, the factors influencing premium movements will have an impact on physical demand and cash prices too. Therefore it is worth noting the spectacular run-up and declines in LME premiums at various locations, showing divergence from the spot price movements and underlying supply-demand fundamentals.
- Aluminium cash prices have been on the decline since around 2011, however premiums kept increasing and especially spiked in 2013 and remained at elevated levels until recently (see top left chart). The main reasons behind the price increases have more to do with speculative financial flows and warehousing logistics rather than physical demand for the metal.
- The historical low interest rates post the GFC, combined with wide contago on the aluminium market, have created strong incentives to engage in inventory financing using the metal (see chart on bottom left). In addition, warehouse providers were frequently offering load-in incentives and rent discounts to attract inventory. The combination of cheap financing and low storage costs made it possible to profit from the forward curve contango and therefore a large quantity of metal has been tied up in the financing deals (chart on bottom right next page).
- The second reason for the disparity between the cash price and the all-in premiums is the warehouse bottlenecks and free-on-truck or loadout charges, which were pushed to artificially high levels as warehousing providers took to profit in the metals financing trade. As the popularity of metals financing increased the demand for LME warehousing services, many banks and trading houses purchased warehousing companies to earn rent profits, including Glencore buying Pacorini and Goldman Sachs purchasing Metro. The warehouses offered free load-in and other attractive incentives including discounted rent and freight costs. However, the charges on loading out the metals can be high which added to the all-in premiums, driving the wedge between cash prices. The loadout queues at some warehouses also reached levels that caused consumer anger and government intervention.
- The LME has engaged in multiple rounds of consultations and introduced measures to combat the long load out queues and high all-in premiums, which have proved effective.

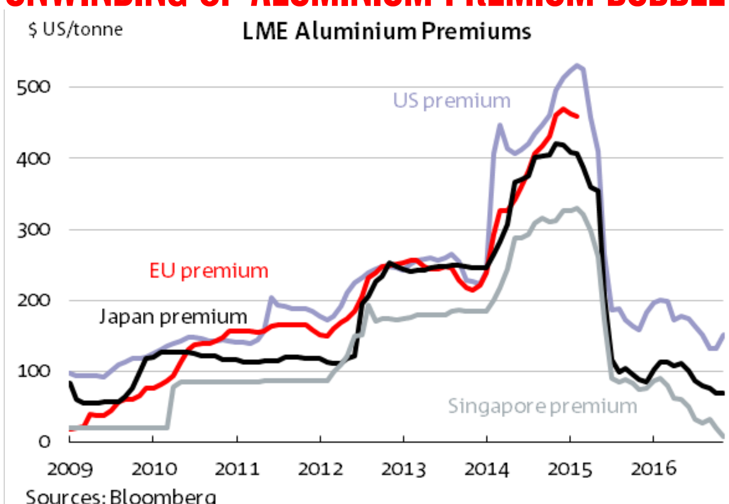
UNWINDING OF THE PREMIUM BUBBLE

CANCELLED WARRANTS UP IN EARLY 2016

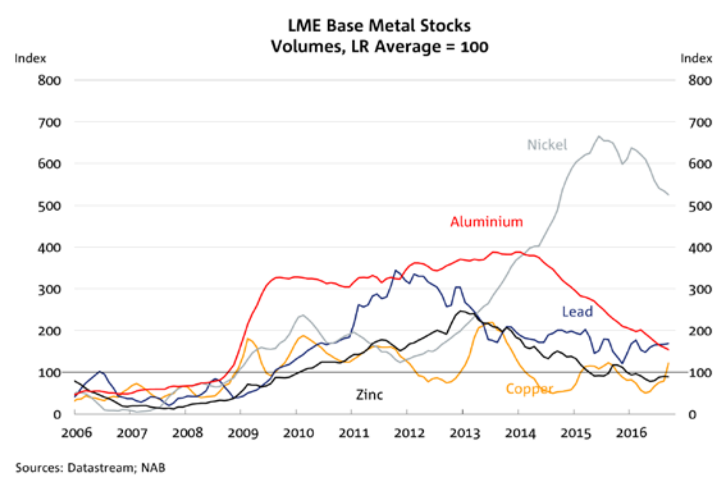


- In March 2016, the percentage of cancelled warrants increased significantly as LME announced plans to impose reduced rents on metals waiting in queue for over 30 days and no rent charges if over 50 days (top left chart). On 28 September 2016, the LME announced it will implement charge capping on 28 December 2016, capping all rent and free-on-truck charges at LME-listed warehouse companies. Premiums have declined with falling stock levels, by as much as 90% at some LME locations. With the bubble deflated, premiums are now more reflective of true supply and demand dynamics.
- Despite the decrease in storage costs, the rationale for aluminium inventory financing is becoming less compelling. For the trades to be profitable, a large enough contango needs to be present. However the spreads have been narrowing and in early 2016 the curves went briefly into backwardation. While interest rates remain low, the 10-year US bond rate has stabilised and risen somewhat. The anticipated Federal Reserve rate hike will likely happen this December, with more hikes expected in 2017, raising the cost of financing and potentially making the trades less profitable. If inventory financing deals are not renewed or renewed at a slower pace, it could potentially release significant amount of metal into the market, at a time when there is slowing demand and over supply.

UNWINDING OF ALUMINIUM PREMIUM BUBBLE



RISE AND FALL IN ALUMINIUM STOCKS



OUTLOOK

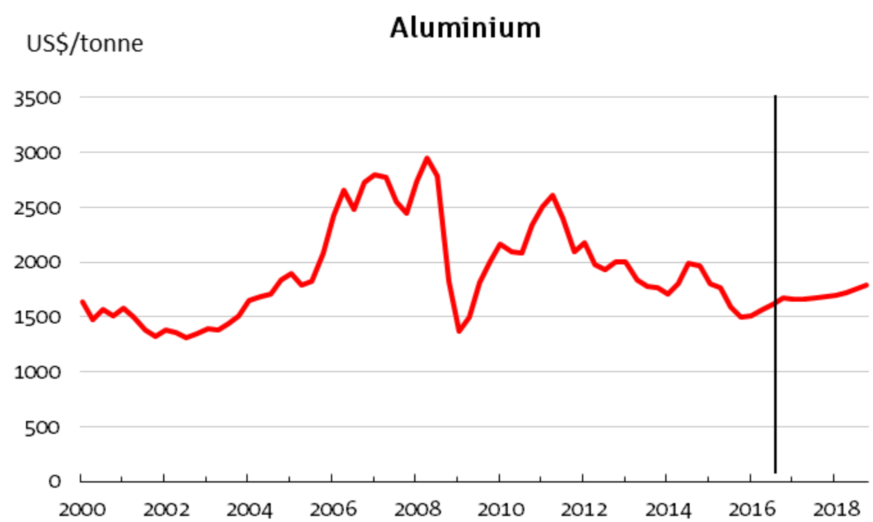
- While the aluminium market will remain dominated by new capacity additions in China, the supply glut may not be as severe as previously feared, if the Chinese government is serious about tackling the industry's over capacity. Demand growth in the near term continues to slow, while long term demand for aluminium shows promising signs as demand from car manufacturing and the power sector grows.
- Overall, we forecast a well supplied market in 2016 and 2017, with prices averaging at USD $1595/tonne and $1670/tonne. In 2018, demand prospects could improve with a higher average price forecast of $1740/tonne.

NAB Forecasts - Quarterly Average Terms

	Spot	Actual	Forecasts								
US$/tonne	02/11/16	Sep-16	Dec-16	Mar-17	Jun-17	Sep-17	Dec-17	Mar-18	Jun-18	Sep-18	Dec-18
Aluminium	1724	1620	1680	1670	1670	1680	1680	1700	1720	1750	1790

Sources: Thomson Reuters; NAB Economics

NAB ALUMINIUM PRICE FORECASTS



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