Boxes

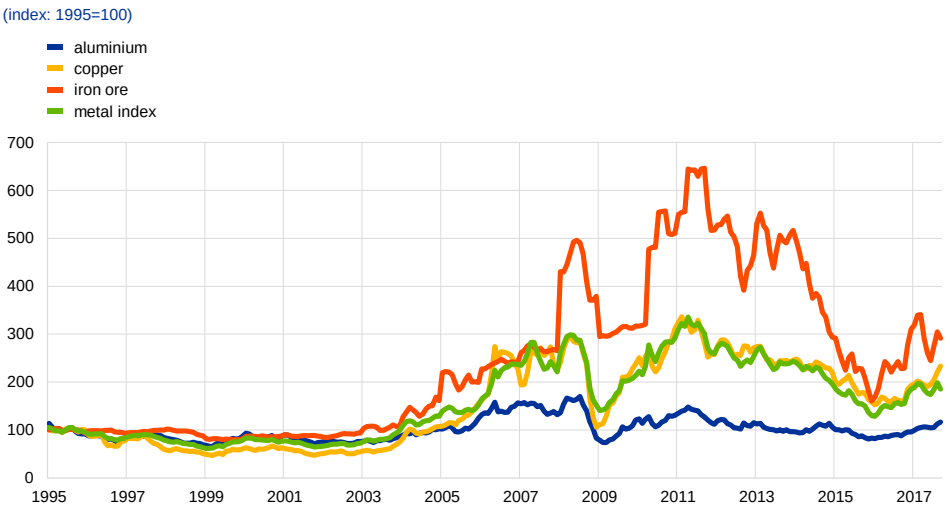
1 What is driving metal prices?

Prepared by Irma Alonso Álvarez and Frauke Skudelny

Understanding the factors behind metal prices is important to the assessment of their implications for euro area prices. This box analyses the drivers of metal price developments since 1998, with a particular focus on the surge in metal prices between June and September 2017, a period in which aluminium, copper and iron ore prices simultaneously increased by around 10%.

While attracting less attention than oil prices, metal prices have also been fluctuating strongly since the end of 2003. Metal prices were relatively stable between 1995 and the end of 2003, then increased strongly until the middle of 2011 (apart from a dip during the global recession), then declined until early 2016, after which they started rising again (see Chart A). Prices were about 75% higher in September 2017 than in 1995, led by iron ore and copper, while aluminium prices remained more stable over this period.

Chart A
Metal prices



Sources: Bloomberg, Hamburg Institute of International Economics (HWWI) and ECB calculations.
Notes: The metal index includes aluminium, copper, lead, nickel, steel scrap, tin, zinc and iron ore. The weights are based on imports into euro area countries (see Chart B).

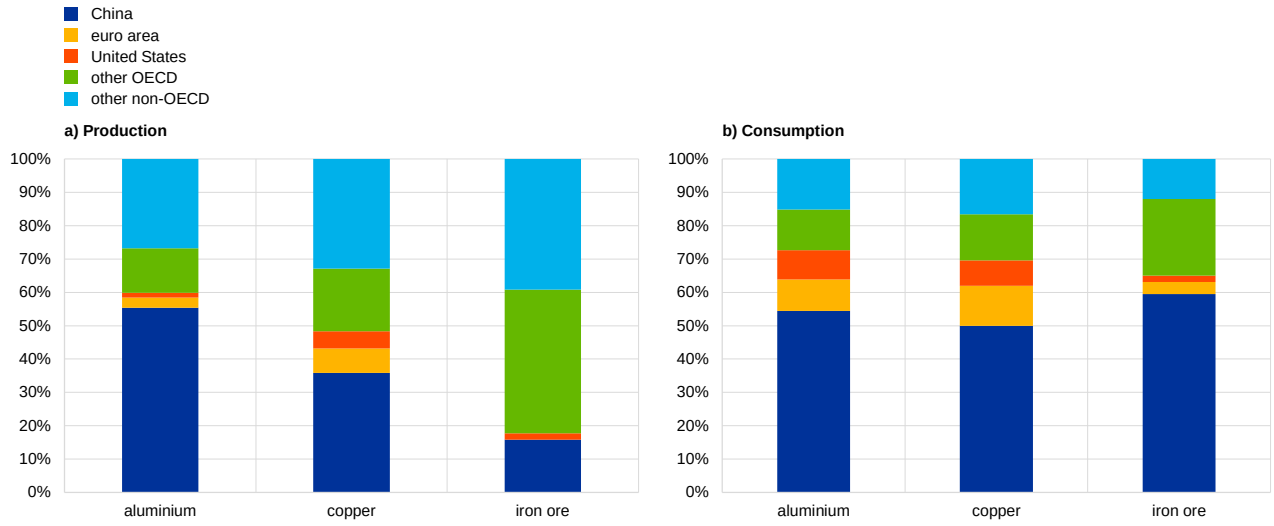
Reflecting buoyant economic growth over the last decade, China has become a dominant player in terms of its share in the consumption of metals and, for some metals, also in terms of production (see Chart B). China consumes about 50 to 60% of world metals and accounts for around 50% of world aluminium production and 35% of world copper production. However, its share in iron ore consumption decreased from 70% in 2014 to 60% in 2015, reflecting a gradual economic rebalancing in China away from commodity-intensive activities and

towards services. In addition, environmental concerns supported lower steel production in China, with a negative impact on demand for iron ore.

Chart B

Geographical composition of metal production and consumption

(global percentage shares in 2016)



Sources: Bloomberg and ECB calculations.
Notes: In panel (a), aluminium and copper data come from the World Bureau of Metal Statistics (WBMS) and reflect primary production and refined production, respectively. Iron ore data are based on mine production of usable iron ore from the United States Geological Survey (USGC). In panel (b), the same sources of data are used for consumption. Iron ore consumption is not available for 2016 and is substituted by 2015 data.

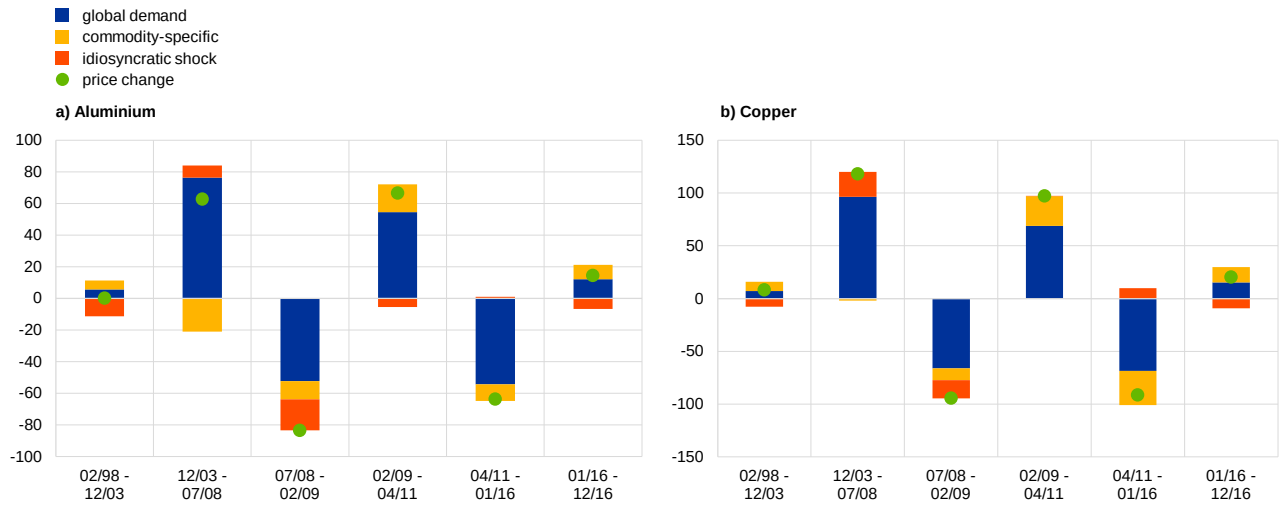
While demand factors have been a key determinant of metal price fluctuations over the last two decades, model-based estimates suggest that the recent surge in metal prices was also driven by supply factors. To disentangle the main factors behind the surge, a dynamic factor model on a large panel of energy and non-energy prices, as developed by Delle Chiaie, Ferrara and Giannone (2017),[7] is used. This approach assumes that commodity-specific shocks, such as supply shocks in individual commodity markets, tend to be idiosyncratic and hence average out when considering a large cross-section of commodity prices. By contrast, sustained changes in the common component (the global factor) tend to be indicative of demand shifts driven by the global business cycle. The global (demand) factor captures a large share of metal price fluctuations and has been of great importance since the beginning of the 2000s, largely owing to the increasing importance of China (see Chart C). However, when looking at the more recent period, the simultaneous increase in all three metal prices by around 10% between June and September 2017 was mainly driven by the commodity-specific components, which should reflect supply factors as captured by idiosyncratic and block-specific contributions (see Chart D). Increasing global demand also played a role, although to a lesser extent than supply.

7 Delle Chiaie, S., Ferrara, L. and Giannone, D., "Common factors of commodity prices", *Working Paper Series*, No 2112, ECB, November 2017.

Chart C

Main drivers of metal prices between 1998 and 2016

(percentage changes and percentage point contributions to price changes)



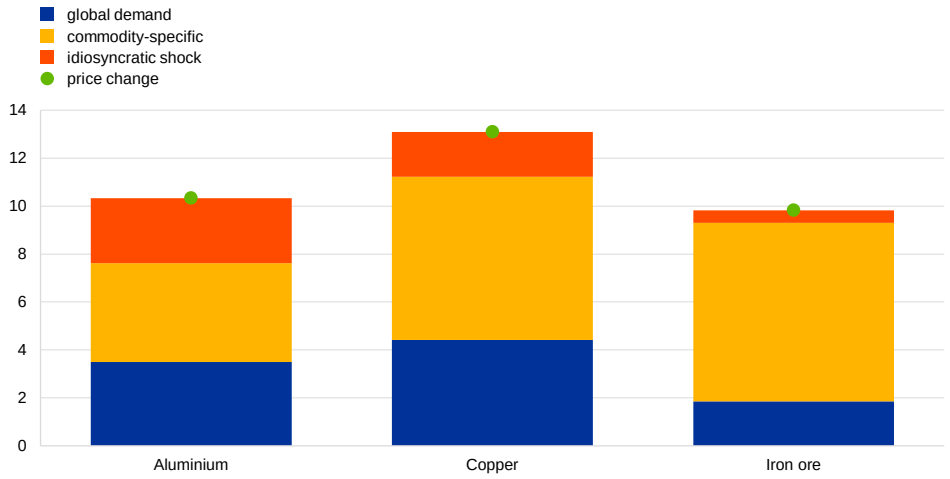
Source: Delle Chiaie, Ferrara and Giannone (2017).

These results are consistent with developments in the metal markets over this period. Copper production declined in Chile and Peru owing to weather conditions and strikes in some mines, while supply shortfalls in Australia and Brazil supported higher iron ore quotations. Aluminium prices also increased on account of strong global demand and China's policy of reducing overproduction and pollution through the shutdown of factories. Since the beginning of October 2017, metal prices have increased slightly (by around 2%), primarily owing to iron ore dynamics. Iron ore prices rose on account of increasing demand for high-grade iron ore in the aftermath of a restructuring of the steel industry in China, affected by the implementation of environmental reforms.

Chart D

Main drivers of the surge in metal prices between June and September 2017

(percentage changes and percentage point contributions)



Source: Delle Chiaie, Ferrara and Giannone (2017) (updated).
Notes: The historical decomposition for iron ore should be treated with caution owing to concerns about the quality of the series. Iron ore prices start only from 1995, and until 2010 most iron ore prices were traded using an annual benchmark price negotiation.

Despite recent increases in metal prices, most forecasts for copper, aluminium and iron ore predict a stabilisation or a decline in prices. While futures markets suggest a stabilisation of metal prices, Consensus Economics forecasts point to a decline, by around 7% by mid-2019, as increased demand is expected to be offset by increases in supply. World Bank projections indicate that the drop in metal prices will be somewhat stronger, with iron ore prices expected to decline by around 30% by late 2019. Copper and aluminium prices are also expected to fall, by around 11%. China will probably play an important role in the evolution of metal prices, as the tightening of metal markets is largely influenced by China's environmental and safety policies and the growth in demand for metals, with a stronger effect on iron ore than on copper and aluminium. Upside risks to these forecasts include unexpected supply outages, while downside risks relate to slower-than-anticipated demand growth in China and an easing of production restrictions on China's heavy industries.

Developments in metal prices play a role in the assessment of the outlook for euro area inflation and the risks to price stability in the medium term. Metal price fluctuations affect inflation mainly via their impact on the production and distribution chain, since the share of metal in consumption is rather small. Moreover, as they mostly affect industry, while having very little impact on services, their impact is more relevant for countries with a large industrial sector than for service-oriented economies. Compared to the impact of oil, the effect of metal prices on inflation is small, as they do not have a direct effect via HICP energy prices. Some estimates suggest that a 10% drop in industrial raw material prices results in 0.15% lower euro area HICP excluding energy and unprocessed food over a three-year horizon.[8]

[8] For the impact of raw materials prices, see Landau, B. and Skudelny, F., "Pass-through of external shocks along the pricing chain – a panel estimation approach for the euro area", *Working Paper Series*, No 1104, ECB, November 2009.