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Commodity prices and monetary policy: old and new challenges

Key takeaways

- *Major price increases in energy and food were key drivers of the 2021–22 inflation surge. These large supply-driven commodity price increases, occurring when inflation was already elevated in many countries, increased the risk of moving to a high-inflation regime.*
- *Central banks have tended to look through commodity price fluctuations due to their often transitory nature and the implied trade-off between inflation and output stabilisation in the case of supply-driven price shocks.*
- *Growing geopolitical disruptions, climate change and a bumpy transition to green energy threaten to make commodity price shifts larger and more frequent going forward. This potentially raises greater risks for price stability, thereby limiting the scope for monetary policy to look through them.*

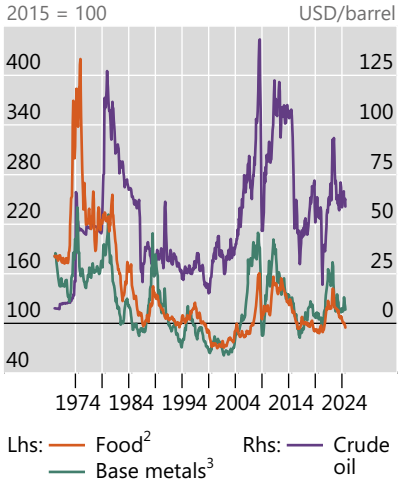
Large and sudden commodity price increases, particularly in energy and food, were key drivers of the 2021–22 inflation surge. The prices of food staples, industrial metals and oil soared to their highest levels in a decade (Graph 1.A). The natural gas price spike was unprecedented, particularly in Europe, with more than tenfold increases within a few weeks – a jump that even exceeded that of oil in the 1970s (Graph 1.B).

While these sharp price increases have largely reversed since 2022, they have left scars in commodity markets. Natural gas prices remain significantly above pre-pandemic levels, resulting in spillovers to prices of other key by-products, such as fertilisers or electricity in some regions. Oil benchmarks have not fully fallen back either. And persistent dislocations in the trading of physical oil have widened spreads between west- and eastbound crudes (Graph 1.C). The prices of metals, especially the key ones for the green transition, are considerably higher than before the pandemic.

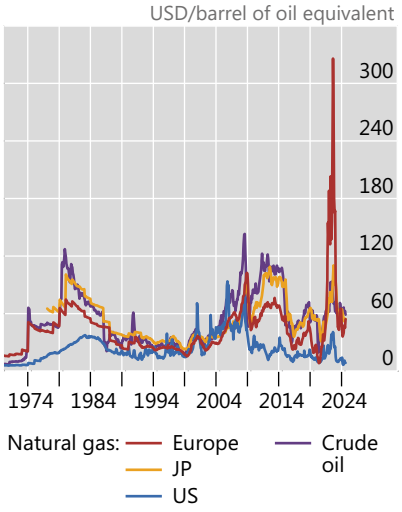
The large surge in commodity prices raised the risk of transitioning to a high-inflation regime, which was averted with the most intense and synchronous monetary tightening in decades. Looking ahead, commodity price surges may become larger, more frequent, more persistent and more disruptive, creating a more challenging environment for monetary policy. Key factors could be growing geopolitical disruptions, climate change and decarbonisation. And these could manifest amid a more challenging macroeconomic landscape characterised by less elastic supply and more pricing power for workers and firms on the back of deglobalisation. Against this background, this Bulletin revisits the macroeconomic effects of commodity price fluctuations, assesses the historical reaction patterns of monetary policy and discusses the challenges ahead.

The recent surge in commodity prices was transitory, but some scars remain — Graph 1

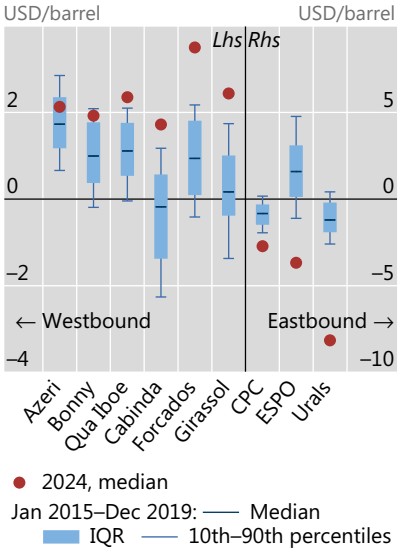
A. Broad-based commodity price surge has reversed[1]



B. Surge in natural gas prices was unprecedented[1]



C. Dislocations in physical oil trading have widened spreads to Brent[4]



[1] Real prices (deflated with US CPI, 2015 = 100). [2] Weighted average price of cereals, oils and other food items. [3] Weighted average price of aluminium, copper, iron ore, lead, nickel, tin and zinc. [4] Spreads between physical crude oil prices and Dated Brent (physical). Azeri = North Sea Azeri Light CIF; Bonny = West Africa Bonny Light FOB; Qua Iboe = West Africa Qua Iboe FOB; Cabinda = West Africa Cabinda FOB; Forcados = West Africa Forcados FOB; Girassol = West Africa Girassol FOB; CPC = Mediterranean CPC Blend CIF; ESPO = ESPO Blend FOB; Urals = Urals Novo CIF.

Sources: World Bank; Bloomberg; LSEG Datastream; national data; BIS.

Macroeconomic impact of commodity price fluctuations

Commodity price fluctuations can have a major impact on the economy through a variety of channels. The impact, in turn, depends on the underlying drivers of the shifts, their size and the structure of the economy. This is what a detailed analysis of the impact of energy and food price shocks for a large group of economies suggests (see online annex A for details).

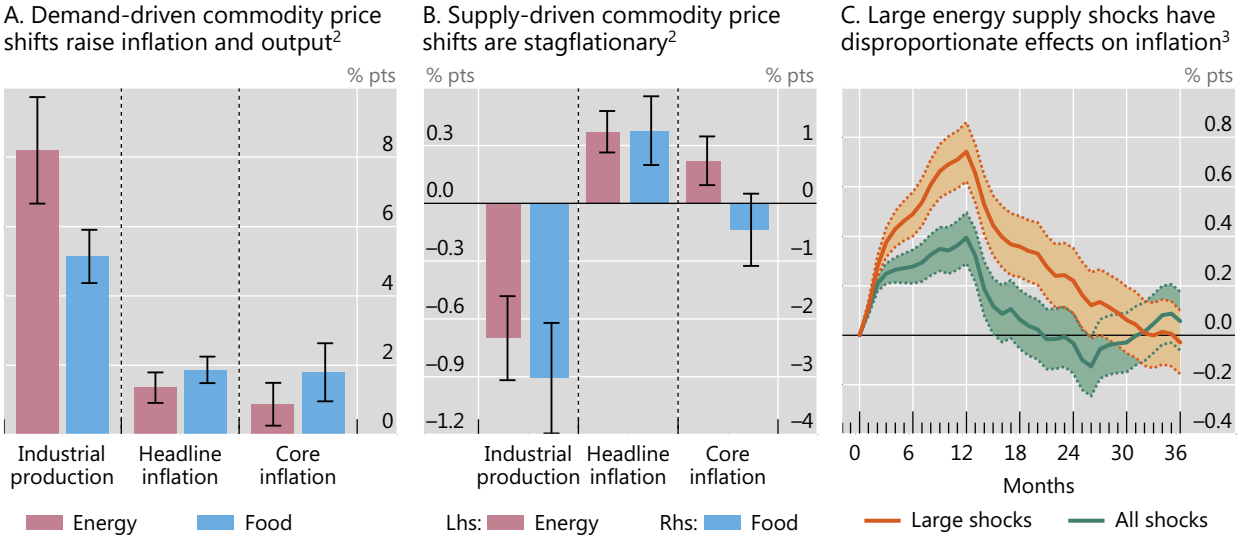
There is a fundamental difference between the effects of demand- vs supply-driven energy and food price changes. When price increases are driven by demand, they elevate both headline and core inflation, while also boosting industrial production (Graph 2.A). By contrast, if the increase reflects a contraction in the supply of the commodities, the effects tend to be stagflationary: they lower output and increase inflation (Graph 2.B). Large supply-driven commodity price shifts, specifically of energy prices, have disproportionate and longer-lasting economic effects, in particular on inflation (Graph 2.C). This is probably because households and firms respond more strongly to larger shocks, since they are more noticeable (salient) and harder to absorb.

The strength of the effect of food and energy price shocks is in turn shaped by structural features of the economy. For supply-driven energy and food price shifts, the fall in output and rise in inflation tend to be larger for economies where the commodities play a bigger role in production processes or consumption baskets (see online annex A). Another key structural factor is whether an economy is a commodity exporter or importer. Higher commodity prices swing the terms of trade in favour of commodity-exporting economies, boosting income for exporters while depressing it for importers. For commodity exporters as a group, the net aggregate effect on output may easily be positive even if the commodity price increase is driven by a contraction in supply in some of them. Indeed, industrial production growth rises on average in energy exporters following supply-driven increases in energy prices, while it falls in the average importer (Graph 3.A). The exchange rate plays a key role in this process. In the

wake of an energy price increase, energy exporter currencies tend to appreciate and those of importers to depreciate. Currency appreciation dampens the inflationary effects of higher commodity prices in commodity exporters. Currency depreciation, in turn, amplifies the impact on inflation in commodity-importing economies.[1]

Macroeconomic effects of commodity price shifts[1]

Graph 2



[1] Response to a 10% increase in energy or food prices. Error bars/bands indicate 90% confidence intervals. See online annex A for details. [2] Peak effects identified as the maximum of the absolute value of the impulse response over three years. [3] Large shocks = months in which the absolute monthly log change in energy prices was above the 75th percentile.

Sources: Baumeister and Hamilton (2019); De Winne and Peersman (2016); Känzig (2021); Mareels (2024); World Bank; LSEG Datastream; national data; BIS.

The wider macroeconomic effects of commodity price fluctuations crucially depend on the prevalence of second-round effects. In the wake of such fluctuations, attempts to recoup purchasing power or resist profit margin compression can become a driving force of broad-based second-round effects in prices and wages. The likelihood of a shift is smaller if monetary policy enjoys high credibility and inflation expectations are well anchored, which will depend critically on the central bank's track record in maintaining price stability.[2]

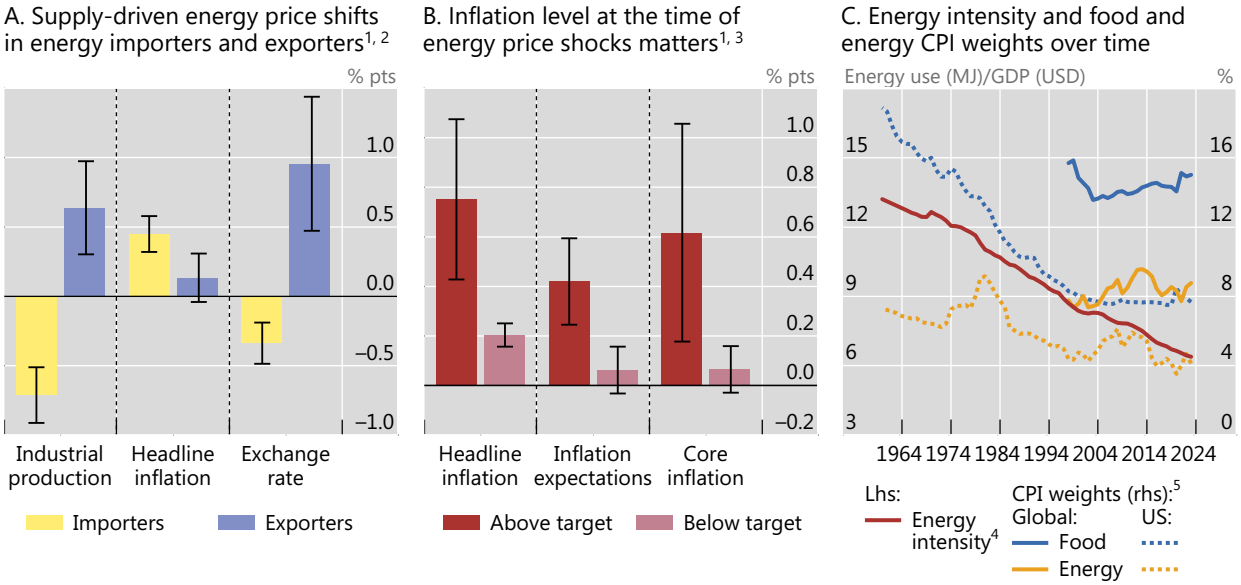
Our results help us to understand why the transmission of the 2021–22 commodity price shocks to inflation was so significant. Their large size is likely to have raised the risk of transitioning to a high-inflation regime, given the disproportionate impact of large shocks on inflation (Graph 2.C). Moreover, the 2022 energy price shocks hit at a time when inflation was already above target in many countries due to the supply side disruptions in the wake of the pandemic. Our empirical analysis also highlights that when inflation is already high, commodity price changes, specifically energy price shocks, have a greater

[1] In particular, the correlation of commodity prices with key international currencies, especially the US dollar, is crucial for understanding the global macroeconomic impact of commodity price shifts, as a positive correlation can amplify stagflationary effects through real and financial channels. Recently, this correlation turned positive due to factors like adverse commodity price shifts and strong US monetary policy tightening, with structural factors such as the US emerging as a major oil and gas exporter potentially influencing this trend. See Hofmann, Igan and Rees (2023) for analyses of the recent change in the US dollar-commodity price nexus, the possible underlying drivers and the consequences.

[2] See Borio et al (2023) for analyses of the different features of high- and low-inflation regimes and the implications for the propagation of commodity price swings. Gelos and Ustyugova (2017) provide evidence on the implications of central bank autonomy for the inflationary consequences of commodity price fluctuations.

inflationary impact on both core inflation and inflation expectations (Graph 3.B). The large energy price shocks at a time when inflation was already elevated made for an explosive combination which tested the low-inflation regimes established over the past couple of decades.

Factors shaping the impact of commodity prices — Graph 3



[1] Peak effects of a response to a 10% increase in energy prices. Error bars indicate 90% confidence intervals. See online annex A for details. [2] Energy exporters are defined as economies where energy exports exceed 60% of total exports. [3] Above (below) target = months when inflation was more (less) than 1 percentage point above (below) the inflation target at the time of the shock. [4] Primary global energy consumption in terms of world GDP (constant 2010 prices). [5] Global: GDP-PPP weighted average of 11 AEs and 14 EMEs. US: personal consumption expenditure-based weights.

Sources: Baumeister and Hamilton (2019); Känzig (2021); Mareels (2024); OECD; UNCTAD; Energy Institute; LSEG Datastream; national data; BIS.

At the same time, several structural changes over the past decades have helped to increase the resilience of the global economy to commodity price shifts. For one, greater energy efficiency and the declining importance of energy-intensive sectors, such as manufacturing, have reduced the energy intensity of global GDP by almost 50% since the late 1970s (Graph 3.C, red line). This has dampened the influence of commodity prices on production and, through that, also on prices. Although the weight of energy and food in CPI has remained broadly unchanged over the past two decades (Graph 3.C, solid blue and yellow lines), a longer-term downward trend becomes visible when longer data series are available, such as in the United States (Graph 3.C, dotted lines). In addition, stronger monetary policy frameworks with greater central bank autonomy and clear price stability mandates have significantly reduced the risk of second-round effects. This is reflected in vanishing pass-through of changes in headline inflation to core inflation and considerably weaker feedback effects between wages and prices over the past two decades (Borio et al (2023)).

Monetary policy implications

There is no one-size-fits-all policy response to commodity price shifts. The drivers of shifts and their persistence interact with structural features of the economy and with how well the monetary framework anchors inflation to a low-inflation regime.

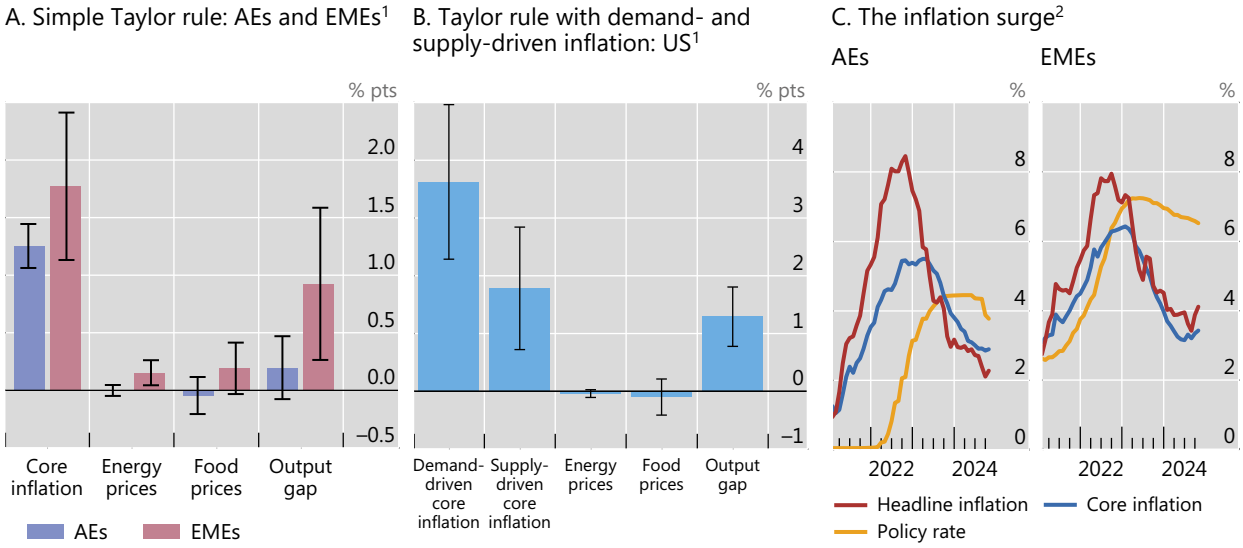
One traditional approach to confront commodity price shifts has been to look through them, at least to some extent. This approach is motivated by two main considerations. First, monetary policy takes time to gain traction, with its peak effect typically reached after around 12 months. If the commodity price shift

is transitory or does not cause second-round effects, a response could even be counterproductive. Second, stagflationary negative supply shocks result in a policy trade-off between stabilising inflation and output, suggesting a more muted response.

We assess the response of monetary policy to energy and food price changes by estimating Taylor rules that split inflation into its core and energy and food components (see online annex B). We find that major advanced economy (AE) central banks appear, on balance, to have broadly followed a look-through approach as they responded to core inflation, but essentially ignored changes in energy and food prices (Graph 4.A, purple bars). In addition, evidence for the United States suggests that, while responding to core inflation, the central bank has reacted more strongly to its demand- than to its supply-driven component (Graph 4.B), with the latter in part reflecting indirect effects of shifts in commodity prices working through production input prices.[3]

Monetary policy response to commodity prices

Graph 4



[1] Coefficient estimates of a Taylor rule with core inflation and food and energy price changes. Error bars indicate 90% confidence intervals. See online annex B for details. 2 GDP-PPP weighted averages of 11 AEs and 20 EMEs. For inflation, year-on-year changes.

Sources: OECD; LSEG Datastream; Macrobond; national data; BIS.

A precondition for central banks to be able to look through commodity price shocks is that second-round effects do not take hold. In this regard, the evidence indicates that, on average, monetary policy in emerging market economies (EMEs) responds more strongly to food and energy prices (Graph 4.A, red bars). This probably reflects more brittle inflation regimes, not least owing to less well anchored inflation expectations and the greater weights of food and energy in consumption baskets.

These reaction patterns were also reflected in the monetary policy response during the post-pandemic inflation surge (Graph 4.C). EMEs responded much faster than AEs in the face of similar surges in headline and core inflation, reflecting greater risks of transitioning to a high-inflation regime due to less well anchored inflation expectations. At the same time, AEs responded with a delay in spite of a considerable increase also of core inflation. This may have been because of perceptions that the initial surge in core inflation was primarily due to supply forces which monetary policy could afford to look through (Hofmann et al (2024)).

[3] For a more detailed assessment of the differential response of policy rates to demand- vs supply-driven inflation, see Hofmann et al (2024).

Looking ahead

Going forward, the challenges of commodity price fluctuations could get tougher. Heightened geopolitical tensions may prove to be persistent and could generate large and longer-lasting shifts. Moreover, energy supply shocks may come in new and more challenging guises. Scarcities may arise in both fossil energy sources, as investment in production capacity is scaled back, and in metals needed for the green transition. At the same time, the spread of energy-hungry artificial intelligence could significantly increase the energy intensity of production. Food prices could also become more volatile, if climate change leads to more frequent extreme weather events.

These risks are arising against the backdrop of less elastic global supply. Globalisation has slowed in recent years, leading to more fragmentation and potentially increasing the pricing power of labour and firms, which could lead to more real wage and profit margin resistance. All of this could increase the risk of transitions to high-inflation regimes and the cost of disinflations. The global economic environment would come to resemble more closely that of the 1970s.

If commodity price shifts became larger and more persistent, central banks would need to exercise particular care when looking through the inflationary effects.[4] This consideration runs counter to proposals to *increase* the tolerance for commodity price surges, possibly even by raising the level of the inflation target, or implementing a target range with a higher upper bound. Any such adjustments could erode credibility and trust in central banks' ability to fulfil their price stability mandates. The consideration also raises questions about less radical proposals, such as putting more emphasis on core rather than headline inflation relative to the past.

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[4] See Maechler (2024) for a more detailed discussion of the implications of potentially more challenging supply side conditions for monetary policy.