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The changing nexus between commodity prices and the dollar: causes and implications

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## The changing nexus between commodity prices and the dollar: causes and implications

### Key takeaways

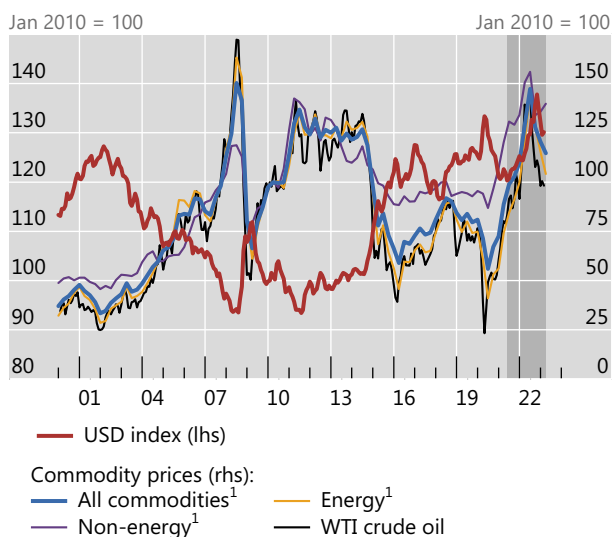
- Commodity prices and the US dollar have moved in tandem recently, in contrast to their usual statistical pattern of moving in opposite directions.
- The causes of the change in the relationship are partly temporary, such as the unusual combination of recent shocks, and partly structural, such as the United States' emergence as a net energy exporter.
- The change in the nexus compounds the stagflationary effects of higher commodity prices for commodity importers, while its implications for commodity exporters are more ambiguous.
- A lasting change in the nexus could create more difficult challenges for macro-financial stability frameworks, particularly in commodity-importing economies.

Commodity prices and the value of the US dollar have recently moved up and down in tandem. Most remarkably, they both surged in 2021 and 2022, and subsequently weakened together. This was a marked departure from the standard pattern, whereby dollar strength goes hand in hand with weaker commodity prices, and vice versa (Graph 1). Since most commodities are priced in dollars, these dollar movements have amplified commodity price swings, as measured in local currency, for non-US economies (Hofmann et al (2022)). The change in the correlation between commodity prices and the dollar from negative to

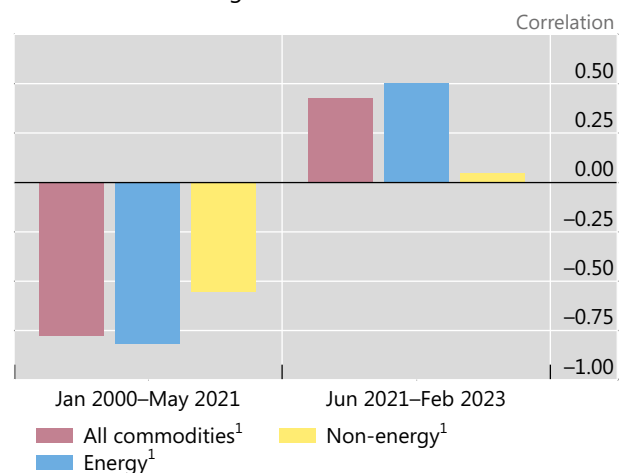
Commodity prices and the dollar

Graph 1

### Co-movements over time....



### ....with a recent change in correlations



The shaded area indicates June 2021–latest period.

<sup>1</sup> S&P Goldman Sachs commodity index (GSCI) spot.

Sources: Bloomberg; Datastream; authors' calculations.

positive is starkest for energy commodity prices but has also been evident in non-energy commodity prices, reflecting the broad co-movement of prices across commodity classes.

This bulletin explores the causes and implications of the change in the commodity price-dollar nexus. We first analyse potential reasons for the change and then discuss possible implications for macro-financial stability frameworks and for the dollar's global role.

## What could explain the change in the nexus?

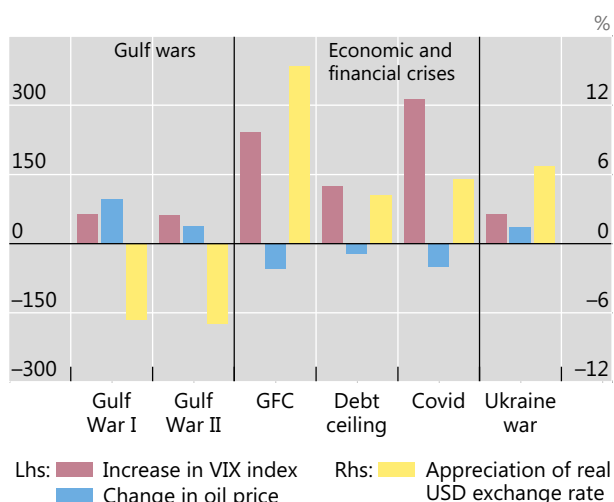
Unusual co-movement between the US dollar and commodity prices may reflect both temporary and structural factors. Temporary factors include the macro-financial stability consequences of higher commodity prices, which prompted a flight-to-safety into the US dollar (and other safe haven currencies), and the more rapid monetary policy tightening in the United States than in most other economies. Structural ones include the United States' emergence as a net energy exporter, which has seen the dollar behave like a "commodity currency".

The commodity price-dollar nexus may have changed temporarily due to the specific nature of the shocks to the global economy in 2022. Russia's invasion of Ukraine drove up commodity prices by curtailing supply (Avalos et al (2022)). It also prompted a sharp rise in investor risk aversion, pushing up the dollar. The adverse financial stability consequences of surging commodity prices reinforced flight-to-safety dynamics, including during the suspension of trade on the London Metal Exchange nickel market in early 2022.<sup>1</sup> Moreover, the Federal Reserve has tightened monetary policy more rapidly than most other central banks, reflecting in part the smaller US exposure to the economic fallout of the war, including the commodity price surge. Widening policy rate differentials relative to the United States have been associated with larger depreciations against the US dollar across countries (Hofmann et al (2022)).

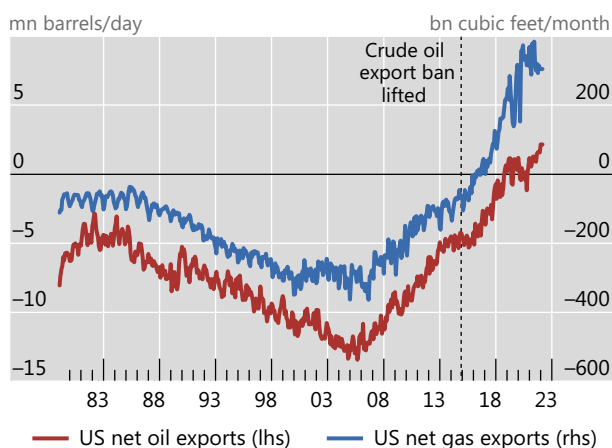
A comparison with previous episodes of war and global financial stress reinforces the uniqueness of recent developments (Graph 2.A). The two Gulf Wars saw higher oil prices but a US dollar depreciation. The Great Financial Crisis, the turmoil in international capital markets due to the US debt ceiling debate in

Transitory and persistent factors affecting the commodity price-dollar nexus Graph 2

A. The current constellation of VIX, commodity prices and the dollar seems unusual



B. The United States has become a net energy exporter



Gulf War I = May–Oct 1990; Gulf War II = Mar 2002–Mar 2003; GFC = May–Nov 2008; Debt ceiling = Apr–Sep 2011; Covid = Jan–Mar 2020; Ukraine war = Oct 2021–May 2022.

Sources: Federal Bank of St Louis, *FRED*; Datastream; author's calculations.

<sup>1</sup> For a detailed discussion of the financial stability aspects of commodity prices, see Financial Stability Board (2023).

2011, and the Covid-19 recession – all associated with heightened investor risk aversion – saw dollar appreciation but lower oil prices. The recent episode has posed a unique challenge for commodity-importing economies, combining higher oil prices due to a commodity supply shock with US dollar appreciation due to the flight to safety and US monetary policy tightening. Both developments amplify the rise in commodity prices in local currency terms.

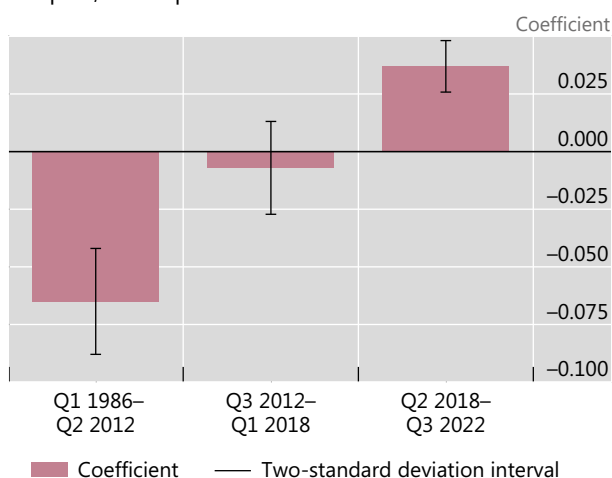
A more structural determinant of the change in the commodity price-dollar nexus is the changing composition of US trade. Historically, the United States has been a net oil and gas importer. This pattern has changed recently. The shale oil boom that began in the early 2010s expanded US energy production substantially. The country became a net exporter of natural gas in 2017 and of oil in late 2019 (Graph 2.B). Russia’s invasion of Ukraine reinforced these changes, as countries sought alternative energy sources to replace imports from Russia. According to the US Energy Information Administration, in 2022 the United States exported half of its petroleum production, up from 10% in the 1990s, and became the world’s largest liquified natural gas exporter, surpassing Qatar and Australia.

These changing trade patterns have altered the relationship between commodity prices and the US terms of trade (ie the ratio of US export prices to US import prices). Historically, higher oil prices were associated with a deterioration in the US terms of trade (Graph 3.A). But as US oil production rose, the relationship between the two series flipped, so that higher oil prices now correspond to an improvement in the US terms of trade.

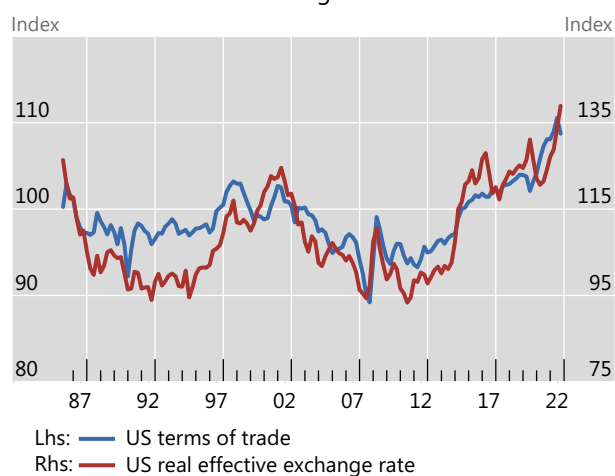
Oil prices, the US terms of trade and the US dollar

Graph 3

A. Higher oil prices worsened the US terms of trade in the past, but improve them now<sup>1</sup>



B. The relationship between the US terms of trade and US dollar has remained strong and stable



<sup>1</sup> Estimates of coefficient  $\beta_1$  from a regression of  $\Delta \log(USTOT_t) = \beta_0 + \beta_1 \Delta \log(Oil_t)$ , where USTOT is the US terms of trade and Oil is WTI oil prices, estimated using quarterly data from Q1 1986 to Q3 2022. Break dates selected using a Bai-Perron structural break test, trimming the upper and lower 5% of the sample. For technical details, see Rees (2023).

Sources: Rees (2023); OECD; BIS.

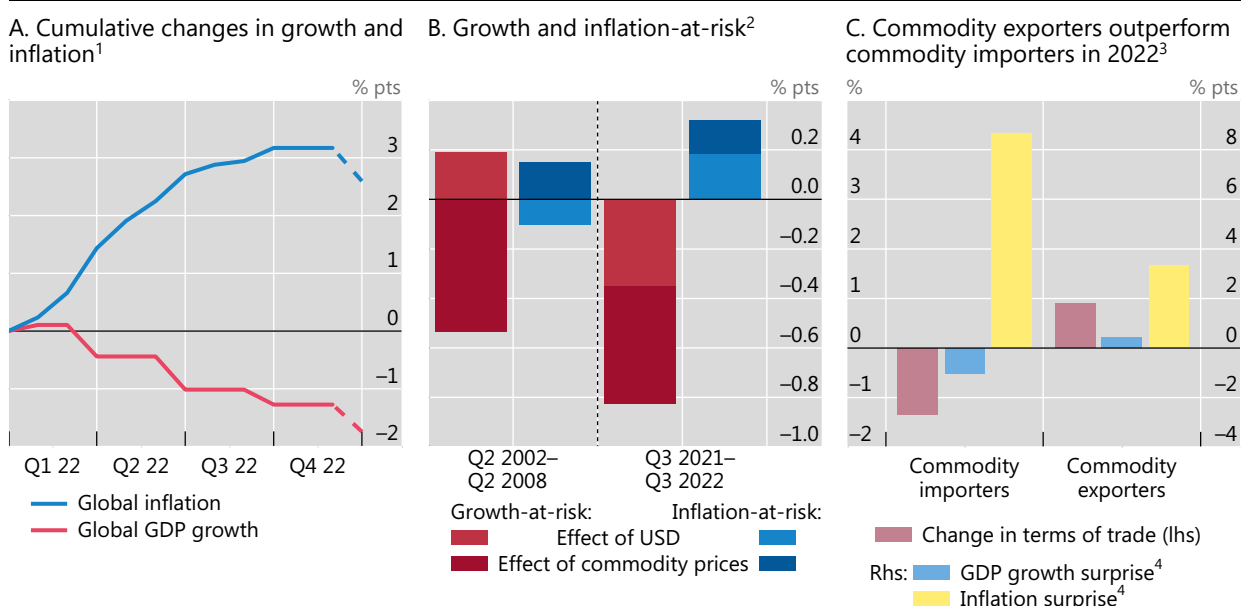
Even as the trade composition of the United States has changed, its terms of trade has displayed a remarkably strong and stable relationship with the dollar (Graph 3.B). But whereas, in the past, higher energy prices were associated with worsening US terms of trade and a weaker dollar, today these patterns are reversed. A similar positive relationship between the terms of trade and the exchange rate is commonly found for commodity exporters, such as Australia and Canada, but not for commodity importers (see Cashin (2004), Rees (2023)). This suggests that – unless the United States becomes a major net energy importer once more – the combination of higher commodity prices and a stronger US dollar could be more common in the future than it was in the past.

## Implications of a possible change in the nexus

The change in the commodity price-dollar nexus implies that movements in the US dollar now compound the effect of commodity prices changes on the global economy. Commodity price rises tend to stoke inflation and choke off growth in commodity-importing economies, while dollar appreciation tends to do the same outside the United States, especially in emerging market economies. The stagflationary effects of higher commodity prices exert themselves in part through higher consumer prices, which squeeze household incomes, and rising production costs for firms, which dampen investment. The stagflationary effects of a stronger dollar come through its dominant role in global trade and finance.<sup>2</sup> The recent confluence of such incidents has significantly increased the risk that weak growth will coincide with high inflation. Consistent with this, inflation surged worldwide while growth fell in 2022 (Graph 4.A).

### Macroeconomic implications of the commodity price-dollar nexus

Graph 4



Commodity exporters = AE, AR, AU, BR, CA, CO, CL, ID, KW, MX, MY, NO, NZ, PE, SA and ZA. Commodity importers = AT, BE, CH, CN, CZ, DE, DK, FI, FR, GB, HK, HU, IN, IT, JP, KR, NL, PH, PL, SE, SG, TH and TR.

<sup>1</sup> Cumulative increments in real GDP growth and inflation rate since Q1 2022. Aggregates based on the median across countries. Dashed lines indicate forecasts. <sup>2</sup> For non-commodity dependent economies. Based on the estimated impacts from Hofmann et al (2023). "At-risk" coefficients refer to the 90th percentile for inflation and the 10th percentile for growth. Period averages. <sup>3</sup> Country averages. <sup>4</sup> Difference between October 2021 and October 2022 WEO forecast for end-2022. For AR, forecast from Consensus Economics.

Sources: Board of Governors of the Federal Reserve System; IMF; OECD; Consensus Economics; Datastream; S&P; national data; authors' calculations.

Formal empirical evidence (Hofmann et al (2023)) indicates that higher commodity prices and dollar appreciation increase the risk of both weak growth (growth-at-risk, GaR) and high inflation (inflation-at-risk, IaR) above all in commodity-importing countries.<sup>3</sup> These effects have played out in tandem recently, compounding stagflation risk, while they had tended to offset each other previously when commodity prices and dollar value were inversely correlated. This is evident when comparing the 2002–08 commodity price boom, which was accompanied by dollar depreciation, with the joint surge in commodity prices and the dollar in 2021–22 (Graph 4.B). Hence, the co-movement of commodity prices and the dollar during

<sup>2</sup> For a more detailed discussion of the channels with further references, see Igan et al (2022) and Hofmann et al (2023).

<sup>3</sup> GaR and IaR are respectively the lowest and the highest decile of the growth and inflation distribution across 22 non-commodity-dependent economies as defined by UNCTAD over the period Q1 1990–Q4 2019.

any period is of material importance for stagflation risk. If the positive correlation between commodity prices and the dollar were to persist, their amplified joint impact could become more frequent.

Different considerations apply for commodity exporters. In these economies, higher commodity prices improve the terms of trade, boosting real incomes and loosening financial conditions by enhancing borrowers' repayment capacity (Drechsel et al (2019)). Historically, exchange rate appreciations have played an important stabilising role in commodity price booms, helping to transmit real income movements to firms and households not directly involved in commodity production, reallocating resources towards non-tradeable and commodity sectors and away from non-commodity tradeable firms, and moderating the inflationary effects of higher commodity prices. At the same time, the financial channel of the US dollar has been more destabilising for these economies as the dollar would appreciate – tightening financial conditions – when commodity prices (and real incomes) were low. A change in the commodity price-dollar nexus would weaken the stabilising effects of the exchange rate on real incomes and inflation for these economies, but also lessen their exposure to the macro-financial effects of dollar fluctuations.

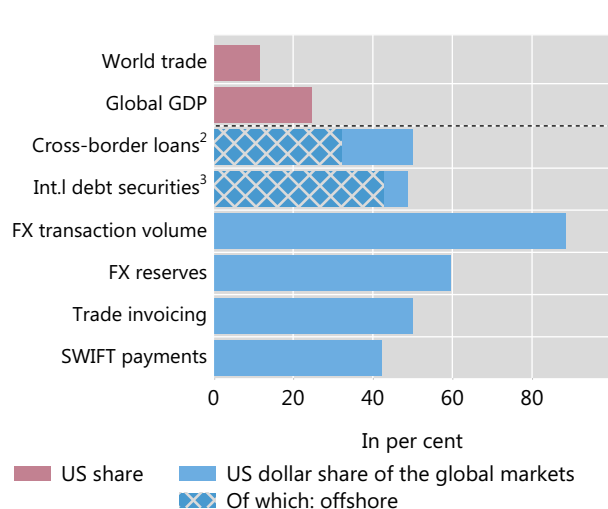
### Longer-term considerations

A lasting change in the correlation between commodity prices and dollar exchange rate could create difficulties for macro-financial stability frameworks (MFSFs). Such frameworks have been enhanced over the recent decades. They commonly involve varying degrees of foreign exchange intervention together with macroprudential and capital flow management policies to address the trade-offs posed by domestic and external financial conditions to monetary and fiscal policy (BIS (2022)). A durable change in the commodity price-dollar nexus could lead to greater macroeconomic volatility and more difficult trade-offs between inflation and output stabilisation. Addressing these may require further enhancements of MFSFs, depending on specific country characteristics.

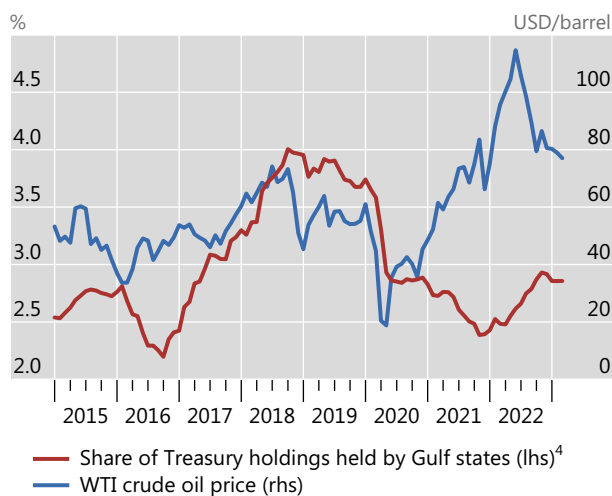
There is another vector through which the global financial system may be affected by the new status of the United States as an energy exporter: the petrodollar regime. For decades, major oil exporters have priced their oil trades in US dollars. Often petrodollars have been recycled back into US Treasury debt and other US assets, reinforcing the dollar's reserve currency status, as manifested in its dominant role in global trade and finance (Graph 5.A) and its outsize impact on global economic and financial conditions.

Less US oil imports could mean fewer petrodollars flowing into the global financial system. This could reduce liquidity and affect currency choices in trade invoicing and reserve management. Some commodity exporters may consider catering to the wishes of their new most important customers, as the stabilising impact of the dollar on their economies weakens. Commodity importers may welcome such a change if it shields their economies from the stagflationary effects of rising oil prices and dollar appreciation. Recent data lend some support to this notion. For instance, the major Gulf States have reduced their investments in US Treasury debt even as oil prices and, hence, oil export revenues have picked up (Graph 5.B), possibly indicating more non-dollar oil export invoicing. Moreover, the share of global trade invoiced in US dollars has declined from its peak in 2014 and the global share of foreign exchange reserves held in dollars has fallen to a three-decade low (Arslanalp et al (2022)). That said, the debate on threats to the dollar's status is not new and there are many reasons for the status quo to continue.<sup>4</sup> Whether the evolving energy and geopolitical landscape prompt a material change in the dollar's global role remains to be seen.

<sup>4</sup> See Eichengreen et al (2019) for a summary of the views on what makes a national currency an international one.

A. The US dollar has an outsize international role<sup>1</sup>

## B. Major oil exporters' appetite for US debt diminished



<sup>1</sup> Data refer to latest available value. <sup>2</sup> USD-denominated cross-border loans by banks to counterparties in all countries (excluding inter-office claims but including interbank claims on account of loans and deposits). Offshore refers to cross-border loans excluding loans from US and on US. <sup>3</sup> USD-denominated international debt securities by all issuers; these securities are issued outside the local market of the country where the borrower resides (eg eurobonds or foreign bonds). Offshore refers to USD-denominated loans/debt issued outside the local market. Data refer to latest available value. <sup>4</sup> Gulf states = IQ, KW and SA.

Sources: IMF; Bloomberg; CPB World Trade Monitor; SWIFT; BIS; US Department of the Treasury; authors' calculations.

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