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‘There is all the difference in the world between paying and being paid’: margin calls and liquidity demand in volatile commodity markets

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7 Minutes

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The Russian invasion of Ukraine in February 2022 and subsequent sanctions led to unprecedented increases in key commodity prices. While prices briefly abated in late spring and early summer, these surged again over late July and August, with EU and UK gas prices reaching new peaks on 26 August. These moves created a sudden and significant demand for liquidity from market participants with derivatives positions. This post examines how non-financial firms (henceforth

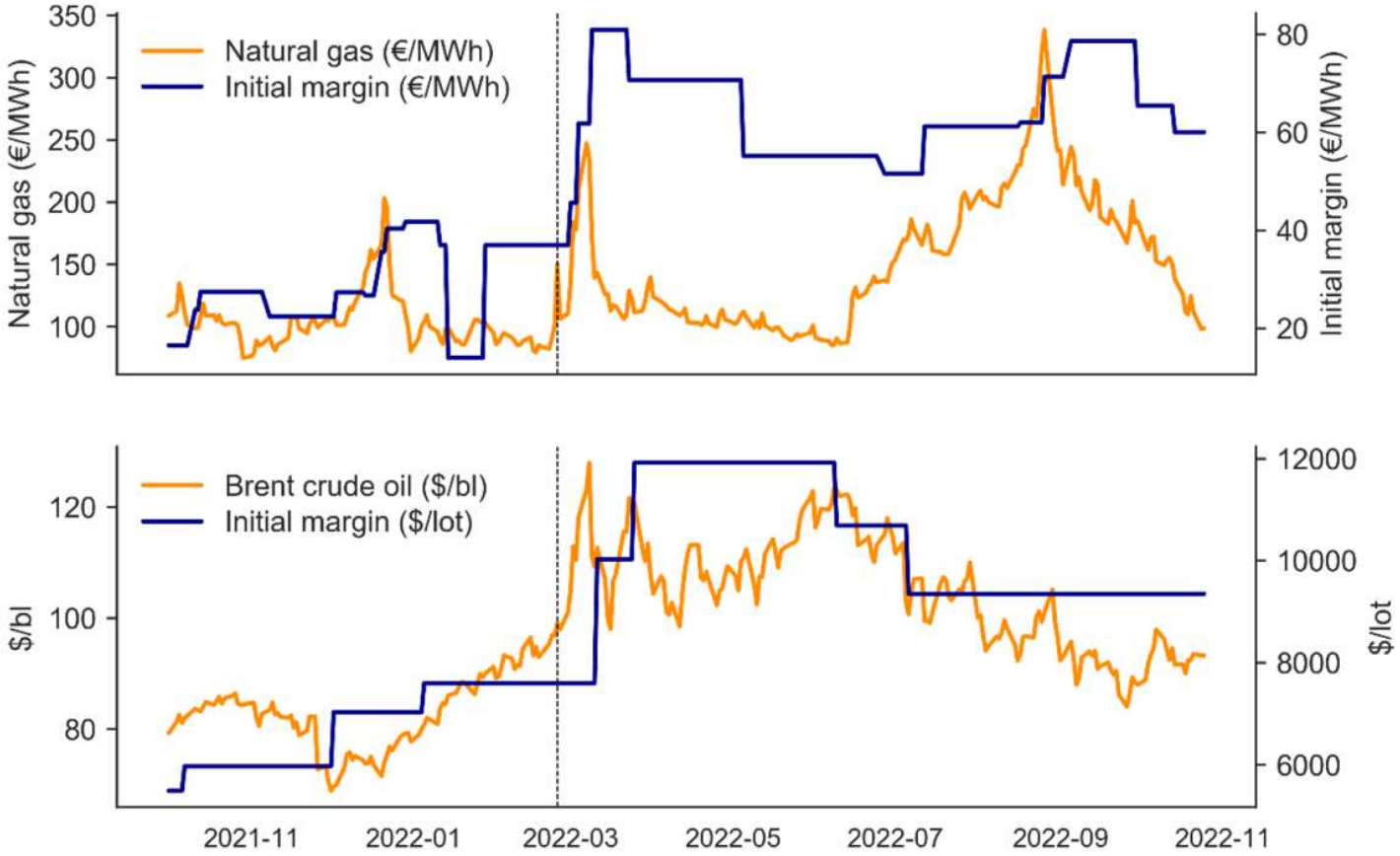
'commodity traders') reacted to this liquidity pressure, and how their reactions impacted the functioning of commodity derivatives markets. Commodity derivative markets are important for the real economy and the recent events underscored the need to better understand the interdependencies between margin and counterparty risk management practices.

Margin requirements and liquidity pressures

Price moves on some key futures contracts following the invasion were extremely sharp but were surpassed by moves in late August. Dutch TTF natural gas, for example, peaked at eight times the pre-invasion price in March 2022, only to later reach 11 times the pre-invasion price in late August. As of early November 2022, natural gas prices in Europe have significantly retraced and are more in line with pre-invasion levels, but remain volatile, and are still far above levels typically seen over the 2010s.

As a result of this elevated volatility and sharp changes in prices, central counterparties (CCPs) called for more initial and variation margin to cover short derivatives positions in commodities. Variation margin calls must be met with cash, while initial margin calls can be met with cash or a range of eligible securities (usually government bonds). Notably, initial margin rates on natural gas in ICE Clear Europe increased sixfold from January to April 2022; they have remained elevated since. Chart 1 shows the margin rate – which is a base level of required initial margin for a given contract – for the front-end (shortest available maturity) futures contract for key commodities. On top of this, some CCP clearing members applied margin add-ons or multipliers when sending the margin calls to their clients to reflect their credit risks.

Chart 1: Prices and margin scanning range of front-end futures: TTF gas and Brent oil



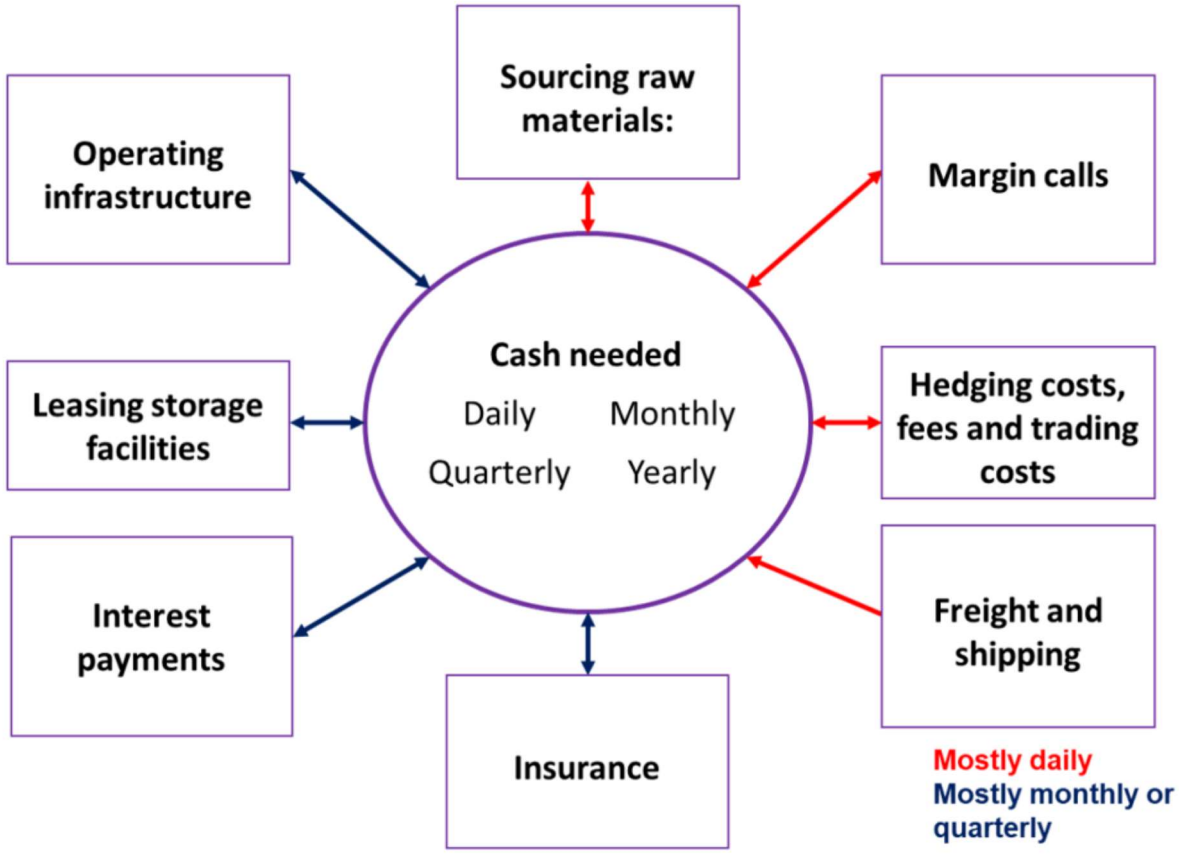
Notes: Scanning ranges are representative of initial margin requirements on a single contract of the product. Levels are reported in monetary units per unit of underlying. The depicted Dutch TTF futures are traded in EDX-ICE Endex and Brent futures in ICE Futures Europe Commodities. Vertical dashed line marks the start of the Russian invasion of Ukraine on 24 February 2022.

Sources: Bloomberg, ICE Clear Europe and Bank calculations.

When prices are rising, variation margin is paid by those who have short positions; in commodity derivatives, non-financial institutions such as commodity traders, producers, and end-suppliers

typically hold structural short positions as they seek to protect the portfolio against price drops during future sales. These short positions are offset by commodity users (eg airlines) and financial players, like dealers and asset managers. As such, it is predominantly non-financial corporates, such as energy firms or commodity traders, who would have been required to pay margin during the commodities stresses of 2022. In principle they could sell assets to meet margin demands. However, sale of the corresponding physical product can take anywhere between 20 and 90 days, depending on the commodity in question. This means there is a timing mismatch between the margin calls they are required to pay on their derivative positions, and the time required to sell their actual physical products. The various cash flow needs of non-financial commodity traders are illustrated in Figure 1.

Figure 1: Cash flow needs of non-financial commodity trader



This timing mismatch between realised cash flows has been at the crux of recent liquidity pressure on commodity firms, but it is not a new problem. For example, in 1993, German industrial conglomerate Metallgesellschaft required a liquidity injection from a group of banks after sudden changes in the shape of the oil curve left it facing large hedge accounting losses and margin claims.

Liquidity management and market incentives

A spike in volatility like that observed in March–April 2022 interacted with these inherent features of traders' business models to produce changes in market behaviours. While some of these were expected, some were not, and raise important questions for policymakers.

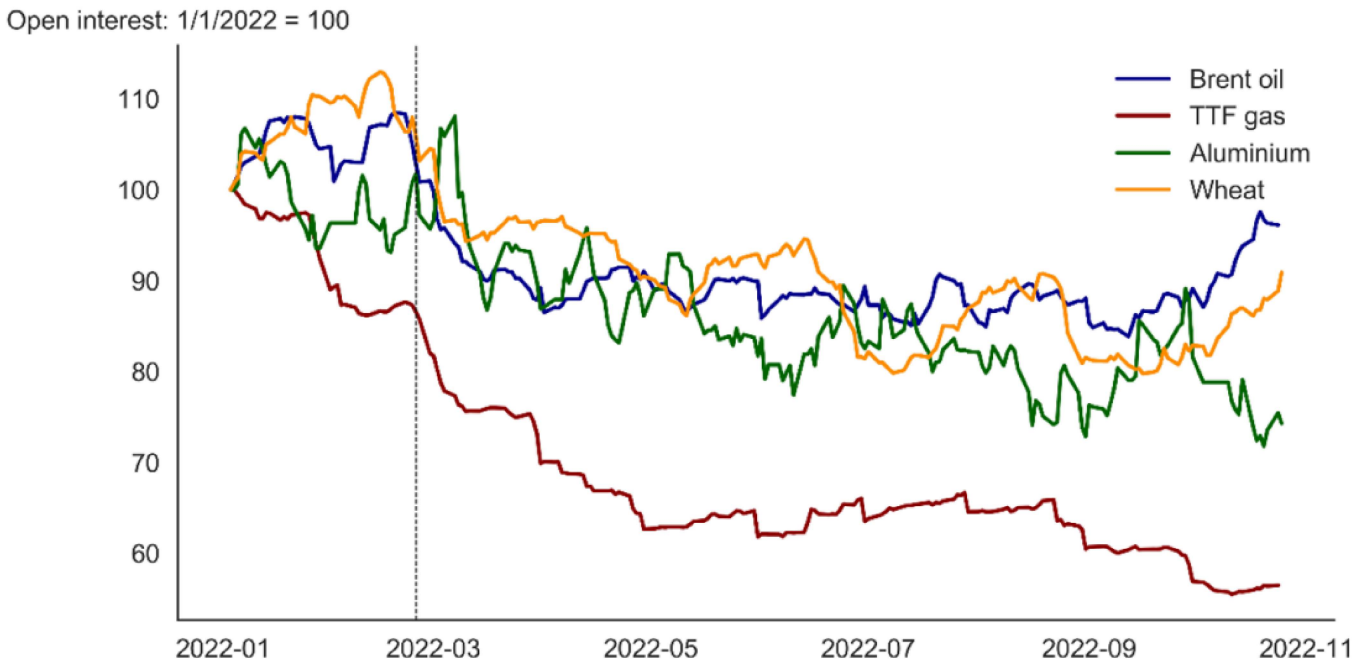
First, differences in liquidity management between non-financial and financial corporations strained the functioning of physical commodities markets. Comparing non-bank financial institutions and commodity traders is instructive. During the March 2020 'dash for cash', non-bank financial institutions sold government bonds or used them as collateral for borrowing in repo markets, in order to access immediate liquidity. The liquidation of safe assets, coupled with limits in dealer intermediation capacity, led to exacerbated volatility and dysfunction in core financial markets.

In contrast, non-financials such as commodity traders hold little to no investments in securities (such as government bonds) on which they might draw during stress. For this reason, in normal times, commodity traders rely on credit lines (such as revolving credit facilities) with banks to meet their liquidity needs. Following the steep and sudden rise in margin calls, commodity traders have primarily sought to increase borrowing capacity of their credit lines. This worked to a certain extent; however, as banks' risk appetite in commodities markets tightened, some traders sought credit elsewhere (such as from private equity) or reduced their hedging activities altogether. This may leave them unable to capture the benefits of hedging forward future production and vulnerable to sharp swings in the prices. Or lead to a reduction of physical supply should an inability to hedge lead participants to exit the market. Both enhance pass-through of price shocks and amplify impacts to the real economy.

Second, market liquidity and trading volumes changed in unexpected ways as the shock evolved. In theory, differences in the reactivity of margins models to volatility increases should incentivise a

shift from centrally to non-centrally cleared over-the-counter (OTC) derivative markets in times of stress. Initial margin requirements on non-centrally cleared transactions (such as those calculated via eg the ISDA Standard Initial Margin Model) are generally less reactive to increases in market volatility and therefore less costly for investors. For centrally cleared markets, a reduction in activity was visible in available data: Chart 2 shows open interest in TTF one-month futures falling more than 40% from pre-invasion levels. Significant drops are also seen in other markets such as Brent oil and aluminium.

Chart 2: Open interest of generic first futures: TTF gas, Brent oil, aluminium and wheat



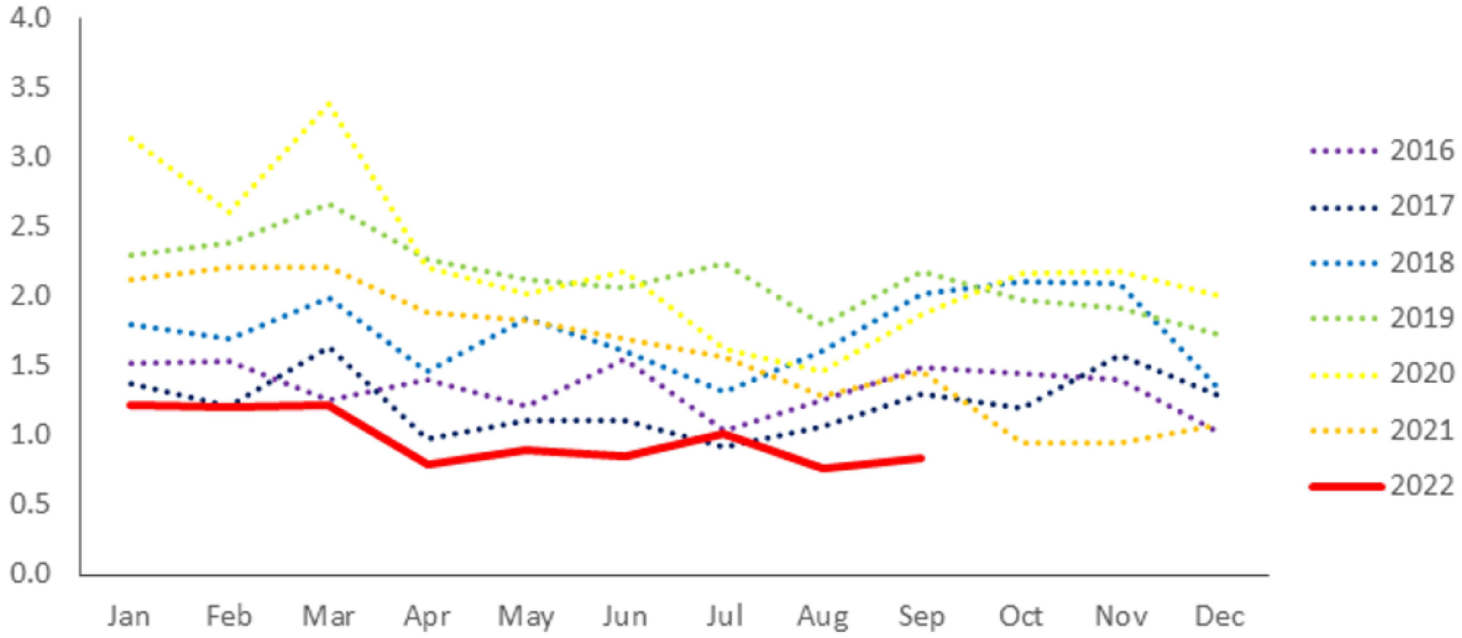
Notes: Open interest is defined as the number of outstanding agreements for the selected contracts. Open interest belongs to contracts traded at the Shanghai Futures Exchange for aluminium, Chicago Board of Trade for wheat, ICE Futures Europe for Brent crude oil and EDX-ICE

Endex for TTF gas. Vertical dashed line marks the start of the Russian invasion of Ukraine on the 24 February 2022.

Sources: Bloomberg and Bank calculations.

However, the non-centrally cleared OTC activity in UK markets also declined sharply. Chart 3 shows a 50% decline in OTC trading activity between June 2021 and June 2022. It should be noted that this is only a partial cut of data relative to the European Gas (Netherlands TTF), and that other jurisdictions may have observed different patterns. One reason for the decline is the tightening of risk appetite: at the first peak of the crisis in March, there was less willingness to enter into OTC trades with commodity traders due to counterparty credit risk concerns, particularly less well-rated ones. Further complicating the incentives at play is the fact that multiple factors other than margin width, influence the choice of which the derivative markets have to use for their trades (eg portfolio netting, temporary amendment of collateral requirements, etc). This is consistent too with the observation that, for a given market structure, reactions of market participants and banks can amplify volatility shock.

Chart 3: Total volume of European Gas (Netherlands TTF) in MWh of centrally and non-centrally cleared OTC GAS derivative contracts (millions)



Sources: London Energy Broker's Association data and Bank calculations.

Policy implications

In addition to implications for markets and liquidity management, this episode has underscored three important lessons for future policy work.

First, given that initial margin is designed to cover potential future losses in the event of a counterparty default, it is natural for levels to increase as volatility increases. However, these sudden changes can cause liquidity stress whereby parties posting margin have to find additional liquid resources, often at just the times when it is most difficult to do so.

Second, changes in investor behaviour and trading activity have further underscored structural issues in commodity derivatives markets and margining practices. In theory, differences in the

reactivity of margins mean that liquidity could shift from centrally to non-centrally cleared OTC derivative markets in times of stress. However, other aspects of margin models, and differences in margin practices, including waivers and multipliers, or eligible collateral may have played a bigger role in incentivising behavioural shifts. A review of margining practices by the Basel Committee on Banking Supervision, the Committee on Payments and Market Infrastructures and the International Organization of Securities Commissions looked at margin practices during the Covid 'dash for cash' in March and April 2020. The report recommended increasing transparency of margin practices in centrally cleared markets and evaluating the responsiveness of CCPs' initial margin models to different market scenarios.

Third, the episode has raised questions about the different liquidity needs and strategies of financial and non-financial corporations. The latter do not hold liquidity buffers in the same way the former typically do yet are subject to similar liquidity demands during times of stress via margin calls on derivatives used for hedging. This episode should prompt more careful thought about non-financial firms' use of derivatives, their liquidity resilience, and their interconnection with the real economy.

In response to the extreme liquidity pressures energy companies face as a result of steep margin calls, the Bank and HM Treasury launched the Energy Markets Financing Scheme on 17 October 2022. It seeks to quell one of the main dynamics outlined above by enabling the provision of short-term financial support to energy firms of good credit quality for the purpose of meeting collateral requirements that arise due to hedging activity.

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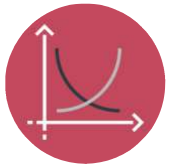

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