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Energy markets: shock, economic fallout and policy response

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Energy markets: shock, economic fallout and policy response

Key takeaways

- *Commodity price increases this year have been larger, more persistent and more broad-based than similar past episodes of commodity price rises.*
- *The recent commodity price surge has exerted an overall stagflationary effect on the global economy, lowering growth and raising inflation.*
- *Given already high levels of inflation and of government debt, a coherent monetary and fiscal policy mix is needed even more than usual to navigate the policy challenges.*

Commodity market disruptions – in energy and, to a lesser extent, food – have shaped economic developments over the past year and are key to the near-term economic outlook. Commodity price increases have prompted a vigorous fiscal policy response to cushion households and businesses against the shock, but have come against the backdrop of the most vigorous and synchronised monetary policy tightening episode in recent decades. This Bulletin reviews the recent evolution of commodity prices, assesses their impact on output and inflation, and discusses near-term prospects and the implications for macroeconomic policy.

Recent energy and food market developments and prospects

A different shock than in the past

The recent commodity price surge differs from historical precedents in at least three respects.

First, prices have increased more and remained high for longer. Oil prices, for instance, have risen five times above their trough in April 2020 – dwarfing all previous episodes but for the one in 1973 (Graph 1.A).[1]

Second, the increase has been more broad-based this time around. In previous episodes, non-oil commodity prices either stayed constant or fell back relatively quickly. In the current episode, natural gas and food prices have increased substantially and stayed high (Graphs 1.B and 1.C).

The unprecedented rise in natural gas prices stands out, even after the recent retreat. This has wider repercussions than would have been the case a few decades ago, because natural gas plays a much more important role in the economy now than it did in the 1970s, not least in electricity generation.[2] Further, natural gas has numerous industrial applications, as both input and power source. Gas prices also affect food prices through their large impact on the cost of fertilisers, some of which use inputs derived from natural gas. Last but not least, the geographical segmentation of gas markets limits arbitrage and hinders the matching of supply and demand globally. In fact, prices increased much more in Europe than elsewhere (shown in a second scale in Graph 1.B).

Third, the rise in commodity prices has coincided with the appreciation of the US dollar. In the past, commodity prices and the dollar typically moved in opposite directions: the dollar depreciated when

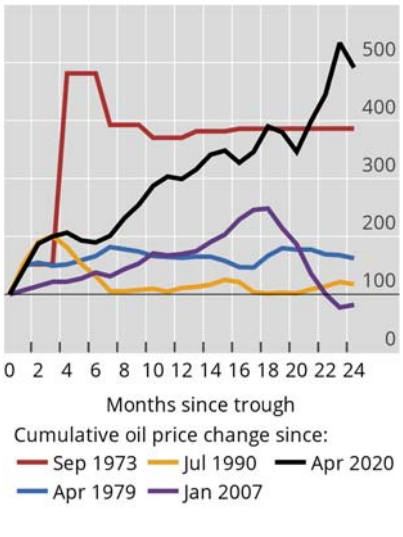
[1] Global oil prices were extraordinarily low in April 2020 but natural gas prices declined much less when the pandemic hit, while food prices barely moved. Hence, considering a later point in time as the start of the current surge does not alter the conclusion that it has been larger and longer.

[2] According to the IEA, natural gas accounts for 25% in the global electricity generation mix, up from about 15% in 1990. Being easier to scale up or down than other inputs, gas – or other fossil fuels – is often the marginal source of electricity generation.

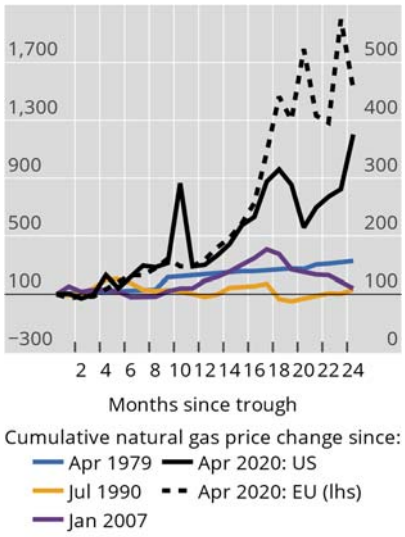
Commodity prices today: a larger, longer and broader rise[1]

Index — Graph 1

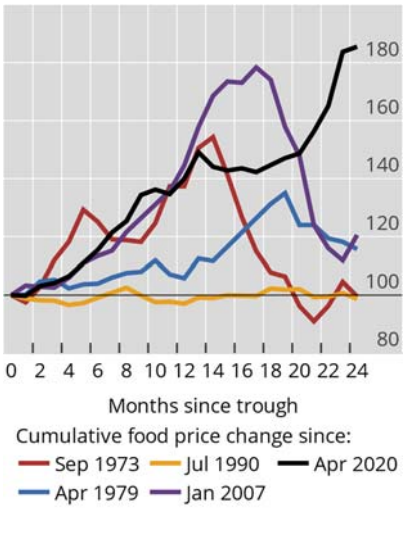
A. Oil prices



B. Natural gas prices[2]



C. Food prices[3]



[1] World oil, natural gas and food prices denominated in US dollars rebased to 100 at the start of each episode. Episodes are large disruptions to global oil supply, based on Hamilton (2009) and the International Energy Agency's (IEA) World Energy Outlook data sets. [2] For 2020 episode: solid line = US (Henry Hub); dotted line = EU (Netherlands TTF). Left-hand scale shows the changes since April 2020 for EU. For the other episodes: natural gas price index, weighted by consumption volumes. [3] Commodity price index consisting of cereals, vegetable fats and oils and other food (sugar, bananas, oranges and meat).

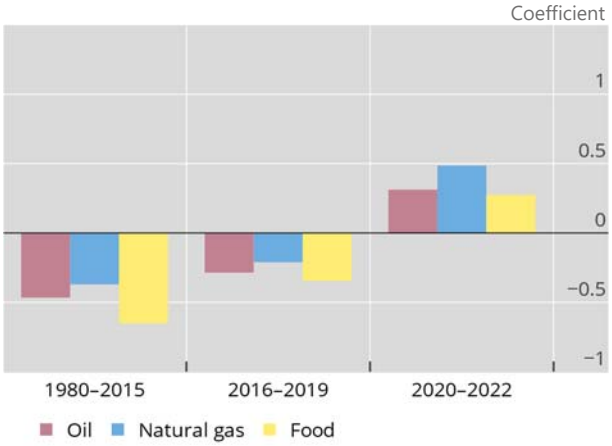
Sources: World Bank; BIS calculations.

commodity prices rose. Given dollar invoicing, these moves dampened the price increase in non-dollar terms. In the current episode, the unusual sequence of shocks (the Covid-19 pandemic and then the war in Ukraine) have resulted in a positive co-movement of the dollar and commodity prices (Graph 2.A). As a result, commodity prices in local currencies have surged much more strongly than in US dollar terms.[3] One

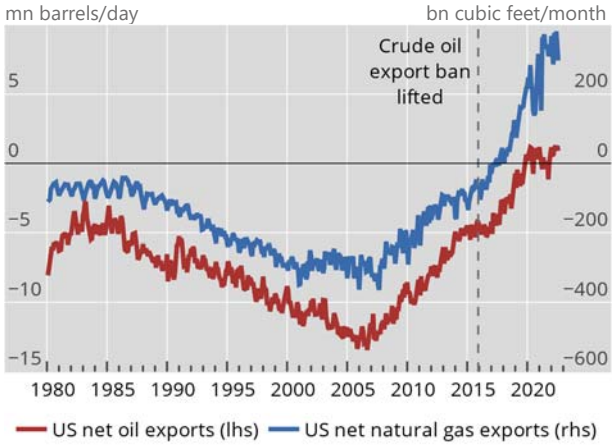
The dollar and commodity prices: a changing relationship?

Graph 2

A. Since the start of the pandemic, USD has appreciated as commodity prices rose, in contrast to the past[1]



B. United States has switched from being a net energy importer to an exporter



[1] Correlation of USD nominal effective exchange rate (DXY) with global oil, gas and food price indices (monthly log prices denominated in US dollars).

Sources: World Bank; Bloomberg; Refinitiv Datastream; BIS calculations.

[3] See Hofmann et al (2022) for further discussion.

reason for changes in the co-movement is that the United States has become a net energy exporter, especially of natural gas (Graph 2.B). Increases in oil and gas prices now improve the US terms of trade and tend to boost the US dollar, with any related monetary tightening further bolstering the currency.

A challenging outlook

Oil and gas prices have come down from their April–June highs, with Russian output back to 2021 levels and European natural gas storage almost full.

That said, material cuts in Russian oil exports could curtail global supply significantly. There is not enough idle capacity to fill the gap that a large reduction in Russian exports would leave.[4] Moreover, with existing import sanctions, Russian firms may find it increasingly difficult to maintain their equipment and keep up supply.

The outlook for natural gas is perhaps even more challenging. EU gas imports from Russia in 2021 amounted to about 110% of the existing export capacity of the United States and almost 90% of the total gas production of Qatar, one of the largest exporters of liquified natural gas (LNG). Replacing Russian pipeline gas with LNG faces infrastructure constraints: the process to build re-gasifying capacity has started, and some is due to come online within months, but the full development needs considerable time. Meanwhile, substantial entry of European buyers into the global LNG market put upward pressure on prices, with knock-on effects on Asia. Substitution of coal for gas is under way to some extent but may push coal prices up, especially affecting those emerging market economies (EMEs) for whom coal is still the main source of electricity generation. And greater reliance on coal would have adverse environmental consequences.

In terms of supply capacity, global investment in oil and gas projects has not fully recovered after the price collapse in the mid-2010s. Even if investment is stepped up today, the new supply will take time to come online. In the meantime, elevated gas prices are bound to keep the upward pressure on the price of electricity.

The supply constraints on food may not be as binding as those on energy. Producers can increase the acreage dedicated to farming or use pricier but higher-yield seeds. However, recall that food and energy are linked through the price of fertilisers. In any event, despite the recent retreat, food prices hover considerably above pre-pandemic levels. Food security in less developed countries remains at risk, and precautionary bans on food exports are possible.

Macroeconomic impact

The impact of persistently high commodity prices on activity and inflation depends on country circumstances, reflecting differing economic structures along key dimensions.

Key considerations

Disruptions to commodity markets tend to have large and far-reaching real effects. Taken together, food and energy account for a sizeable part of consumption baskets, about 25% in advanced economies (AEs) and almost 40% in EMEs. And energy is an essential input in all production processes.

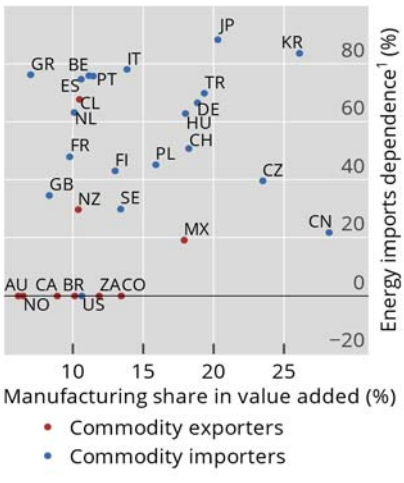
Two features of an economy are key to determining the macroeconomic impact. One is the reliance on imports: for net importers, high prices are analogous to a tax collected by foreigners and represent a loss in real purchasing power. Consumers in net exporters also face higher prices but, for the country as a whole, real income increases. The other dimension of differential impact is the industrial structure: energy intensity varies by sector and is especially high in manufacturing. Europe is particularly vulnerable on both counts (Graph 3.A).

Also important is the size of the shock. Cross-country differences on this front are especially large. The spikes in European electricity prices have dwarfed those elsewhere (Graph 3.B). While most European

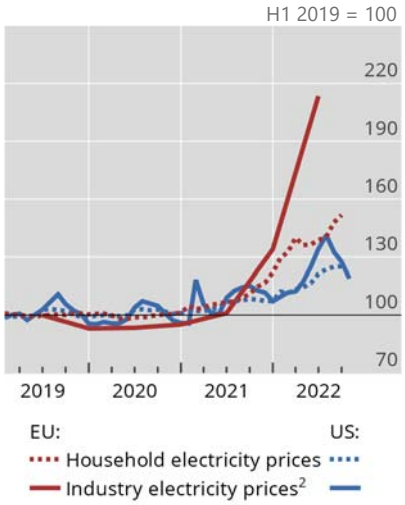
[4] See Avalos and Huang (2022) for further discussion.

Exposure to energy market disruptions varies significantly across countries Graph 3

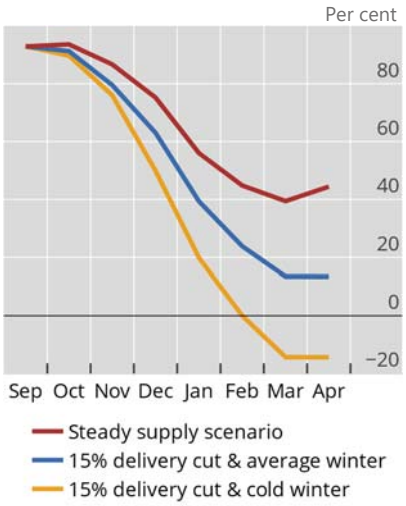
A. Some energy importers are more vulnerable due to industrial structure



B. The price shock has been much bigger in Europe



C. Gas stockpiles in the EU are high, but could be depleted rapidly[3]



[1] Energy imports dependence calculated as the share of net energy imports in total energy supply. Zero for net energy exporters. [2] For EU, average price for users with annual consumption of 500–150,000 MWh, excluding taxes and levies. For US, average prices in the industrial sector. [3] Projections of EU gas storage capacity in the upcoming winter under different scenarios. Steady supply scenario assumes no changes to gas inflows and an average winter, based on data for the last three years. The other two scenarios assume a decline of 15% in gas inflows and calculate outflows based on consumption in an average winter versus a colder than usual winter.

Sources: IEA; GIE-AGSI; Refinitiv Datastream; national data; BIS calculations.

countries have rushed to fill up gas storage facilities and have so far seen demand below the 2019–21 average, further delivery cuts together with an increase in demand due to a colder than usual winter would probably require some rationing (Graph 3.C). Notably, the uncertainty extends beyond this winter, and it may take several years for energy markets to stabilise as both demand and supply adjust to the new circumstances.

Impact on output

The impact on output, while hard to estimate, can be substantial. Judging by the revisions to consensus forecasts between January and March 2022, war-induced higher energy and food prices have already shaved about 0.20 percentage points off EME growth and roughly 0.60 percentage points off AE growth in 2022.[5] Supply shortages can be especially damaging. In the case of Europe – the most exposed region and the hardest hit in the case of energy prices – estimates suggest that a shutdown of Russian gas supply could cut GDP over the following 12 months by as much as 3% (see Graph A.1 and related Annex for elaboration).[6] Spillovers to the rest of the world would be significant: a 1 percentage point drop in euro area growth could reduce growth by about 0.20 percentage points in the United States, 0.25 percentage points in other AEs and 0.40 percentage points in EMEs.

Several factors could give rise to larger, possibly non-linear effects. First, heterogeneity in the household sector could exacerbate the impact. Poorer households, which have a higher propensity to consume, spend a larger share of their income on energy and food (Graph 4.A). Thus, higher prices for

[5] These are broadly consistent with VAR-based rules of thumb, which suggest that a 10% rise in oil prices and in agricultural commodity prices reduces GDP for the average AE by around 0.25% and 0.15% after one year, respectively. See Igan et al (2022). Oil prices went up by about 30% and food prices by about 15% at the onset of the war in Ukraine (from January to March).

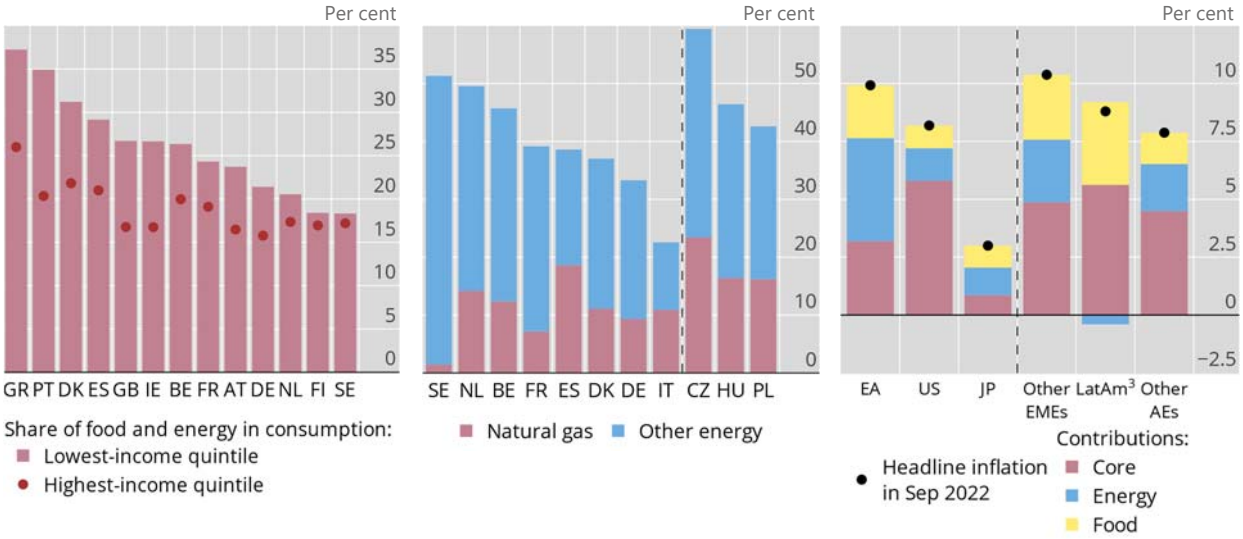
[6] For agricultural commodity market disruptions, De Winne and Peersman (2021) use data from 75 countries for 1970–2016 and find that, following a 10% supply-driven increase in global food prices caused by harvest disruptions or extreme weather events, real GDP declines by a maximum of some 0.5% after six quarters. Igan et al (2022) find in a panel of 19 countries that the GDP impact of a 10% rise in agricultural commodity prices after eight quarters amounts to almost 0.4% for importers but less than 0.2% for exporters.

The economic cost of higher commodity prices and supply shortages can be large Graph 4

A. The poor spend a larger share of their income on food and energy

B. Higher energy costs could reduce corporate profits by as much as 50%[1]

C. Food and energy account for much of the rise in inflation, especially in Europe[2]



[1] Increase in total energy bill and its natural gas component as a share of operating income. Data for energy consumption and operating income are for 2019; increase in natural gas and energy prices is for 2022 relative to 2021. [2] Weighted averages based on GDP and PPP exchange rates for: other AEs = CA, CH, DK, GB, NO and SE; LatAm = BR, CL, CO and MX; other EMEs = CZ, HU, IL, KR, PL and ZA. [3] Brazil recently introduced government support that caused a sizeable year-on-year drop in energy prices (energy state tax and gas price cuts).

Sources: National data; BIS calculations.

these items weigh more on aggregate demand, pulling growth down and worsening inequality. In turn, the impetus for public intervention will be stronger, with implications for inflation as well as possible erosion of fiscal sustainability.

Second, businesses could come under stress. For instance, the increase in energy bills due to the rise in gas prices between 2021 and 2022 alone could cut annual corporate profits by more than 10% (Graph 4.B). If all energy inputs became as expensive as gas, the cost could climb to 50%. This would dampen investment and could even push some firms into bankruptcy.

Finally, financial system vulnerabilities could emerge. Firms active in the commodity business rely heavily on hedging. Forward contracts are crucial for electricity markets, where careful planning compensates for limited storage possibilities. Increased volatility has ramped up margin calls in these markets, straining the liquidity position of some firms. Further, heavy reliance on short-term debt makes electricity market participants especially vulnerable to monetary policy tightening (see Annex). Given the unusually large, long and broad surge in commodity prices, smooth market functioning and financial stability may be at higher risk than in the past.

Impact on inflation

Other things equal, the first-round effects of higher energy and food prices mechanically translate into higher CPI inflation (Graph 4.C). The impact is bigger where the share of food and energy in the consumption basket is larger (eg EMEs) and/or the price shock is more severe (eg euro area). Equally important as these first-round effects are the changes in perception and resulting changes in behaviour. Food and household energy prices tend to be salient, and are known to be crucial in shaping inflation perceptions and expectations. And strong supply chain linkages (eg transportation) tend to generate high spillovers from food and energy to other sectors.

Model estimates suggest that a full shutdown of gas flows from Russia could push up euro area CPI inflation by up to 1.4 percentage points in the subsequent year. Estimates vary depending on modelling and scenario assumptions. If, for instance, households and businesses expect that gas supply will remain restricted in the foreseeable future, they will be more likely to substitute away from gas and adjust spending patterns. This would lead to a larger decrease in gas demand and, hence, a smaller price adjustment.

In many countries, fiscal policy – in the form of income or price support – has already responded to the cost of living crisis. This has helped contain price increases in the near term. But the fiscal measures arguably succeed by postponing the effective price increases. If the measures are reversed, a corresponding price adjustment will follow.[7] In the absence of such a reversal, the failure of demand to adjust would affect global prices.

Policy implications

Real economy forces and the sequence of unusual shocks are behind the recent commodity price movements, many of which necessitate relative price changes. However, given the strength and persistence of these forces and with inflation already well above target, containing inflation will be top of the list of central banks' policy imperatives. Tighter monetary policy is necessary, even at the cost of lower demand.

The current environment puts a premium on coherent fiscal and monetary policies. Targeted, tailored, temporary fiscal support could contain inflation or its social effects in the near term, and possibly may also curb second-round effects. The inflationary impulse down the road could be limited if support packages are budget-neutral over the medium term. However, partly because they are easier to implement, measures have rarely been targeted.[8] And experience suggests that support is politically hard to reverse. Distorted price signals may also prompt rationing in the near term, as energy demand stays high, and hinder adjustment in the longer term.

An overly loose fiscal policy stance could bring debt sustainability into question, not least through possible disruptions in core financial markets.[9] Moreover, central bank credibility could be dented if a loose fiscal policy stance cast doubt on the anti-inflation commitment. Financial stability, too, could be threatened if markets reacted abruptly to a perceived risk of fiscal dominance or became concerned about the fiscal-bank nexus.

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[7] For instance, in Brazil energy tax cuts are estimated to have lowered headline inflation by 2.5 percentage points in 2022 (September 2022 Inflation Report). For 2023, an upward push of 0.6 percentage points is anticipated should cuts expire.

[8] Of the $160 billion worth of price support put in place to date, 93% is untargeted (OECD (2022)).

[9] For net exporters, windfall revenues could finance the cost of fiscal support measures. Hence, it is not necessarily the case that there would be an increase in debt or a loss of fiscal space. But this still involves an opportunity cost.