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Commodity market disruptions, growth and inflation

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Commodity market disruptions, growth and inflation

Key takeaways

- *Higher commodity prices will erode global growth, as the modest growth boost for commodity exporters will only partly offset the output losses of commodity importers.*
- *Rising commodity prices will also intensify global inflationary pressures. The effects will be strongest for food and energy prices, but spillovers to other components of inflation are likely.*
- *Recent shocks have been smaller than the 1970s oil shocks but broader-based, encompassing food and industrial commodities as well as energy. Nonetheless, structural changes, as well as stronger policy frameworks and nominal anchors, make stagflation less likely to return.*

The war in Ukraine triggered a surge in commodity prices. In the weeks after its onset, oil prices rose by over 30% and European natural gas prices by more than 60%. Food and metals prices also spiked (Graph 1, left-hand panel). These increases came on top of substantial price gains in 2021, moving prices well above pre-pandemic levels. Although prices have since retreated somewhat, they remain high by historical standards. As the war continues, the outlook for commodity markets is remarkably uncertain.

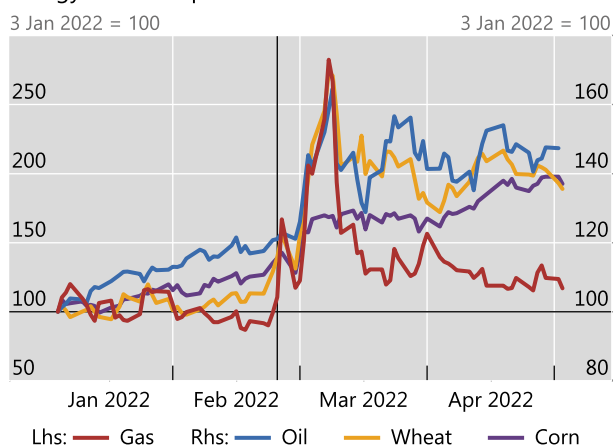
Rising commodity prices went hand in hand with the threat of major supply disruptions. Russia and Ukraine are significant in many commodity markets. Together, they account for over 10% of global wheat and oil production, and more than 20% of the world's natural gas. Russia also supplies metals used to manufacture aircraft, cars and computer chips (Graph 1, right-hand panel). A shortage of these metals could lead to an intensification of bottlenecks. Already, the war has disrupted agricultural supply chains. Such disruptions could multiply, not least due to the destruction of crops and physical infrastructure. Meanwhile, additional sanctions on Russia could further crimp the supply of energy commodities, at least to some markets.

High and volatile commodity prices pose significant risks to the global economy. The effects will be felt on both inflation and growth, and will fall unevenly across countries, depending on whether they are exporters or importers of affected commodities and how higher prices affect household and corporate income. On net, higher commodity prices are likely to erode growth and lift inflation in the short term. Whether the world economy sees a repeat of the 1970s – when rising oil prices contributed to the most pronounced stagflationary episode of modern times – depends on how long the commodity market disruptions continue, and whether macroeconomic policy manages the fallout more successfully than in the past.

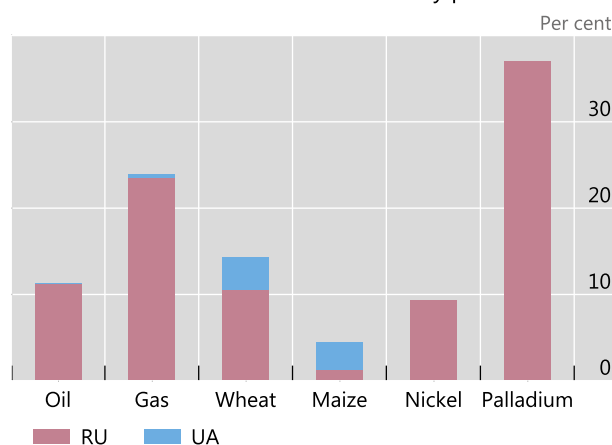
At first glance, some uncomfortable parallels are evident. As in the 1970s, recent commodity price rises partly reflect lower available supply. These pressures could intensify if the reduced supply of fertiliser shrinks global crop yields and sanctions pinch the flow of energy commodities to global markets.¹

¹ The supply-driven nature of the current episode differentiates it from other post-1990 commodity price rises, which were typically demand-driven. Supply-driven commodity price rises were more common in the 1970s. See World Bank (2022).

Energy and food prices



Ukraine and Russia's share of commodity production



Sources: IEA; FAO; OECD; USGS; Bloomberg.

By some measures, recent events look even more disruptive than those of the 1970s. For example, recent price increases have affected a broader set of commodities. Commodity price rises in the 1970s were concentrated in oil markets, whereas in recent months energy, agricultural, commodity and metals prices have all experienced strong gains (Graph 2, left-hand panel). That said, oil price increases in the 1970s were much larger than the recent ones: in the 1973 crisis, oil prices more than doubled in the space of a week, while in the 1979 crisis they increased by a similar amount over a year. In contrast, oil prices are less than 50% above what they were at the start of 2022 and are lower in real terms than in the early 2010s.

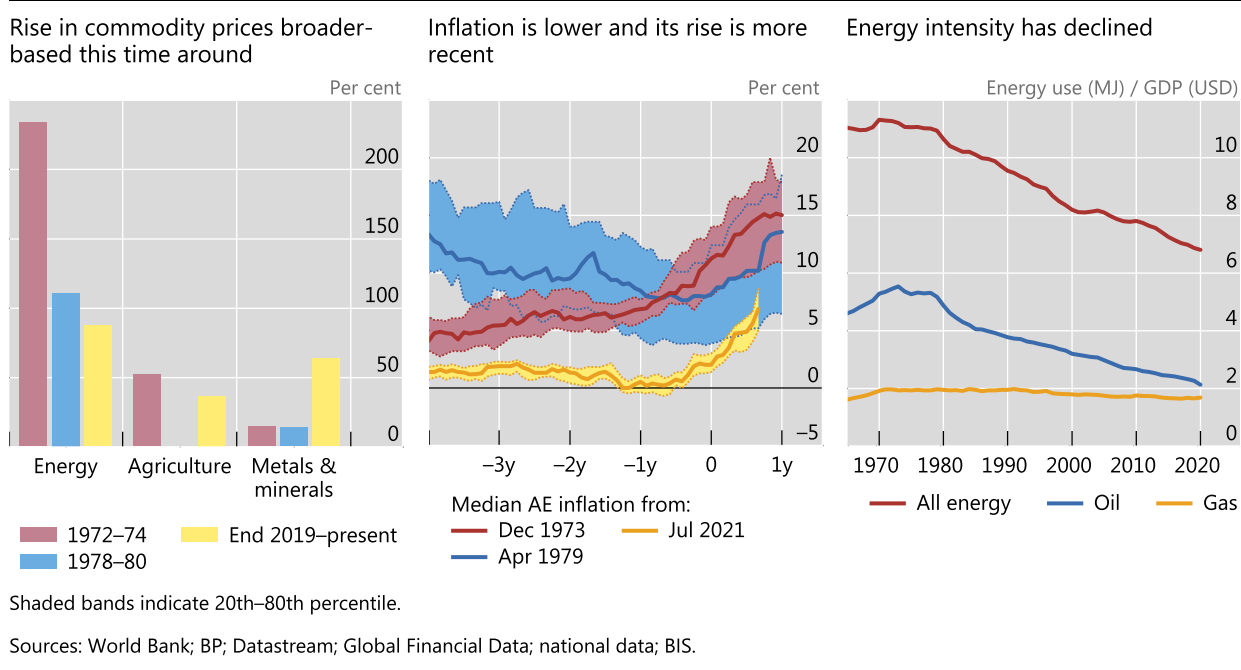
At the same time, there are reasons to think that recent commodity price increases could be less disruptive than those of the 1970s. The inflationary backdrop, in particular, is less threatening. The 1973 oil crisis followed several years of rising inflation (Graph 2, centre panel). And inflation was very high in the years leading up to the 1979 crisis. Although global inflation has risen substantially over the past year, it was low for several years before that. As a result, high inflation is likely to be less ingrained in the minds of households and firms, which could limit the spillover of higher commodity prices.²

Economies are also less energy-dependent. The energy intensity of GDP – the amount of energy consumed relative to the total volume of goods and services produced – has fallen by around 40% since the late 1970s (Graph 2, right-hand panel). The reduction has been most striking for oil, for which consumption per unit of GDP has more than halved. Some of this decline reflects a shift in energy use from oil to other fuels, such as gas. But even for these fuels, total consumption per unit of GDP has declined. As a result, higher energy prices matter less for growth than in the past.

Policy frameworks are also more robust. The 1970s oil crises followed the collapse of the Bretton Woods system. In many countries, monetary policy targets and reaction functions were ill-defined. Today, most central banks have more coherent policy frameworks, allowing them to successfully navigate several large commodity price spikes since the 1970s. That said, credibility ultimately depends on central bank actions and could be eroded if central banks allow high inflation to persist for too long.

Even if less disruptive than the 1970s oil crises, recent commodity price increases could still have significant implications for output and inflation. These, in turn, will depend on why commodity prices rose, and on whether a country exports or imports the commodities involved.

² See Carstens (2022).



How will higher commodity prices affect the macroeconomy?

The impact of higher commodity prices depends in part on the cause, as prices can rise for many reasons. Often, higher commodity prices reflect stronger global demand. At other times, reduced global supply is the cause, for instance, due to adverse weather. Geopolitical tensions involving major commodity-producing countries or regions can also raise commodity prices, in part due to precautionary stockpiling.

Regardless of the trigger, higher commodity prices affect macroeconomic conditions through several channels. The first is inflation. Some commodity prices (eg for oil and wheat) are closely linked to the prices of consumption goods (eg gasoline and bread). Others (eg metals) are key production inputs. Higher prices for these items will raise firms’ costs, which they may pass onto consumers. Higher and more persistent inflation could in turn prompt a monetary policy response that lowers growth.

A second channel is through changed production patterns. Higher commodity prices lead firms to substitute away from expensive inputs towards other production inputs (eg less efficient energy sources), which could impinge on growth in the short run, with implications for investment. These effects are potentially larger if higher commodity prices result from a reduction in commodity supply, particularly if the resulting policy response involves economic distortions (eg rationing).

A third channel is through terms of trade effects. Higher commodity prices provide a real income boost for commodity producers and a real income drag for commodity importers.³ How growth responds will depend upon whether the income changes accrue to firms (profits), households (wages) or governments (tax revenues). While at a global level the income flows from commodity price changes net out – commodity exporters’ income gains offset commodity importers’ losses – the effects on global GDP will depend on how exporters and importers respond to the income changes and are thus ambiguous.

We use a structural vector autoregression model to assess the effects of commodity price changes, as detailed in this Bulletin’s online annex. To disentangle the various channels, we follow a two-step

³ Intuitively, when a country’s terms of trade improve, it can purchase a larger quantity of imported goods and services – allowing it to consume and invest more – for a given quantity of domestic exports.

approach. In the first step, we define three commodity price “shocks”: a supply-driven oil price shock, a “pure” oil price shock that is independent of changes in oil supply or global aggregate demand, and an agricultural commodity price shock that is independent of global aggregate demand. In the second step, we calculate the responses of macroeconomic variables across a panel of 19 countries to the commodity shocks, distinguishing between the exporters and importers of each commodity.⁴

As with all empirical exercises, several factors are not explicitly accounted for. In some emerging market economies (EMEs), which are severely underrepresented in our sample, higher commodity prices could provide an additional growth boost by strengthening fiscal positions and encouraging foreign investment. Working against this, the greater financialisation of commodity markets means that commodity price volatility could have larger adverse implications today than in the past.⁵ Heightened geopolitical uncertainty and tightening global financial conditions mean that commodity exporters may see a smaller-than-usual investment boom from recent commodity price rises.

Growth

Our empirical analysis suggests that higher commodity prices cut growth on average by an economically meaningful margin. The effects are particularly large when increased commodity prices reflect lower commodity supply, as in the 1970s oil crises. We estimate that a 10% rise in oil prices driven by lower global oil supply lowers the level of GDP for the average advanced economy (AE) by around 0.5% after two years (Graph 3, left-hand panel). By contrast, a 10% oil price rise unrelated to changes in oil supply or aggregate demand would lower GDP by less than 0.2%. We also find that the output effects of higher agricultural commodity prices are larger than those of oil prices.

To put these estimates in context, they imply that commodity price increases since the start of the year could reduce GDP in major AEs by around 0.7 ppts by the end of 2023.⁶ However, the effects of higher commodity prices differ between commodity importers and exporters. In general, for pure price changes, higher commodity prices lead to a modest rise in output in commodity exporters and a larger decline in output in commodity importers (Graph 3, centre panel). Reductions in commodity supply, on the other hand, are contractionary for both sets of countries.

An examination of the expenditure and income flows sheds light on the transmission of commodity price movements. In commodity importers, higher commodity prices are unambiguously negative for both households and firms (Graph 3, right-hand panel). Real wages and profits decline, consistent with lower economic activity and higher inflation. Meanwhile, consumption and investment both fall.

The patterns for commodity exporters are quite different. Higher commodity prices typically boost profits and, in turn, investment.⁷ But wage income falls on average while consumption hardly responds. The contrasting implications for firms and households probably reflects the capital-intensive nature of commodity production, at least in AEs. A rise in commodity prices does little to affect commodity output or employment in the short run. Although workers still receive a real income boost from a stronger exchange rate and, potentially, increased fiscal transfers, our estimates suggest that these are typically largely offset by higher consumer prices, leading to a muted consumption response.

⁴ The sample is constrained by the availability of long time series at a quarterly frequency and includes Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, New Zealand, Norway, South Africa, Spain, Sweden, Switzerland, the United Kingdom and the United States.

⁵ See Adams and Glück (2015).

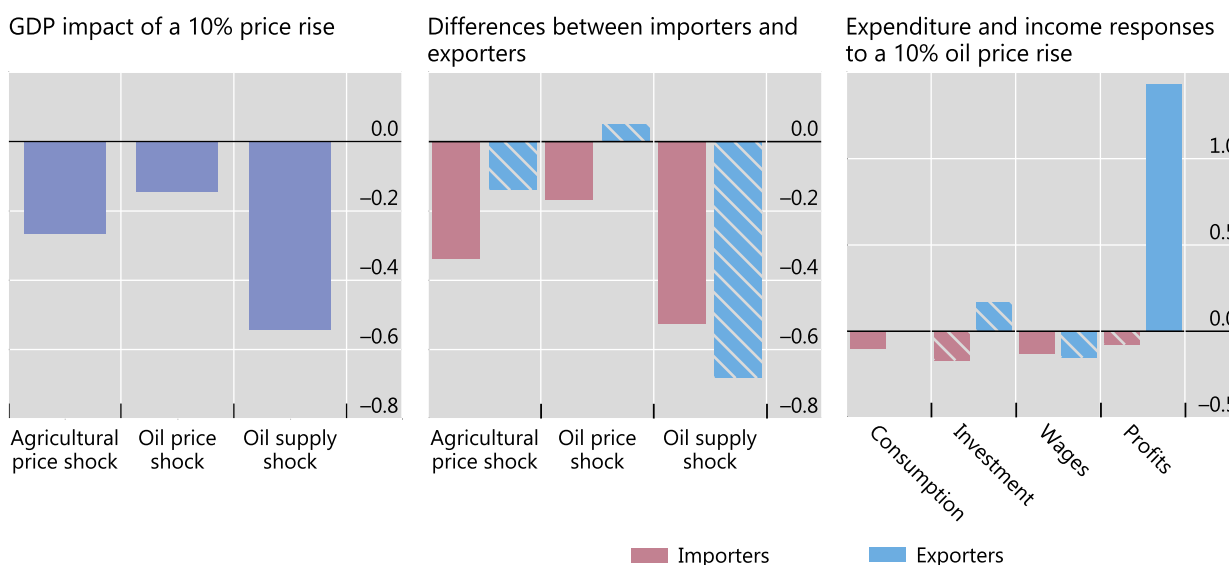
⁶ These estimates assume permanent increases of 30% in oil prices and 10% in agricultural commodity prices, reflecting price changes between January and May 2022. They show effects on the *average* AE, not accounting for other impacts of the war (eg financial market disruptions or the differential exposure of certain economies to commodities affected by the war).

⁷ The size of the investment boom is likely to depend on the expected persistence of the commodity price rise.

Estimated impact of a 10% commodity price increase on growth¹

Per cent

Graph 3



¹ Impulse responses from structural vector autoregression models eight quarters after the initial shock; sample includes AEs plus ZA. Diagonal pattern indicates values that are not statistically significant.

Sources: OECD; Datastream; national data; BIS.

Inflation

As one would expect, our results show that higher commodity prices are inflationary. We find that a 10% oil price rise lifts year-on-year inflation after 12 months by 0.2 ppts on average across importers and exporters (Graph 4, left-hand panel).^{8,9} Agricultural commodity price rises are twice as inflationary – a 10% increase raises inflation by over 0.4 ppts.¹⁰ By contrast, the response of headline inflation to oil supply shocks is statistically insignificant, possibly due to the disinflationary effects of lower GDP growth.

The inflationary effects of higher commodity prices are not confined to energy and food prices. Core inflation also rises, albeit by only half as much as headline inflation. These spillovers are typically larger for commodity importers; the rise in core inflation for commodity exporters is very mild and statistically insignificant. One possible reason is that commodity exporters' exchange rates tend to appreciate in the wake of higher commodity prices, which lowers import prices.

At face value, our results suggest that recent commodity price gains could raise inflation in a typical AE by over 1 ppt in 2022.¹¹ Of course, actual outcomes could differ from this central estimate both because of uncertainty surrounding the estimates and because of factors not captured in the empirical framework. For example, the inflationary impact could be smaller if lower commodity supply reduces economic

⁸ The response of headline inflation in commodity exporters is not statistically different from that of commodity importers.

⁹ Unlike the growth impact of higher commodity prices, which we estimate to cumulate over two years, our model suggests that the inflationary effects are concentrated in the year in which commodity prices rise.

¹⁰ For EMEs, where food and agriculture typically account for a significant share of consumption, the effects could be even larger.

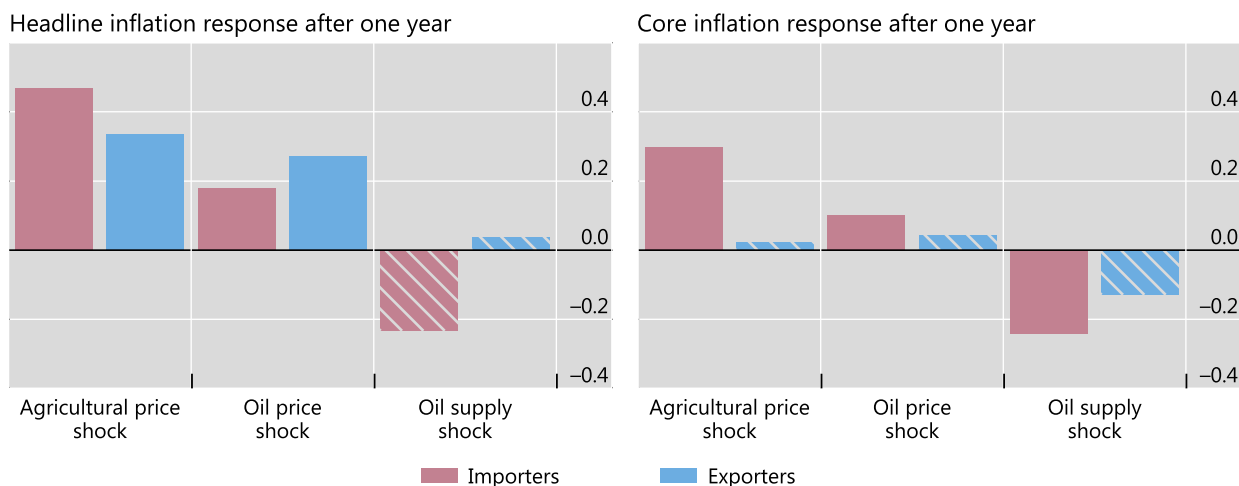
¹¹ As for GDP, these estimates assume a 30% rise in oil prices and a 10% rise in agricultural commodity prices.

growth.¹² Alternatively, the boost to inflation could be larger if commodity market disruptions, in the context of already strained supply chains, were to tighten bottlenecks in key production inputs.¹³

Estimated impact of a 10% commodity price increase on inflation¹

Percentage points

Graph 3



¹ Impulse responses from structural vector autoregression models 12 months after the initial shock; sample includes AEs plus ZA. Diagonal pattern indicates values that are not statistically significant.

Sources: OECD; Datastream; national data; BIS.

Conclusion

Commodity price increases in the wake of the war in Ukraine are likely to weigh on global growth and add to inflation. While lower energy dependence and stronger policy frameworks make a repeat of the 1970s stagflation unlikely, high and volatile commodity prices could still be disruptive. This puts a premium on restoring low inflation quickly, before it becomes ingrained in household and corporate decisions.

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¹² Like us, Kilian (2008) and Baumeister and Peersman (2013) find that oil supply shocks have little inflationary impact.

¹³ See Rees and Rungcharoenkitkul (2021).

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