WINTER 2022

FINANCE 21

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Facilitating Global Trade

Fabio Panetta considers the bursting crypto bubble and the future of digital finance

Graham Bright discusses the role of the container ship in enabling global trade

In a Q&A Josephine George discusses the Bank of St Helena's financial inclusion role

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Foreword

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Welcome to the Winter edition of **FINANCE21**, a *World Commerce Review* supplement. This publication has been prepared in response to readership demand for an overview of the financial sector in these turbulent and unique times.

All aspects of the sector are examined, with the most respected authors providing the reader with the most comprehensive information available. Our brief is to provide all the data necessary for the readership to make their own informed decisions. All editorials are independent, and content is unaffected by advertising or other commercial considerations. Authors are not endorsing any commercial or other content within the publication. ■

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Monetary policy in difficult times

The UK economy has been buffeted by large disturbances in the last couple of years. Andrew Bailey sets out the key elements of monetary and financial stability policy

In these difficult times, a large measure of stoicism is called for, particularly the view of stoics that the best indication is what we do and how we behave, rather than what we say. But, there is an important role for communication, and so I will set out the key elements of UK monetary and financial stability policy as I see them.

The UK economy has been buffeted by very large disturbances in the last two and a half years or so. COVID, the supply chain issues in the COVID recovery, a shrinkage of the labour force during this period, and most recently the impact of Russia's invasion of Ukraine on energy and other commodity prices.

These disturbances are very large. In the UK, the rise in energy prices means that household spending on energy as a share of income could plausibly be a full 2 percentage points higher this winter than in 2019. This is a bigger increase than we saw in the energy crises in the 1970s.

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The disturbances that have come since COVID hit have been supply side effects in the UK – supply chains, shrinkage of the labour force, cuts in the supply of natural gas to Europe as a whole. I want to draw out a number of points from this.

First, the UK economy did not experience a rapid and sustained recovery from the COVID disturbance. The level of GDP on the latest reading remains below the pre-COVID level. The problem is that the supply side has shrunk, particularly the labour force, and the economy has been hit by a huge shock to national real income from the war.

Second, it is said that central banks, including the Bank of England, were wrong a year or so ago to emphasise the transient nature of these shocks, and thus how monetary policy should respond. No and yes is my response to that.

No, in the sense that the monetary policy prescription for how to respond to a single transient supply shock was the correct one. But, yes, because what we didn't see was a sequence of such shocks to come, without gaps, which invalidated the basis of the transient argument.

The combined duration of these shocks has kept inflation elevated for an uncomfortably long period of time given the potential implications for medium-term inflation expectations. But, could we have predicted Russia's behaviour?

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In these difficult times, we need to be very clear on this framework of intervention

Third, and I think harder, and where I am sure economic historians will find interesting issues to dissect: could we have foreseen the shrinkage of the labour force and the persistently low level of unemployment, despite the prevailing disturbances?

I'm not going to judge this, but I will say that the two questions that weigh for me are: could we reasonably have foreseen at the time that the high level of inactivity in the labour force would persist beyond the pandemic? and should we have been more sanguine that the end of a furlough scheme, which covered one million jobs up to the end, would have no impact on unemployment?

That's all history, but it shapes where we are today. Meanwhile, Russia perpetrated its illegal invasion of Ukraine, setting off the disturbance that has run through the world economy.

For the UK, as I noted earlier, and for many other countries, it has been a huge negative shock to real income, to the position of households and businesses. It affects most severely the most vulnerable and least well off because energy, as a necessity of life, is a much larger part of their consumption. For us at the Bank of England, it has created a huge challenge for monetary policy. Inflation is well above its 2% target.

In early August, we estimated that the direct effects of higher energy prices – that's not including indirect effects – would contribute around 6½ percentage points to inflation towards the end of this year. Our assessment was that inflation would peak at around 13%, and then come down sharply – other things equal – to the 2% target in two years' time, before falling further to 0.8% in three years.

Much of the discussion in the Monetary Policy Committee was around how equal other things really would be. To what extent would the tightness of the labour market exacerbate the impact of energy prices on inflation expectations, and thus cause higher inflation to be more persistent?

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Meanwhile, the impact of the energy price shock has, throughout Europe and beyond, posed a huge challenge for Governments and for fiscal policy. The consequences of the shock for people are huge and disturbing. Governments have naturally responded. The UK Government has introduced a two-year price cap for domestic household energy prices, and a six-month cap for businesses. This is a major intervention, but understandable.

The consequences for monetary policy are important. It should cap the peak of inflation, we think at around 11%, and it should lead to a more rapid fall in inflation back towards target.

And, other things ought to be more equal because there is greater confidence in the profile of retail energy prices during the period on which monetary policy focusses.

But, it remains to be seen whether other things will be more equal – we can't take this for granted I'm afraid – we will have to keep a close eye on the situation.

And, the price cap will add to demand relative to what it would have been without the cap, and thus what we thought in August. It will therefore add to inflationary pressures towards the later part of the two-year period on which we focus.

This is the point at which we thought inflation would come down to, and then go below target. Lastly on this, we also have to think about what energy prices will be when the cap is lifted.

More recently, the UK Government has made a number of fiscal announcements, and has set October 31 as the date for a further fiscal statement. The MPC will respond to all this news at its next meeting in the coming weeks. This is the correct sequence in my view. We will know the full scope of fiscal policy by then.

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But I will repeat what we have said already. We will not hesitate to raise interest rates to meet the inflation target. And, as things stand today, my best guess is that inflationary pressures will require a stronger response than we perhaps thought in August.

UK financial markets have experienced some violent moves in the last few weeks particularly at the long-end of the Government debt market. This has put the spotlight on flaws in the strategy and structure of one important part of a lot of pension funds. The Bank of England has had to intervene to deal with a threat to the stability of the financial system, our other core objective.

There may appear to be a tension here between tightening monetary policy as we must, including so-called Quantitative Tightening, and buying government debt to ease a critical threat to financial stability. This explains why we have been clear that our interventions are strictly temporary, and have been designed to do the minimum necessary.

I want to end by drawing on this experience to make the distinction between monetary policy and financial stability interventions. As a central bank we have to be able to do both, and at any time. We cannot decline to do one because it appears to be at odds with the other. For me, the test is whether we can still operate each policy in accordance with its objectives, at all times. And the answer is yes.

But let me elaborate on the difference between the two, with three important points.

First, one of definition. Monetary policy should be seen as the active setting of interest rates, or more broadly influencing risk-free yields, in order to meet the inflation objective given prevailing economic conditions. Financial policy, meanwhile, has a broad sweep.

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In the context of our recent gilt market operations, it is aimed at preventing overall financial stability from being threatened by severed dislocations in some financial markets. It is not about steering market yields towards some particular level, but rather preventing them from being distorted by market dysfunction.

This distinction may not always be as clear in practice as in principle. But on this occasion, I think it was. The jump in long-term yields in the hours before the Bank's intervention was accompanied by a sharp widening in bid-ask spreads. For shorter maturities, historically the more liquid part of the gilt market, both yields and spreads moved significantly less.

We had a very clear message from market participants about the stability-threatening dynamics of this process. On that first day it only took a small number of purchases (£1 billion) to reduce the 30-year yield very significantly (-100bps). All this suggests that – whatever the fundamentals – the particular behaviour at the long end of the curve was caused by a liquidity event.

Second, the operational details also differ significantly. The MPC's decisions on QE have targeted a specific stock of total asset holdings. But for financial stability purposes, we are not looking to buy any particular amount, or to cap or control yields.

Our aim was to restore liquidity and to provide time for so-called liability-driven investment (LDI) funds to reduce leverage. Unlike QE, our financial stability operation was very much a short-term one. It ended yesterday after only two weeks of operation.

Third, the MPC is not using the stock of asset holdings as an active tool of monetary policy at present. As we have made clear over a number of years, once Bank Rate was away from the lower bound, and could move in both

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directions, the intention was to unwind the stock of QE gradually and predictably, and in a way that wasn't bound to underlying economic conditions.

Instead, monetary conditions are now steered by Bank Rate, the primary instrument of policy. Should monetary conditions prove too loose to meet the inflation target, given the economic news, it's Bank Rate that responds. And whatever the source of any disturbance to monetary conditions, the MPC is free to offset those disturbances by means of its primary instrument, Bank Rate.

In these difficult times, we need to be very clear on this framework of intervention. ■

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Andrew Bailey is Governor of the Bank of England

I am grateful to Nick Bate, Ben Broadbent, Andrew Hauser, Karen Jude, Martin Seneca, Fergal Shortall, Silvana Tenreyro, Daniel Walker, Laura Wallis, and Sam Woods for their assistance in helping me prepare these remarks. This article is based on a speech given at G30 37th Annual International Banking Seminar, Washington, D.C, 15 October 2022.

What can we learn?

Lael Brainard considers the lessons learned from the pandemic, supply shocks, inflation, and the challenges for monetary policy

Policymakers and researchers have begun reassessing certain features of the economy and monetary policy in light of recent experience. After several decades in which supply was highly elastic and inflation was low and relatively stable, a series of supply shocks associated with the pandemic and Russia's war against Ukraine have contributed to high inflation, in combination with a very rapid recovery in demand.

The experience with the pandemic and the war highlights the challenges for monetary policy in responding to a protracted series of adverse supply shocks. In addition, to the extent that the lower elasticity of supply we have seen recently could become more common due to challenges such as demographics, deglobalization, and climate change, it could herald a shift to an environment characterized by more volatile inflation compared with the preceding few decades[1].

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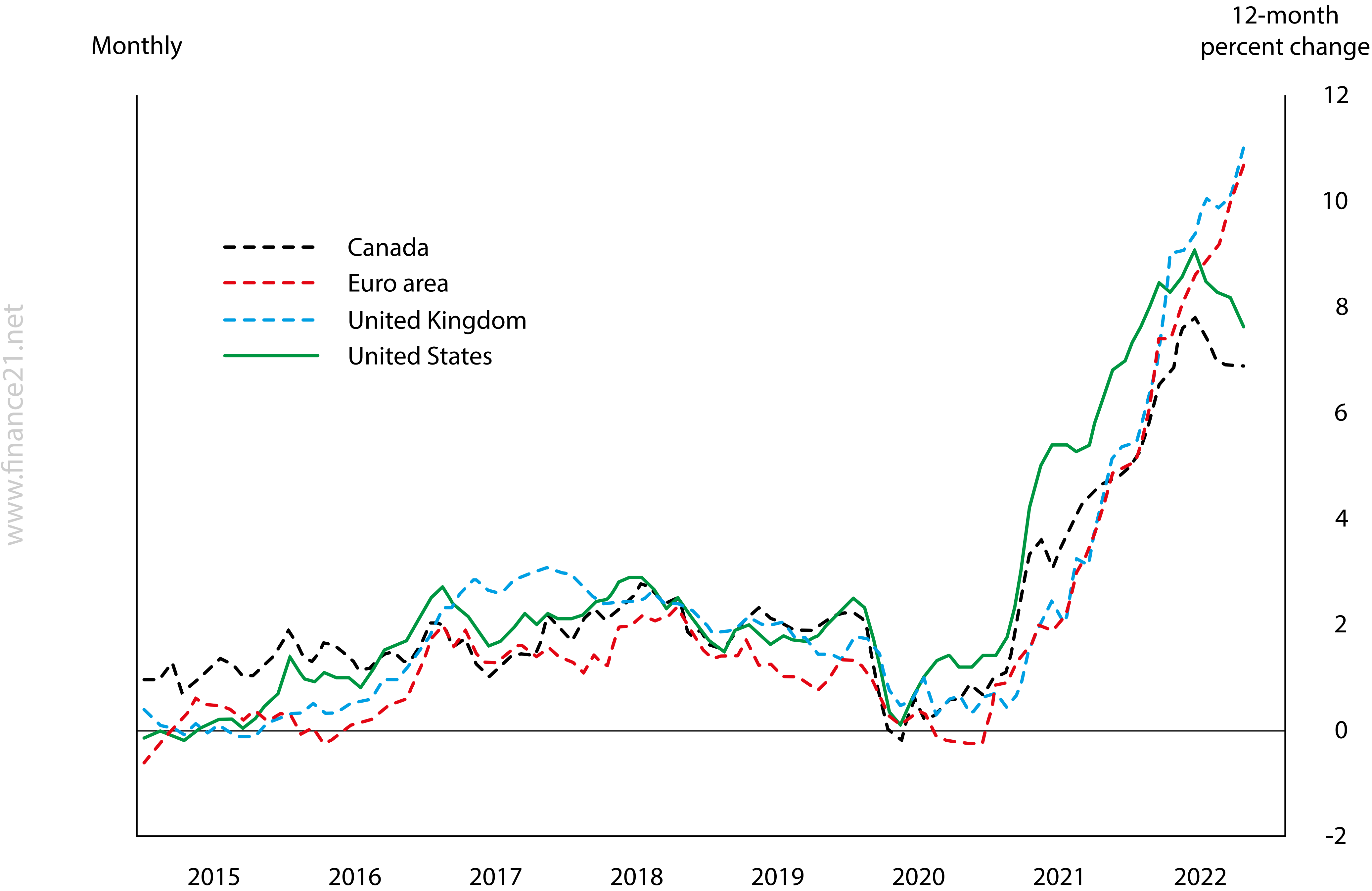
Inflation in the United States and many countries around the world is very high (Figure 1). While both demand and supply are contributing to high inflation, it is the relative inelasticity of supply in key sectors that most clearly distinguishes the pandemic- and war-affected period of the past three years from the preceding 30 years of the Great Moderation[2].

Interestingly, inflation is broadly higher throughout much of the global economy, and even jurisdictions that began raising rates forcefully in 2021 have not stemmed the global inflationary tide[3].

In the United States, as a result of significant fiscal and monetary support, the level of private domestic final purchases recovered extremely rapidly in 2020 and 2021 to levels consistent with the pre-pandemic trend before moving below trend in 2022 (Figure 2).

Figure 1. Headline inflation for selected countries



Note: Data go through October 2022.
Source: Haver Analytics.

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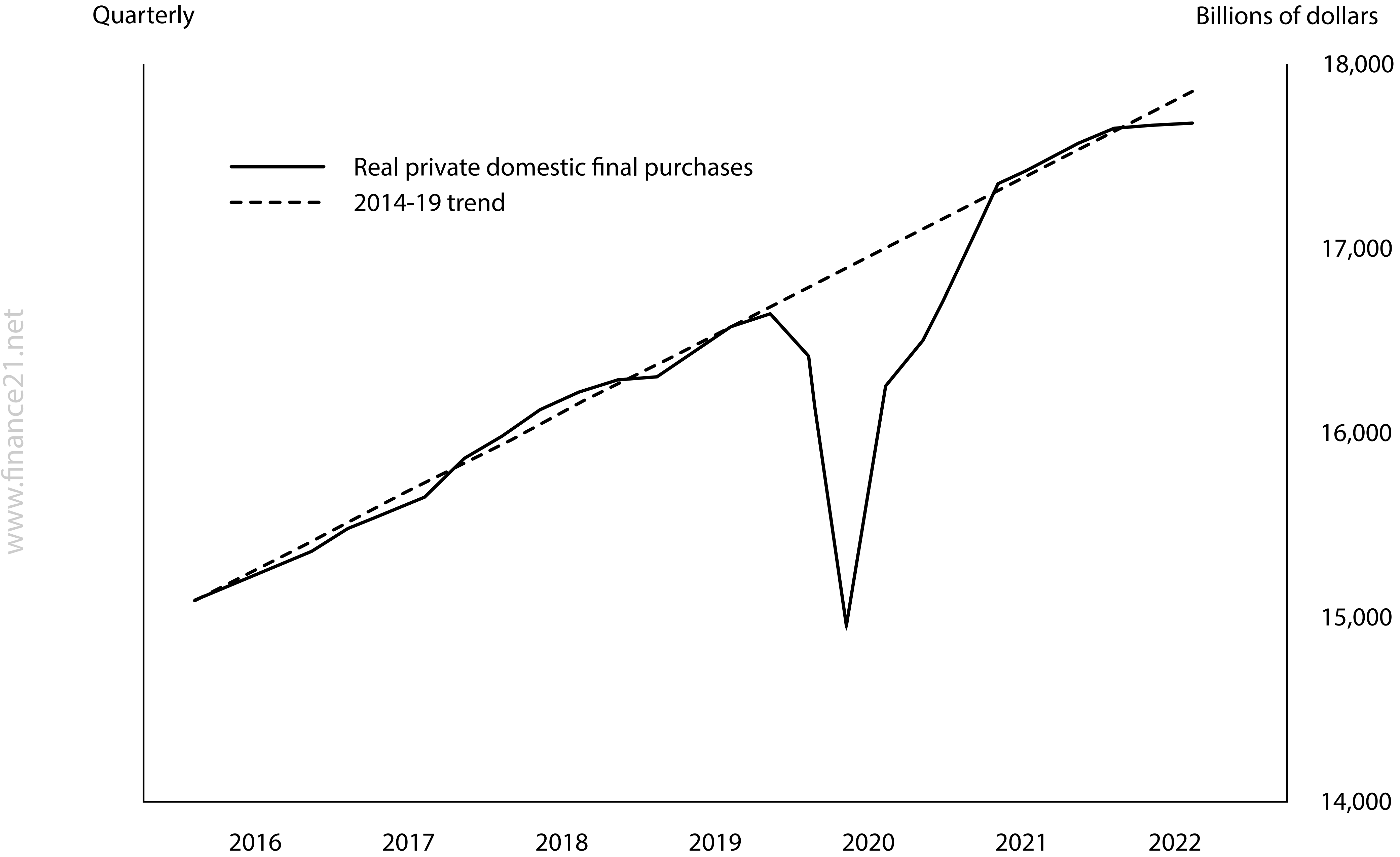
Figure 2. Real private domestic final purchases



Note: Data go through October 2022:Q3.
Source: Bureau of Economic Analysis.

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Although demand came in near the pre-pandemic trend on an aggregate level, the pandemic induced a shift in composition that concentrated large increases in demand in certain sectors where the supply response was constrained.

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It is vital for monetary policy to keep inflation expectations anchored, because inflation expectations shape the behaviour of households, businesses, and workers and enter directly into the inflation process

The shift in consumption from services to goods was so pronounced that—despite plunging at the onset of the pandemic in March 2020—real spending on goods had already risen nearly 4 percent above its pre-pandemic trend by June of that year.

While a very slow rotation back toward pre-pandemic patterns of consumption has been under way for over a year, it remains incomplete more than two and a half years after the initial shutdown: in the most recent data, the level of goods spending remains 6 percent above the level implied by its pre-pandemic trend, while services spending remains a little more than 2 percent below its pre-pandemic trend (Figure 3).

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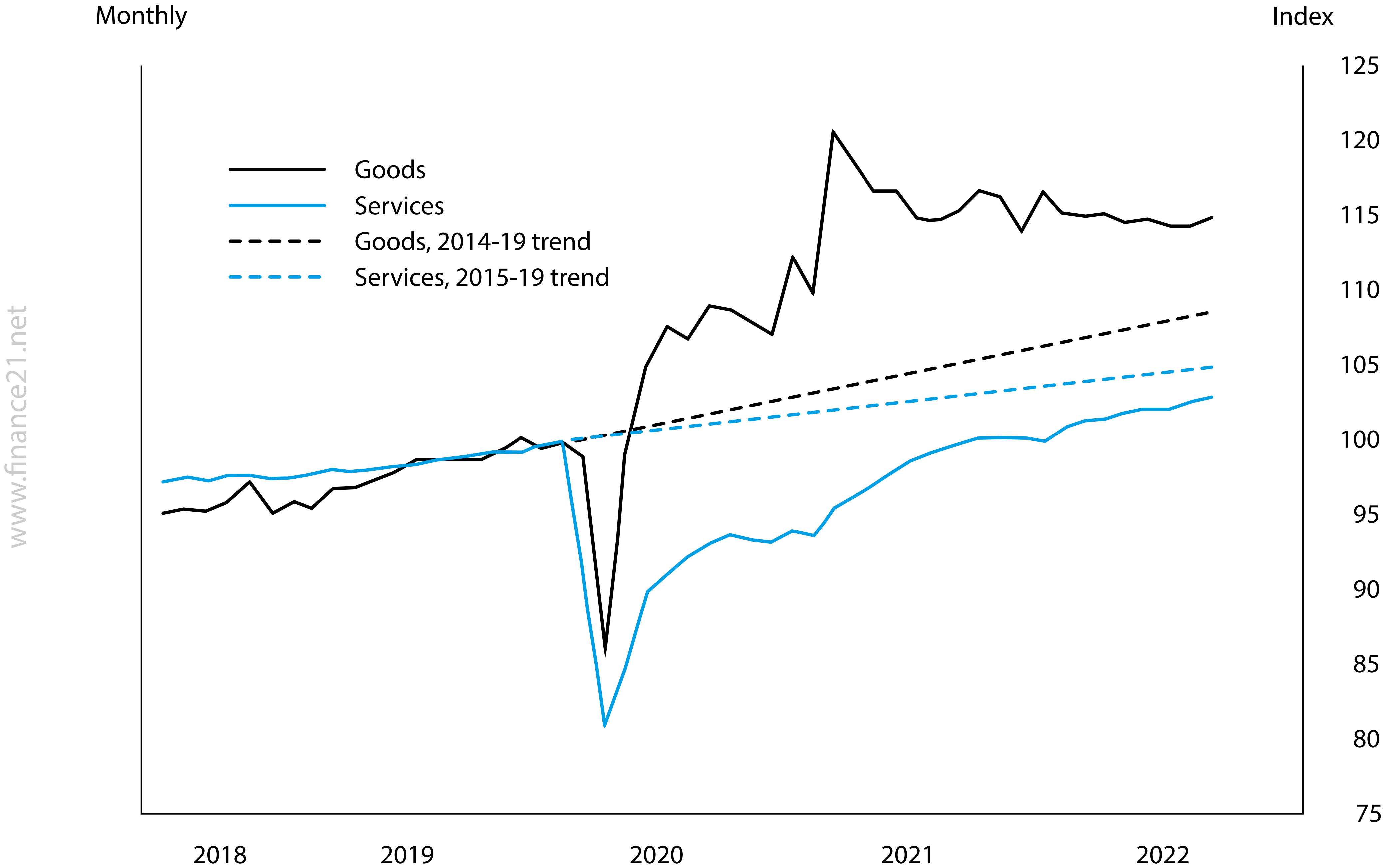
The supply shocks to goods, labour, and commodities have been accompanied by unusually high volatility in monthly inflation readings since the beginning of the pandemic. Since March 2020, the standard deviation of month-over-month core inflation has been 0.22 percentage point—a level of variation not seen in a 31-month period since the 1970s and more than double the standard deviation in monthly core inflation from 1990 to 2019.

The initial drivers of this high variation in monthly core inflation readings were a sharp drop in prices and subsequent bounceback in the first months of the pandemic, followed by a couple of bursts lasting three to four months each.

The first burst occurred around reopening in the spring of 2021, and the second occurred amid the effects of the Delta and Omicron COVID-19 variants in the autumn of 2021 (Figure 4)[4].

The evidence suggests that high concentrations of demand in sectors such as appliances, housing, and motor vehicles—where supply was constrained by the effects of the pandemic—played an important role initially in generating inflationary pressures.

Figure 3. Real personal consumption expenditures



Note: Data go through September 2022.
Source: Bureau of Economic Analysis.

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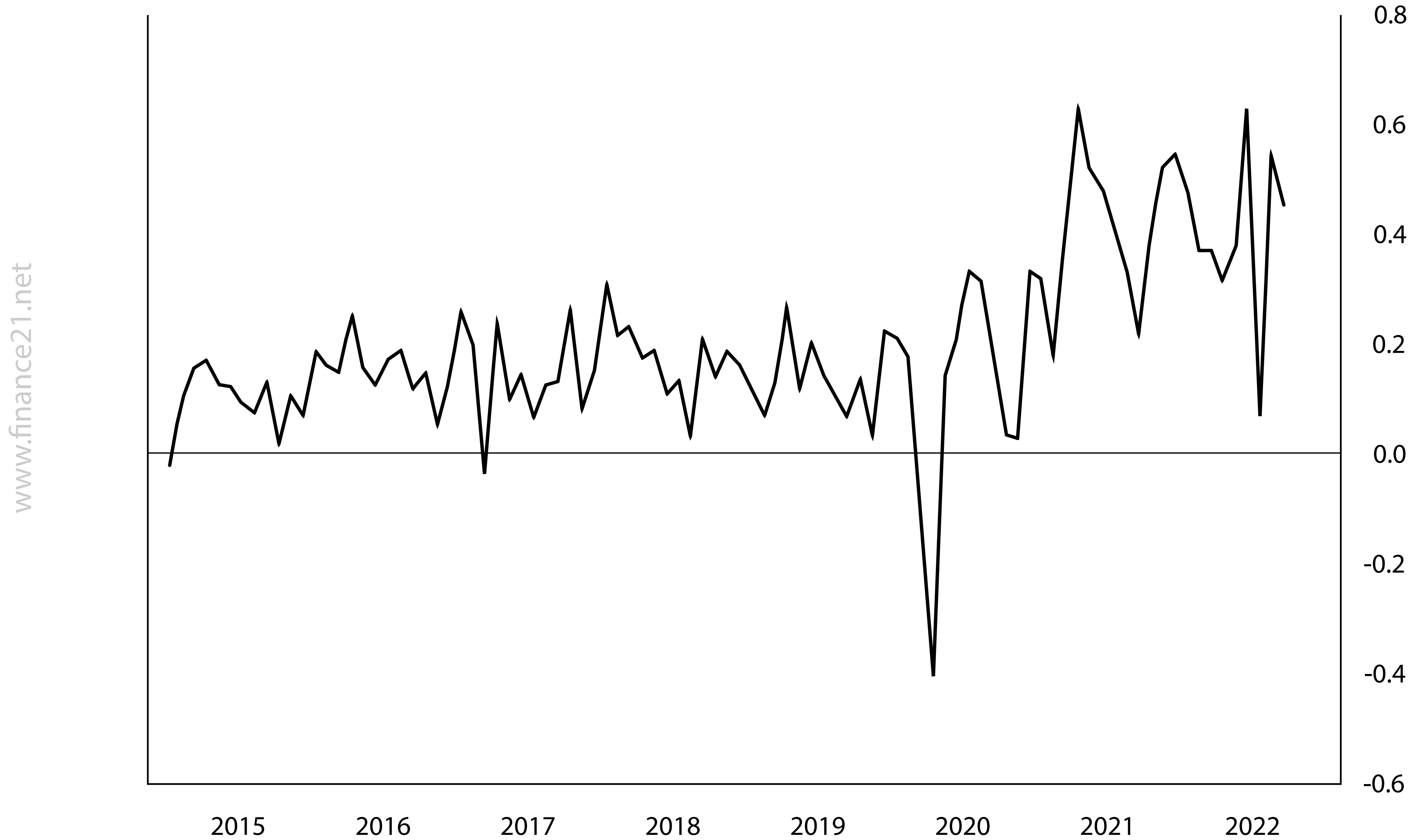
Figure 4. PCE monthly inflation less food and energy



Note: Data go through September 2022. PCE is personal consumption expenditures.
Source: Bureau of Economic Analysis.

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Acute constraints on shipping and on the supply of non-substitutable intermediate inputs like semiconductors were compounded by acute constraints on labour supply associated with the effects of the Delta and Omicron variants and later compounded further by sharp commodities supply shocks associated with Russia's war on Ukraine.

The standard monetary policy prescription is to 'look through' supply shocks, such as commodities price shocks or shutdowns of ports or semiconductor plants, that are not assessed to leave a lasting imprint on potential output[5].

In contrast, if supply shocks durably lower potential output such that the economy is operating above potential, monetary policy tightening is necessary to bring demand into alignment with the economy's reduced productive capacity. Importantly, and separately from the implications for potential output, monetary policy should respond strongly if supply shocks risk de-anchoring inflation expectations[6].

Although these tenets of monetary policy sound relatively straightforward in theory, they are challenging to assess and implement in practice. It is difficult to assess potential output and the output gap in real time, as has been extensively documented by research[7].

This is especially true in an environment of high uncertainty. The level of uncertainty around the output gap varies considerably over time, and research suggests that more muted policy reactions are warranted when uncertainty about the output gap is high[8].

The unexpectedly long-lasting global pandemic and the sharp disruptions to commodities associated with Russia's war against Ukraine have contributed to substantial uncertainty (Figure 5).

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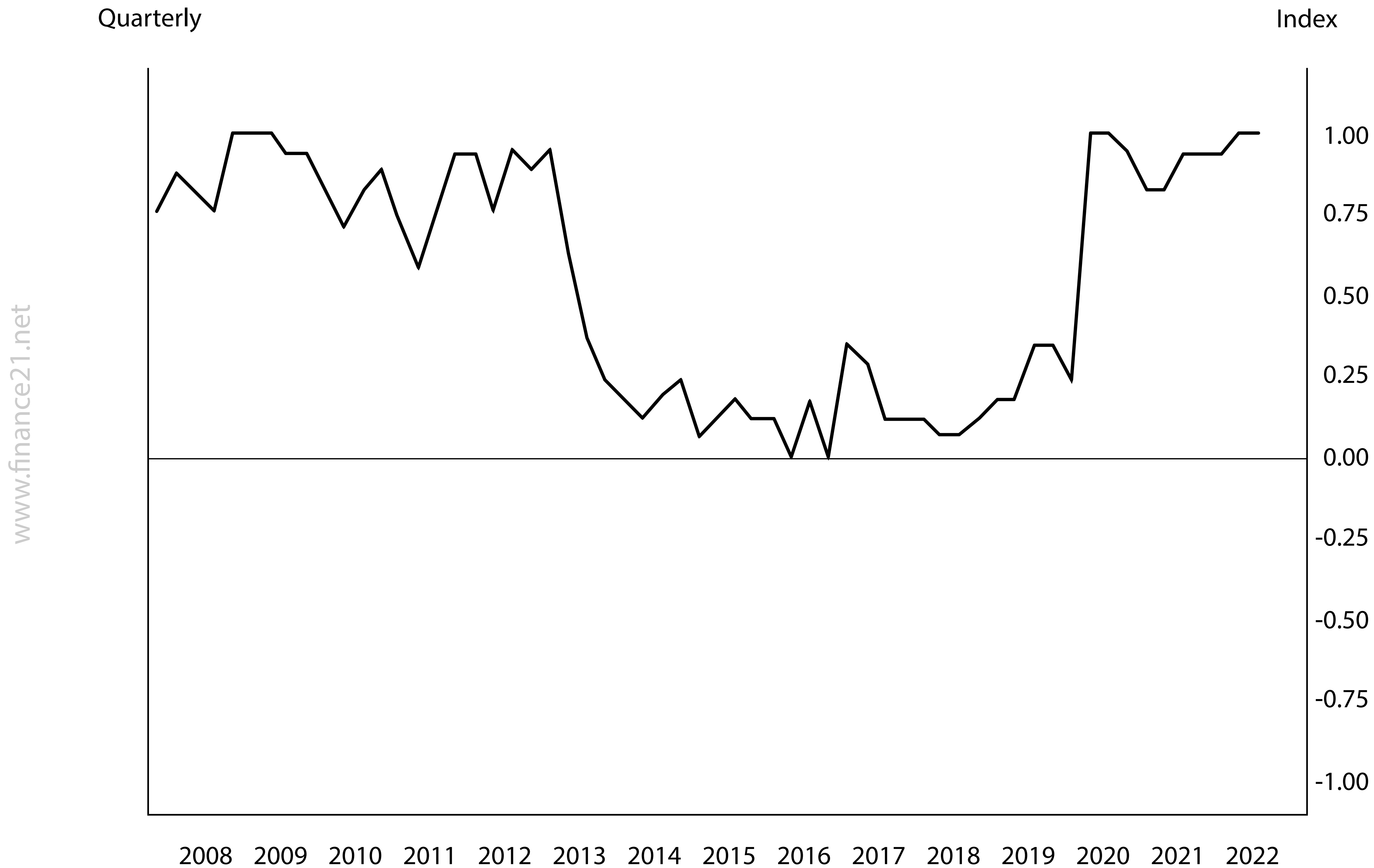
Figure 5. Diffusion index of FOMC participants' uncertainty assessments for GDP growth



Note: Data go through 2022:Q3. FOMC is Federal Open Market Committee; GDP is gross domestic product.
Source: Federal Reserve Board.

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Even so, the drawn-out sequence of shocks to the supply of labour, commodities, and key intermediate inputs, such as semiconductors, blurred the lines about what constitutes a temporary shock as opposed to a persistent shock to potential output.

Even when each individual supply shock fades over time and behaves like a temporary shock on its own, a drawn-out sequence of adverse supply shocks that has the cumulative effect of constraining potential output for an extended period is likely to call for monetary policy tightening to restore balance between demand and supply.

In addition, a protracted series of supply shocks associated with an extended period of high inflation—as with the pandemic and the war—risks pushing the inflation expectations of households and businesses above levels consistent with the central bank's long-run inflation objective[9].

It is vital for monetary policy to keep inflation expectations anchored, because inflation expectations shape the behaviour of households, businesses, and workers and enter directly into the inflation process.

In the presence of a protracted series of supply shocks and high inflation, it is important for monetary policy to take a risk-management posture to avoid the risk of inflation expectations drifting above target. Even in the presence of pandemics and wars, central bankers have the responsibility to ensure that inflation expectations remain firmly anchored at levels consistent with our target.

In monitoring inflation expectations for purposes of risk management, not only the median but also the distribution of inflation expectations can provide important information about how inflation expectations may be changing[10].

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Survey measures suggest that the median of longer-term inflation has remained within pre-pandemic ranges consistent with 2 percent inflation (Figure 6). However, starting in 2021, there has been a greater dispersion than usual of views about future inflation in survey responses, as shown in Figure 6.

Although initially the increased dispersion reflected a rise in expectations for significantly above-target inflation, more recently, following substantial cumulative monetary policy tightening, the increased dispersion has also reflected increased expectations of no inflation or even disinflation.

About one-fourth of respondents to the most recent University of Michigan Surveys of Consumers anticipate that prices are likely to be the same or below their current level 5 to 10 years in the future—roughly three times the average fraction that reported such expectations before the pandemic.

Finally, it is important to explore whether any features of the inelastic supply response associated with the pandemic and the war may have implications for potential growth and macroeconomic stability in the future[11].

In particular, despite the unprecedented pandemic policy support for businesses of all sizes that was directed at preserving the supply side of the economy, key sectors struggled to ramp up activity after reopening. The supply response was particularly impaired in sectors where supply chains are geographically fragmented and recurring foreign COVID-19 lockdowns have reduced the reliability of foreign supplies.

While conditions have improved dramatically from some of the worst periods in 2021, measures like the Global Supply Chain Pressure Index from the Federal Reserve Bank of New York indicate that total supply chain pressures still are elevated relative to pre-pandemic levels (Figure 7).

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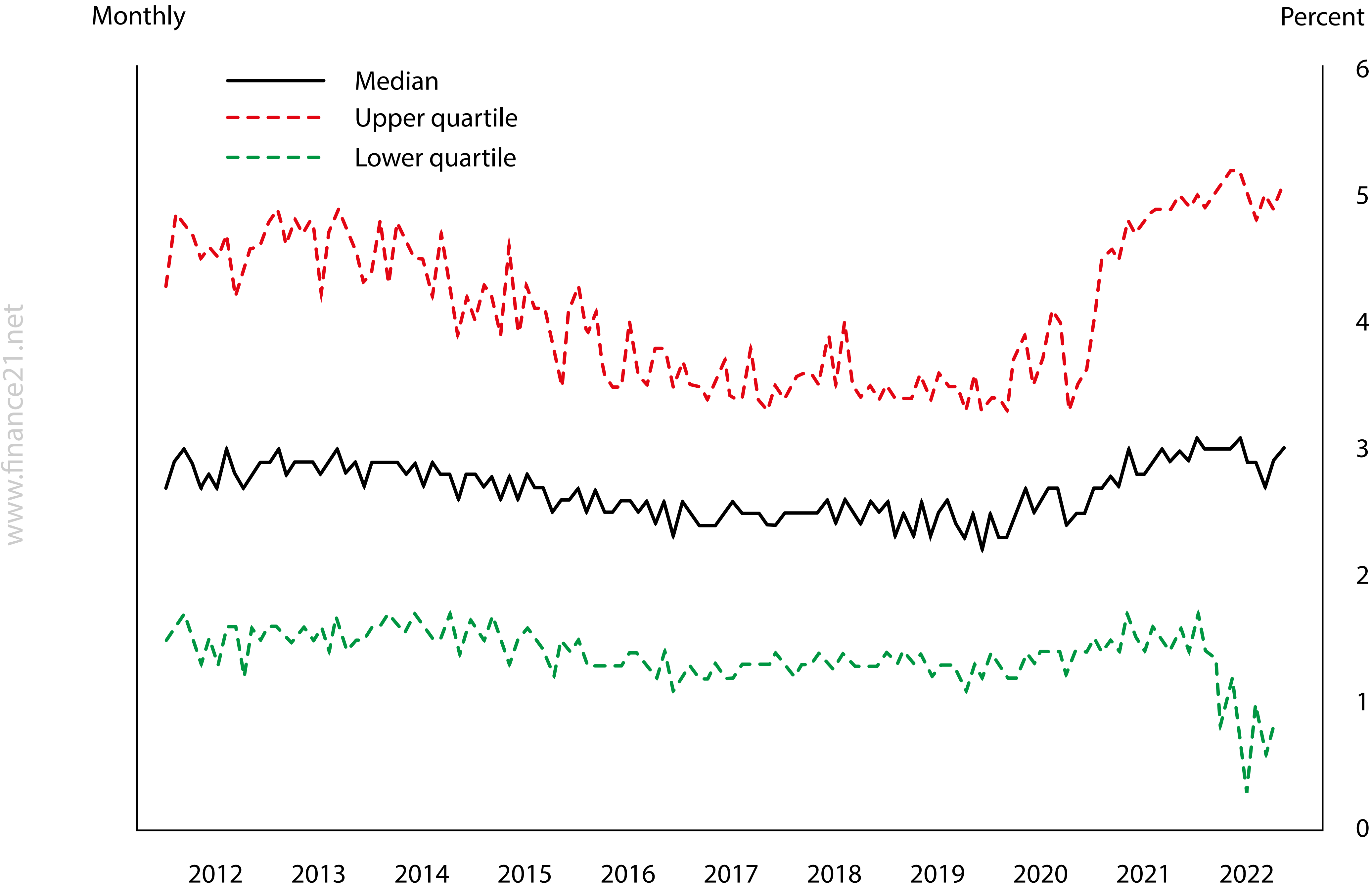
Figure 6. Expected price change, next 5 to 10 years



Note: Data go through November 2022.
Source: University of Michigan surveys of consumers.

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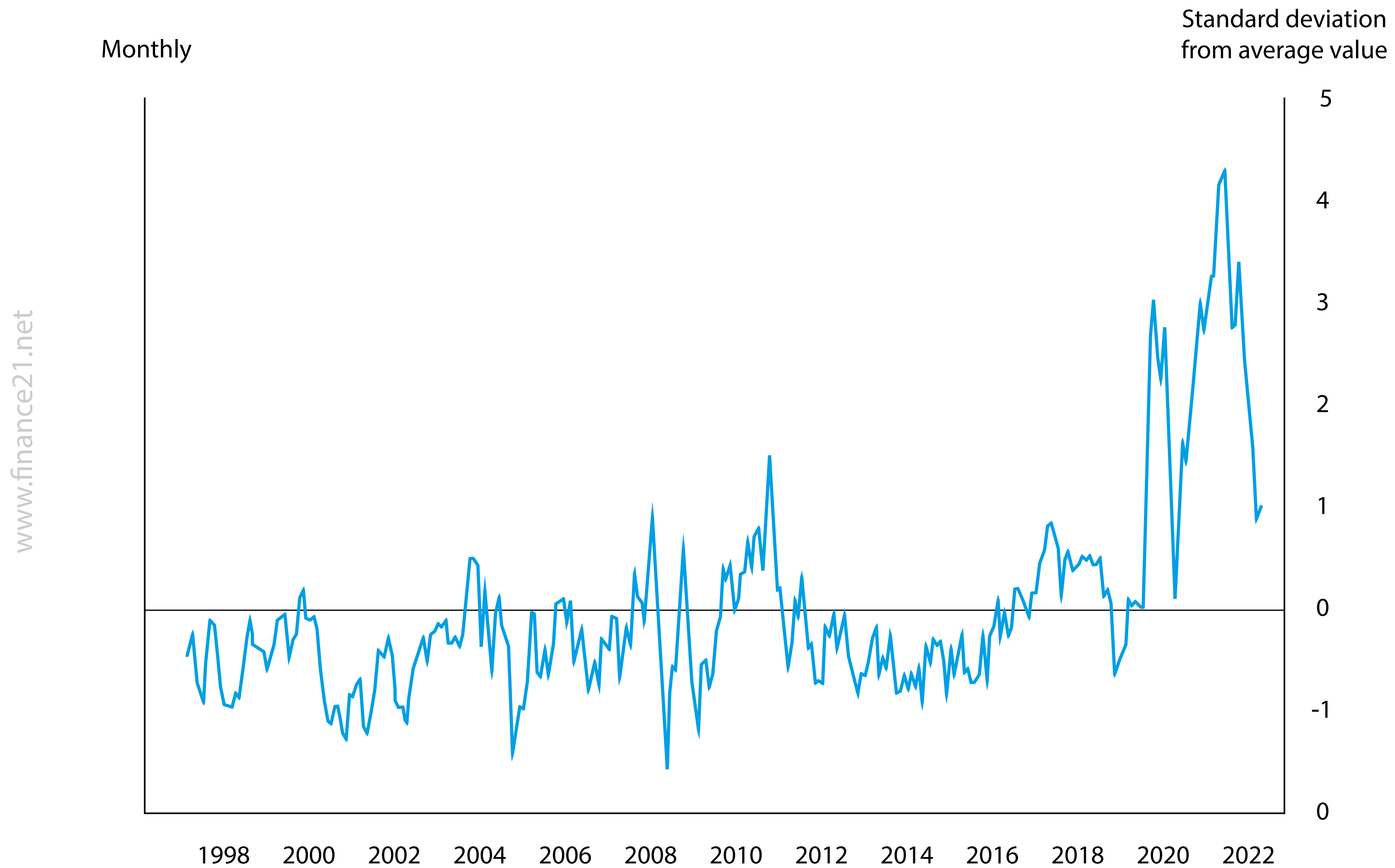
Figure 7. Global supply chain pressure index



Note: Data go through October 2022.
Source: Federal Reserve Bank of New York.

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The supply disruptions in key goods and commodities sectors associated with the pandemic and Russia's war against Ukraine have highlighted the fragility of global supply chains and the risks of inelastic supply at moments of stress. Conditions have improved dramatically over the past year, judging by the return of the ISM Supplier Deliveries index to its pre-pandemic range of values (Figure 8).

That said, ongoing discussions about moving from 'just in time' to 'just in case' inventory management and from offshoring to 'nearshoring' are raising important questions about the extent to which businesses are likely to reconfigure global supply chains based on a reassessment of the trade-off between cost efficiency and supply resilience.

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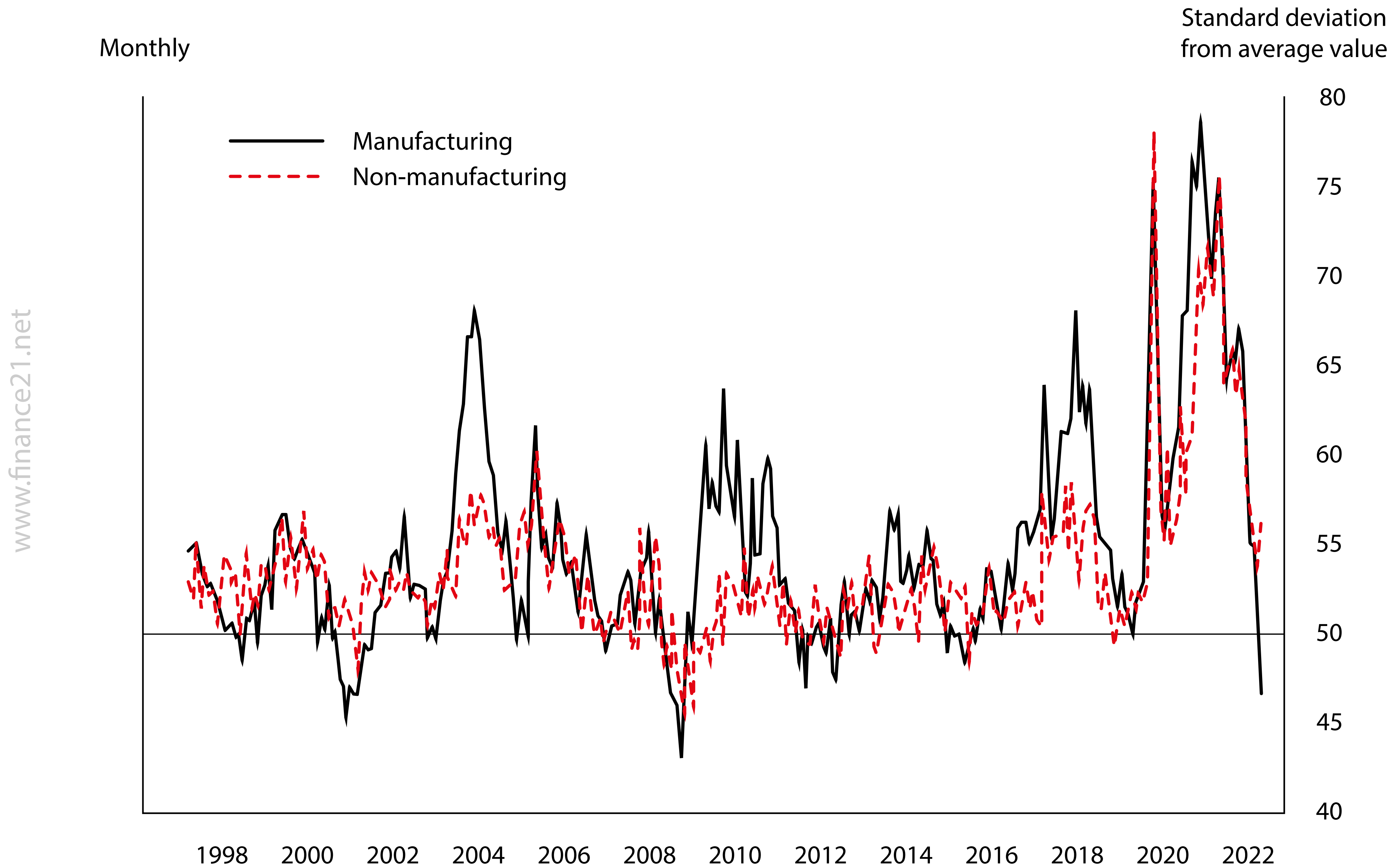
Similarly, some have conjectured that the slow and incomplete recovery of the workforce over the course of the pandemic may be the beginning of a longer-term change in labour supply dynamics (Figure 9)[12]. In addition, the potential for more frequent and severe climate events, as we are already seeing, and for frictions in the energy transition could also lead to greater volatility of supply.

Together, a combination of forces—the deglobalization of supply chains, the higher frequency and severity of climate disruptions, and demographic shifts—could lead to a period of lower supply elasticity and greater inflation volatility.

To conclude, the experience with the pandemic and the war highlights challenges for monetary policy in responding to supply shocks. A protracted series of adverse supply shocks could persistently weigh on potential output or could risk pushing inflation expectations above target in ways that call for monetary policy to tighten for risk-management reasons.

Figure 8. ISM supplier deliveries index



Note: Data go through October 2022. The ISM Supplier Deliveries Index is an inverse diffusion index, a reading above 50 percent indicates slower deliveries.
Source: Institute for Supply Management.

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Figure 9. Labour force participation rate

Note: Data go through October 2022.
Source: Bureau of Labor Statistics.

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More speculatively, it is possible that longer-term changes—such as those associated with labour supply, deglobalization, and climate change—could reduce the elasticity of supply and increase inflation volatility into the future. ■

Lael Brainard is Vice Chair of the Federal Reserve Board

Endnotes

1. I am grateful to Kurt Lewis of the Federal Reserve Board for his assistance in preparing this text and to Kenneth Eva for preparing the figures. This text updates the views that I discussed as part of a panel at the BIS Annual Meeting on June 24, 2022. These views are my own and do not necessarily reflect those of the Federal Reserve Board or the Federal Open Market Committee.

2. Research has generated a range of estimates on the contributions from supply and demand factors. For example, Shapiro (2022) finds that demand factors are responsible for about one-third of the surge in inflation above the pre-pandemic trend, while di Giovanni and others (2022) find a number closer to two-thirds. See Adam Shapiro (2022), "How Much Do Supply and Demand Drive Inflation?" FRBSF Economic Letter 2022-15 (San Francisco: Federal Reserve Bank of San Francisco, June); and Julian di Giovanni, Sebnem Kalemli-Ozcan, Alvaro Silva, and Muhammed Yildirim (2022), "Global Supply Chain Pressures, International Trade, and Inflation (PDF)," paper presented at the ECB Forum on Central Banking 2022, Sintra, Portugal, June 27–29.

3. The median year-to-date total policy rate hike within the group of Brazil, Hungary, New Zealand, Norway, Peru, Poland, and South Korea is 6 percentage points. All of these countries began forceful rate hikes in 2021, and the cumulative hikes have taken policy rates in some of these countries above 10 percent. Despite this, through September 2022 core inflation

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in these countries was 9.5 percent year-over-year, rising 3.5 percentage points since March. See Economist (2022), "Even Super-Tight Policy Is Not Bringing Down Inflation," October 28.

4. Pandemic fiscal measures played an important role in boosting demand, but the rapid deceleration of inflation over the summer of 2021 and subsequent rebound in inflation from October through the end of the year do not line up well with the fiscal demand impulse projected by most forecasters. For example, the Brookings Institution projected a smooth demand impulse from the American Rescue Plan that peaked at the end of last year. See Wendy Edelberg and Louise Sheiner (2021), "The Macroeconomic Implications of Biden's $1.9 Trillion Fiscal Package," Brookings Institution, Up Front (blog), January 28.

5. See, for instance, Martin Bodenstein, Christopher J Erceg, and Luca Guerrieri (2008), "Optimal Monetary Policy with Distinct Core and Headline Inflation Rates," Journal of Monetary Economics, vol. 55 (October), pp. S18–33.

6. Ricardo Reis makes the case that both these factors would have prescribed tighter policy in the current environment. See Ricardo Reis (2022), "The Burst of High Inflation in 2021–22: How and Why Did We Get Here?" CEPR Discussion Paper Series DP17514 (London: Centre for Economic Policy Research, July).

7. See Athanasios Orphanides and Simon van Norden (2002), "The Unreliability of Output-Gap Estimates in Real Time," Review of Economics and Statistics, vol. 84 (November), pp. 569–83.

8. For discussions of the time-varying nature of output gap uncertainty, see Travis J Berge (2020), "Time-Varying Uncertainty of the Federal Reserve's Output Gap Estimate," Finance and Economics Discussion Series 2020-012 (Washington: Board of Governors of the Federal Reserve System, February; revised April 2021); and Rochelle M Edge and Jeremy B Rudd (2016), "Real-Time Properties of the Federal Reserve's Output Gap," Review of Economics and Statistics, vol. 98 (October), pp. 785–91. For a discussion of tempering the policy response to the output gap in response to increased uncertainty, see Athanasios Orphanides (2003), "Monetary Policy Evaluation with Noisy Information," Journal of Monetary Economics, vol. 50 (April), pp. 605–31.

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9. For two recent examples of assessing longer-term inflation expectations, see Michael T Kiley (2022), "Anchored or Not: How Much Information Does 21st Century Data Contain on Inflation Dynamics?" Finance and Economics Discussion Series 2022-016 (Washington: Board of Governors of the Federal Reserve System, March); and Danilo Cascaldi-Garcia, Francesca Loria, and David López-Salido (2022), "Is Trend Inflation at Risk of Becoming Unanchored? The Role of Inflation Expectations," FEDS Notes (Washington: Board of Governors of the Federal Reserve System, March 31).

10. See, for example, Ricardo Reis (2021), "Losing the Inflation Anchor (PDF)," Brookings Papers on Economic Activity, Fall, pp. 307–61. The Board's staff recently updated the Index of Common Inflation Expectations to include the 25th and 75th percentiles of inflation expectations over the next 12 months from the University of Michigan Surveys of Consumers.

11. See, for example, Agustín Carstens (2022), "The Return of Inflation," speech delivered at the International Center for Monetary and Banking Studies, Geneva, April 5.

12. See, for example, Charles Goodhart and Manoj Pradhan (2020), The Great Demographic Reversal: Ageing Societies, Waning Inequality, and an Inflation Revival (Cham, Switzerland: Palgrave Macmillan).

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Monetary policy in the euro area

Christine Lagarde says the ECB will not let this phase of high inflation feed into economic behaviour and create a lasting inflation problem

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After a long period when inflation in the euro area was too low, it is now far too high. We are in the tenth consecutive month of record-high inflation rates and we may see this streak continue in the near term. Inflation is being caused by a series of unprecedented shocks, which have led to turning points in the global economy. As a result, price pressures have proven much stronger and more persistent than originally projected.

In this setting, monetary policymakers must ensure that inflation does not become entrenched and that it returns to target in the medium term. And our policy response will need to account for the special combination of shocks that we are facing in the euro area. In my remarks, I would like to address two issues. First, the nature of the inflation shock we are facing in the euro area today, and second, the implications this has for monetary policy now and in the future.

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The shocks hitting the euro area economy

In our monetary policy strategy, the appropriate response to a deviation of inflation from our target depends on three factors: the source, size and persistence of that deviation.

Typically, when the source of an inflationary shock is stemming mainly from demand, monetary policy will respond proactively to prevent the economy from overheating. And when faced with supply shocks, to the extent that such shocks are seen to have no lasting impact on inflation, central banks will 'look through' and extend the medium-term policy horizon if necessary.

But such a neat categorisation does not adequately capture the situation we are facing in the euro area today. We are not seeing the type of demand-led overheating that is visible in the United States and, despite a tight labour market, the risk of a wage-price spiral so far seems to remain contained.

Instead, the euro area is seeing an increase in inflation driven by two unprecedented shocks. These shocks have constrained global supply, but they have also shifted demand and led to a large and persistent inflation response.

The first shock was the pandemic. Pandemic-related supply bottlenecks and rising prices have reinforced each other, with firms reacting to the threat of shortages by ordering more and earlier. This 'bullwhip effect'[1] has driven up prices along the pricing chain.

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Monetary policy cannot prevent the first-round effects of many of these shocks. But it can ensure that they do not become embedded. This is what the ECB is doing

At the same time, the fiscal and monetary policy response to the pandemic has succeeded in protecting nominal incomes, thereby supporting a fast recovery of demand when our economies reopened. The resilience of incomes has, in turn, triggered large swings in demand across sectors.

During the lockdown period, and thanks notably to e-commerce, consumption was concentrated on durable goods. Then, when the economy reopened, we saw strong pent-up demand for services. Since the start of the pandemic, the volatility of durable goods consumption has been almost ten times higher than during the preceding two decades, and almost 30 times higher for services.

This has led to inflation broadening into both industrial goods and services. Today, around three-quarters of the items in the core inflation basket have inflation rates above 2%.

The second shock has been Russia's unjustifiable invasion of Ukraine. Even before the invasion, OPEC+ production cuts and capital constraints on US shale producers were restricting energy supply. This resulted in a spike in energy prices which was a major factor in our underestimation of inflation[2].

But the invasion has hugely aggravated the supply squeeze and sent energy prices to extraordinary levels, making it all the more challenging to forecast inflation. European gas and electricity prices are up 105% and 75%, respectively, since the months before the invasion[3], and around 650% and 450%, respectively, since the first half of 2021.

This surge in energy prices has directly contributed around 30% to the headline inflation rate since the start of this year and, indirectly, has added to the broadening of price pressures across the economy. In fact, the models used by

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the national central banks indicate that the indirect effects of higher energy costs are currently contributing around one-third to core inflation.

The persistence of inflation

Collectively, these shocks have pushed inflation a long way from our target. Headline inflation – which was negative as recently as December 2020 – has risen by 9.4 percentage points from its trough during the pandemic to its peak last month. Core inflation has risen by 4.1 percentage points.

In the recent past, elastic global supply has meant that shocks to production or energy have dissipated eventually. Following the Iraqi invasion of Kuwait in the 1990s, for example, oil prices fell below their pre-war level after around five months. And following the Japanese earthquake and nuclear disaster in 2011, production is estimated to have returned to normal after only seven months for Japanese firms[4].

But the shocks triggered by the pandemic and the war have also created what I have previously called a 'new global map' of economic relationships[5]. The economic turning points on this new global map imply that supply constraints are likely to last longer than in the past. And this means, in turn, that it is taking longer for the inflationary effects of those shocks to fade out.

Two issues are worth considering here. First, geopolitics have shaken up European energy markets. The cut in gas supplies owing to the Russian invasion has become a major structural change which will have ramifications for several years.

For example, following the two oil shocks of the 1970s – the OPEC embargo and the Iranian revolution – the effect on oil prices was still persistent after three years. This was because, in both cases, the shocks were related to a

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lasting shift in the geopolitical landscape, and reductions in oil supply could not be fully offset by oil from other sources[6].

Today, although the EU response will cushion the rise in energy costs, fossil fuel prices are likely to be higher for some time. Fully replacing European imports of Russian fossil fuels is a challenge in the short term, even though there are an increasing number of examples of substitution effects taking place[7].

Over the longer term, the war is likely to accelerate the green transition in Europe, including the switch to renewables. This will require considerable green investment but will also weigh on investment in oil and gas production during the transition phase. That could put upward pressure on fossil fuel prices while demand for those fuels remains high.

If energy prices are durably higher during the transition, it may have an impact on industrial production in Europe, affecting both supply and prices. This is certainly how firms in the euro area see the situation. In a recent ECB survey, at least 80% of respondents expected the ongoing transition to make the raw materials and energy they use more expensive, leading to higher prices for their products8.

Second, globalisation is and will be changing. The disruptions created by the pandemic, the exposure of vulnerabilities, the new geopolitical landscape and the prospect of higher energy and transport costs look set to trigger a reassessment of global value chains.

While I doubt that we will see de-globalisation, firms are likely to hold higher inventories on a permanent basis and shorten their supply chains to relocate high-value services and R&D centres. This is especially true where strategic considerations come into play.

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We might also see energy-intensive production being relocated owing to the uneven impact of the current energy price shock. Added to this, the speed of the transition and the new energy mix will contribute to material transformations.

A recent survey finds that around 60% of firms had increased their inventories of critical products by the end of 2021, and almost 90% were expecting to regionalise their production over the next three years[9].

This is likely to reduce efficiency and increase costs, which could create inflation pressures while supply chains are adjusting. It could also make the economic cycle more volatile[10].

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Over time, however, the turning points I have identified could also dampen the impact on prices. The green transition, for example, should ultimately lead to falling electricity prices. And insofar as the inventory cycle returns, it will be a multiplier for lower prices when inventories are liquidated in a downturn.

The ECB's monetary policy response

So, to sum up, we are currently facing a situation where lingering supply constraints are an important factor causing above-target inflation to persist for longer – and their effect is being exacerbated by the release of pent-up demand. In this setting, monetary policy needs to avoid deviations from our target becoming entrenched and return inflation to 2% in the medium term.

Two considerations are important here. The first is the destination of monetary policy: we need to normalise policy, and be ready to adjust rates by as much as necessary to reach our inflation target in the medium term.

The second consideration is the pace of rate increases: since interest rates are rising from very low levels, the pace of rate increases can mobilise the signalling channel of monetary policy directly.

Let me address each of these points in turn.

The destination of monetary policy

First, when inflation is high and growth is constrained by inelastic supply, monetary policy cannot remain expansionary and add to inflationary pressures by pushing up demand. It is therefore appropriate to pursue a strategy of monetary policy normalisation.

As I explained in a blog post earlier this year[11], normalisation implies ending net asset purchases and then raising rates to neutral levels – so levels that are neither expansionary nor restrictive.

That is why the ECB has not only started raising interest rates, but also communicated that we expect to raise interest rates further over the next several meetings. And to ensure that these changes in our policy stance are effective, we have taken several decisions over the last few months to preserve the orderly transmission of our stance throughout the euro area[12].

As we move forward, we will reassess whether a normalisation strategy is sufficient to bring us back to 2% inflation over the medium term. Ultimately, the terminal rate at which our hiking cycle ends must be compatible with inflation returning durably to our target – and that rate will depend on how the economic environment evolves around us.

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One key factor will be how the persistence of the shocks we are facing affects inflation expectations and potential output. If there were evidence that high inflation risked de-anchoring inflation expectations, then the policy rate that is compatible with our target would lie in restrictive territory.

Similarly, were we to conclude that ongoing supply shocks had durably lowered economic potential, we would have to ensure that demand remains aligned with supply.

Another key factor will be how the growth outlook affects inflation. Negative supply shocks will result in a growth slowdown, which will likely have an impact on the prevailing inflation rate. In past euro area recessions going back to the 1970s, headline inflation has fallen by about 1.1 percentage points a year later, while core inflation has fallen by about half that amount[13].

But this is not a hard-and-fast rule: in some recessionary episodes, such as those triggered by a worsening of supply conditions, inflation has stayed the same or even risen. In our downside scenario, which captures – among other shocks – the impact of a complete cut-off of Russian gas, we project that the economy will contract next year before picking up in 2024. But inflation is expected to be higher at the end of the projection horizon than in the baseline scenario[14].

A third factor will be the actions of governments. Monetary policy will do whatever is needed to return inflation to our target. But a truly European approach where monetary and fiscal policy complement each other can improve the inflation outlook.

In particular, how fiscal policies support firms and households through the difficult winter ahead will play an important role in inflation dynamics. Targeted, temporary and tailored measures are needed to protect the

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incomes of the most vulnerable, while also preventing a significant loss of capacity owing to production cuts and bankruptcies.

But beyond that, it will make a difference whether fiscal policy focuses mainly on public consumption and transfers – which may add to inflationary pressures – or on public investment and debt sustainability. As many of the sources of inflation today are on the supply side, government policies that lift supply and redirect investment to where it is needed are necessary to support sustainable growth.

The pace of rate increases

The second consideration in responding to current inflation is the pace of rate increases.

When inflation is high for a long period of time, an important role for monetary policy is to ensure that inflation expectations remain anchored as the shocks work their way through the economy. If expectations become de-anchored and trigger a wage-price spiral, it can lead to inflation becoming persistent even after the shocks disappear.

Raising interest rates has a mechanical effect on demand and inflation, and thereby on inflation expectations. But when interest rates are starting from unusually low levels, rate hikes are more powerful if they also create signalling effects that influence expectations directly.

In this context, especially compared with the traditional focus on 25 basis-point increments, adjusting the pace of rate hikes is a key tool to signal our determination to fulfil our mandate and keep inflation expectations contained. And moving faster at the start of the hiking cycle clearly conveys our commitment to bring down inflation to our medium-term target.

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At present, inflation expectations remain relatively well anchored across a range of measures. But there are two reasons why it would be unwise to take this for granted.

First, the shock is severely affecting the prices of those consumption items, such as groceries and petrol, that have the greatest influence on households' inflation expectations[15]. The ECB's Consumer Expectations Survey shows that, since February this year, both mean and median expectations for inflation three years ahead have risen by around 1 percentage point.

Second, we are seeing a rapid change in the economic environment, with inflation switching from being very low to being extremely high. History suggests this can leave a scar on expectations.

For example, research finds that differences in inflation expectations between people from the former East and West Germany can largely be explained by the lasting effect of the inflation shock after reunification. This contrasted strongly with the perceived norm of zero inflation in the German Democratic Republic and seems to have led former East Germans to over-adjust to an environment of rising prices[16].

This imperative to anchor inflation expectations helps explain why, over the last two policy meetings of the ECB's Governing Council, we raised our key interest rates by 125 basis points in total.

This is the fastest change in rates in our history and it has sent a strong signal of our determination to return inflation to our medium-term target in a timely manner. This major step also took into account the unusually low level of interest rates and the limited risk of overreacting at the start of the hiking cycle.

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Going forward, the appropriate pace of future rate increases will be decided on a meeting-by-meeting basis. Indeed, as we have repeatedly emphasised, we will remain data dependent in all scenarios. Where rates ultimately settle, and the size of the steps that we move in, will depend on how the inflation outlook evolves as we proceed.

Conclusion

Inflation in the euro area has proven to be much higher and more persistent than originally projected. This reflects the unprecedented series of shocks we have faced, and the fact that those shocks have led to turning points in our economic environment.

Monetary policy cannot prevent the first-round effects of many of these shocks. But it can ensure that they do not become embedded. This is what the ECB is doing.

We have taken major steps along the path of normalising our monetary policy, frontloading our rate increases. This signals that we are determined to bring inflation back to our medium-term target of 2% in a timely manner and ensure that inflation expectations remain well anchored.

We will not let this phase of high inflation feed into economic behaviour and create a lasting inflation problem. Our monetary policy will be set with one goal in mind: to deliver on our price stability mandate. ■

Christine Lagarde is President of the European Central Bank

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This article is based on a speech delivered at the Karl Otto Pöhl Lecture, organised by Frankfurter Gesellschaft für Handel, Industrie und Wissenschaft, Frankfurt, 20 September 2022

Embracing financial inclusion

WCR interviews Josephine George, Managing Director of the Bank of St Helena, who discusses the Bank's embracing of financial inclusion in an ever-changing world

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The Bank of St Helena has a vision to be known as the financial cornerstone from which their customers can confidently build a sustainable and prosperous economy for the Island of St Helena. Their mission is to develop and deliver banking products and services that are appropriate, affordable and accessible to all to enable sustainable development. *World Commerce Review* interviews Josephine George, Managing Director of the Bank of St Helena, the recipient of the *WCR* award *Best Bank for Financial Inclusion 2023,* who discusses the Bank's embracing of financial inclusion in an ever-changing world.

Please describe the financial inclusion initiatives that the Bank of St Helena have put in place.

Financial inclusion is at the heart of the business of Bank of St Helena. This is supported by the mission which is to develop and deliver banking products and services that are appropriate, affordable and accessible to all. Since its inception in April 2004, the Bank has progressively increased its product offering to customers to support their journey with us.

Prior to this time there were no banking services offered other than that by the Government Savings Bank which supported cash deposits and withdrawals. The lack of exposure beyond St Helena due to the geographic isolation, the high costs to leave the island and limited access to internet services are some factors that has had an impact on our customers' perceived need for or confidence in modern banking services.

However, as time passed there has been technological improvements, a migration of people on and off the island and the skills and experience of Bank staff has grown. These factors have supported a shift in customer expectation and has shaped the need for and the delivery of the banking products and services offered today.

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Serving a resident population of approximately 4,200 and 1,000 on our sister island, Ascension Island, the Bank now offers a range of products and services which one might expect from a retail bank. This includes current and savings accounts, personal and commercial lending services, international remittance services, foreign currency exchange services, cash advances on all major international debit and credit cards, Local Debit Cards and Online Banking services.

Savings accounts includes Child Bond Savings which are designed to encourage our youth and their families to start saving from young towards their future aspirations and needs, whether this is their education, material goods or a nest egg for a rainy day. In the absence of a national pension scheme the Bank also introduced a savings scheme for customers to enable them to save towards life after retirement in the form of a New Life Account. Both the Child Bond Savings Account and the New Life Account offers an attractive interest rate. A Term Savings Account was introduced and allows our customers to save towards short-term goals.

A range of diverse lending products offered are aimed to support the island's long-term goals for development and sustainability. These include personal, mortgage and commercial lending products designed to ensure they are fit

for purpose and suit the local needs and demands. The international remittance service allows customers to transfer funds from their local bank accounts to beneficiaries residing overseas and to receive funds into their local account from overseas.

In 2014 the Bank launched its Online Banking product in an attempt to provide customer convenience. The uptake was slow which could be attributed to unaffordable internet access and the product not fully meeting all expectations of an online platform.

However, being a local bank, it was deemed important to provide those customers residing offshore e-banking services to fulfil their local banking needs from abroad. With the introduction of the Bank's bespoke Local Debit Card and St Helena Pay Services in 2017, coupled with enhanced functionality of Online Banking, the uptake of the service began to see growth. Affordability, jurisdiction and the market size are challenges that makes it difficult for Bank of St Helena to operate an issuing license which will allow us to offer card association branded payment cards such as Mastercard and Visa to the local community, therefore a complete closed loop debit card solution was developed and launched.

With the inability to facilitate a card payment acquiring service to allow local merchants to accept tourist card payments, the Bank has created an innovative solution to make card payments available for tourists to avoid the necessity of having to use cash for every transaction.

This solution is the Tourist Card, a local prepaid GBP cash card enabling tourists to use the island's Local Debit Card payment services to pay for goods and services provided by local businesses. The imminent roll out of the Bank of St Helena's Tourist Card will enhance our financial inclusion one step further.

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How will these programmes help those citizens previously excluded from modern banking facilities?

The introduction of the various products has allowed our customers to have access to finance in a way in which was never available before. For many, they now have access to finance to build or purchase their own homes quicker, have the ability to purchase goods and services that would have otherwise only be gained through years of saving, such as planned holidays. This was almost impossible for many before the Bank offered lending services. The offering of commercial lending products has also assisted the local economy in its development through various loan offerings.

St Helena Pay, Local Debit Cards and Online Banking has revolutionised how payments are now made on island, although bespoke, this service allows everyone on island to be part of the digital payment environment. Safety and security measures features very high on the Bank's agenda, with industry standards being followed. The introduction of products such as Local Debit Cards and Online Banking also equips customers who leave the island exposure to banking products and services which are a part of everyday life in the majority of the world.

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How did the initiative come about?

The Tourist Card initiative has come about as a result of the Bank endeavouring to fill an island need. Until now, visitors to St Helena were limited to the options of carrying cash or taking cash advances of their debit/credit cards by visiting the Bank once on island. With a card payment acquiring service not feasible at this time and with the expected increase in tourists to St Helena in the coming years, the Bank needed an 'outside the box' solution to make card payments available for tourists to avoid the necessity of having to use cash for every transaction.

This development has been in partnership with the Bank's services providers International Financial Systems (IFS). It has been designed to provide convenience, be modern, be technologically based, keep costs minimal and puts compliance and safety as top priority. It has been built on the existing Local Debit Card infrastructure and there is no further expectancy placed on the locals for acceptance.

The Tourist Card is a prepaid GBP cash card using a virtual card which is downloadable to a mobile phone. It is envisaged the product will promote tourist spending and eliminate the previous impractical need to carry cash. The introduction of the Tourist Card will be one of the biggest achievements by Bank of St Helena.

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Is this an ongoing programme?

Yes, this is an ongoing programme which sees Bank of St Helena being committed to ongoing development of its products and services that will continue to meet current needs and exceed the expectations of our customers, especially as we embrace and strive to become a bank that is digital by default.

What new developments are in the pipeline?

With mobile phones being introduced on island in 2015, one of our desired objectives is to offer various mobile banking services which will provide further convenience to our customers. However, at this time with internet connectivity not freely available, it does inhibit the possible uptake of these types of services. In the coming years

with the introduction of the fibre optic cable it is hoped this will alleviate these concerns and Bank of St Helena will offer a range of apps to support customer banking needs.

What is your message to those individuals who are unbanked?

To those who are unbanked we would say get banked!

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Please describe your career at the bank and how the banks structure has evolved over this period.

My career with Bank of St Helena spans fourteen years and began with me joining the Bank in 2008 in the role of Human Resources Manager. My previous work experience in various management and human resources roles provided me with the skills and experience needed to set-up the new function of human resources in the Bank at that time. This included implementing systems and processes for staff recruitment, development and retention.

Over the years I have used every opportunity to develop myself personally and professionally. This has enabled me to gain promotions within the Bank that has culminated to becoming successful for the role of Managing Director in 2017. During my years of employment with the Bank, the structure has seen much change to become the establishment we have today, one which supports the unique banking environment of St Helena. There have been changes in the organisational structure and product and services, all of which has been possible due to improved

technological advancements, staff development, networking and more exposure to the world that operates outside of St Helena.

What developments and services have been driven by the internal and external factors of the St Helena economy?

The majority of development has been driven by either internal or external factors. Internal development of the Bank has been achieved from our growing knowledge and experience of the industry, upgrades of banking systems, professional development, customer feedback, networking and individual exposure to banking outside of St Helena.

The Bank endeavours to keep abreast with the local political, social, environmental, technological and legal environments in which we operate, to ensure it designs and offers products and services that are fit for purpose, which might mean they are not necessarily as one might find in traditional banking.

For example, the suite of lending products and services specifically caters to our customers personal needs as well as business needs for living on an island, whilst ensuring to comply to industry standards. Over the last five years there has been the introduction of a number of new or revised lending initiatives to support St Helena's emerging economy such as financial assistance for young entrepreneurs, initiatives to support first-time homeowners, short-term contract financing and reduced interest rates on loans to our farming community. In addition to the local economy, the Bank also monitors the global environment as these issues do impact on our island's economy and can have other financial implications for Bank of St Helena.

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Global connectivity is clearly a key building block for the bank; what has been your strategy?

St Helena has felt the effects of limited global connectivity over the years whether through geographical isolation or technology isolation, all of which has had an impact on the development of the island's economy and its overall aim to become a vibrant economy. The Bank's strategy recognises that global connectivity is a key building block if it is to meet both the Bank's and island's aims and objectives.

Therefore, the Bank values and endeavours to develop the relationships we enjoy with various stakeholders and work towards expanding our network reach to better position ourselves in the global market. Expanding our networking ability through visits and bi-lateral meetings has enabled the Bank to work with others in the industry outside of St Helena to draw from their knowledge and experience, which in turn has allowed us to develop the service offered, but also supports others in gaining a better understanding of how banking operates and the challenges faced in a small environment. In addition to networking, professional development has been an important element to support our strategy to ensure that our staff have the right skills and experience to deliver on what the Bank promise.

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What systems has the bank integrated into its infrastructure for the benefit of customers?

The Bank has integrated the SWIFT Platform into its infrastructure, which is the biggest international payment network in the world and allows our personal and business customers to send and receive monies in a standardised and secure way. The Local Debit Card solution also includes a local card issuance service and a bespoke merchant card terminal app and device which is supported by Online Banking for the benefit and convenience of customers.

St Helena is not in a position to offer ATM services due to various logistical and legal limitations and restrictions, and in the absence of such, the Bank introduced a cashback facility as part to the Local Debit Card solution. All transactions are real time, enabling local merchants to provide cash to customers outside of normal banking hours which benefits customers.

Bank of St Helena does not qualify to subscribe to existing BAC's infrastructures. As an alternative, the Bank has created an interface via the Online Banking service to accept BACs formatted messages from businesses on island, all of which is processed in real time and is yet another bespoke solution to the benefit of our customers.

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What is the medium- and long-term programme for the bank's development?

The long-term aim for the Bank is to be known as the financial cornerstone from which our customers can confidently build a sustainable and prosperous economy for the island of St Helena. It is our mission to develop and deliver banking products and services that are appropriate, affordable and accessible to all.

What international programmes does the bank participate in?

In addition to the SWIFT international payments system, Bank of St Helena engages the services of an Investment Manager to manage Bank of St Helena's investments.

The Bank also supports the learning and development of their staff and supports affiliations and memberships with professionally recognised institutes such as Chartered Banker Institute, Chartered Institute of Marketing and Chartered Institute of Personnel and Development.

Your background is in developing personnel skills and human resources. How have you employed these initiatives in staff development?

With a Human Resources background, I am fully aware that a company's success is dependent on its most valuable assets, its people and it is vital that we manage and optimise this valuable strategic resource. Therefore, implementing a framework for managing, developing and optimising employee skills, abilities and competencies has been imperative.

Being a Human Resources Manager and now the Managing Director, I have found it is important to provide encouragement to individuals, ensure adequate resources are available to support staff training and development, give recognition and provide/support incentives for staff performance.

As individuals we are all different and will be motivated by different factors, but the one thing I have learnt from experience is as managers we should lead by example, which is also my philosophy. I am extremely proud to lead a team of highly skilled, motivated, committed and dedicated employees, all of whom have worked hard to ensure the continued success of the organisation. The design and implementation of products and services to date is a testament to the innovation, skills and experience of our staff to find and produce solutions to meet the needs of our customers.

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How does the bank work with local businesses to help them develop products and markets?

Being a small island with a limited population, the Bank knows its customers in the truest sense of the word. Customer interaction, feedback gathered and knowledge and experience of our customers and the environment enables the Bank to work with local businesses to meet its product and market requirements.

In addition, the Bank works with the local Government to understand their national aspirations and endeavours to introduce products or service which support the island's national strategic objective.

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What are the key strengths of the St Helena economy?

The key strengths of the St Helena economy are not yet fully realised, however as a fledgling economy the island has a lot it can draw upon to become a thriving economy. The island is a British Overseas Territory that uses the local currency of St Helena Pound (SHP) which is at parity with Great British Pound (GBP).

We are also an English-speaking island. With GBP being the fourth most traded currency in the world and English being one of the most spoken languages in the world, it places St Helena in an attractive position to live and trade.

There is the potential for business development in eco-tourism, coffee production and fishing, all of which could have a significant positive effect on St Helena's economy. However, the true potential is yet to be realised.

How do you think the bank will look in 10 years?

Bank of St Helena is optimistic about the future. In ten years, the Bank will become digital by default and would have been the key enabler to move to a cashless society. Bank of St Helena will be recognised as offering a modern banking service that continues to offer products and services to meet our customers' needs and expectations in an ever-changing world. ■

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Containing trade

These are disruptive, challenging times. Graham Bright considers the role of the container ship in enabling global trade

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As the world implements policies to cope and live with COVID-19 as it re-emerges in new strains, and battles with exponential rising prices for many raw materials and utilities, supply chain inflation, fragmentation, trade is still global.

Businesses across the globe, especially multinationals, cannot stand idle whilst fundamental costs are rising, as we witness an unprecedented era of geopolitical turmoil, recession in leading economies and bleak financial outlook.

With US dollar appreciation having almost reached parity with the Pound Sterling (the highest rate in almost 40 years), businesses are wary of committing to investment plans, as companies assess whether the artificially hiked prices of goods truly reflect the value of those goods.

Whilst the current situation is no doubt cyclical, it is bad news in the short term for most economies. However, the hiatus in trade and forced review of internal strategies has prompted progressive firms to re-evaluate how they will identify and harness future opportunities.

These include product positioning, reducing paper and manual processes, with investment in technology enablers such as trade blockchains which will be of fundamental benefit in improving competitiveness, cost-control and ultimately market share and sustainability.

Globally, trade is predicted to grow by 70% to almost US$30 trillion by the end of this decade with the majority transported by sea. Having encountered supply difficulties corporates have sought out new sets of suppliers, which were simply not in the supply chain before, often in land locked locations, with challenges of transport, customs and delivery.

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But the race for new supplies has led to a new logistical issue, with news of a massive surplus of containers in the US. What this means is that ports in North America could become overwhelmed by a build-up of empty containers, as trans-Pacific supply chains and transportation times gradually return to pre-pandemic levels.

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The humble container is the true star. Why? Its fundamental benefits in rationalising, standardising and its re-useability dramatically altered the cost and efficiency model for the industry

Whilst our institution has been involved in the document and instrument side of the business, for example dealing with compliance and operations with letters of credit, standbys, bonds and guarantees, it is hard to ignore the contribution, impact, versatility and simplicity of containers, the true enablers of international trade.

Containers

Just boxes you may think, but the humble container is the true star. Why? Its fundamental benefits in rationalising, standardising and its re-useability dramatically altered the cost and efficiency model for the industry.

As recently as 1956, an American trucking company owner named Malcolm McLean bought a shipping company. His requirement was simple, namely, to find an easier cheaper way to get his goods onboard ship, without damage or pilferage, quickly and cost-effectively. In the past, it took crews of specialist loaders, stevedores, and dockers and adherence to union rules to physically move goods from truck to hold.

The answer was to move a stackable storage vessel, regardless of contents (ie perishable, non-perishable, chemical, plastic or solid), not the goods, and the simple multi-use intermodal steel box (loaded with goods at its starting location, to be transported via road, rail, and sea to the final destination without the goods needing to leave the container) we know today was incepted and patented.

The additional breakthrough was the standardisation of size, through negotiations with the ISO Standards Organisation. The outcome was set the standard sizes that then allowed each ship, port and truck to be able to handle the dimensions with ease.

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Today, whilst dimensions of containers have remained constant, a number of adaptations for types of goods have become common. And whole industries have been established to create the right environment for transport of goods requiring heat or refrigeration.

This ensure that goods, no matter how large, or dangerous, may be safely loaded and transported anywhere, to arrive in peak condition.

Containers carry general cargo by rail and sea and their size makes them ideal for storage, enabling liquid cargo or dry bulk shipping, and the wide variety of goods has led to the introduction of container variants.

Open or hard-top containers cater for cargo exceeding regular heights, which will incur higher rental and insurance fees due to the lesser strength of roof materials. Flat racks provide the support for excessive size goods, secured on strong platforms, whereas platform containers transport heavy and out of gauge cargo with high resistance mounting brackets to make transport safer.

Tank containers are commonly used to transport liquid chemicals and beverages, where a tank is constructed inside a general container, which, to avoid rapid movement of the cargo during transport, must be at least 80% filled.

Accidents will happen

Fleets are getting large and the physical size of ships has increased from the Emma Maersk, with a capacity of 15,000 containers (TEU) 10 years ago to Ever Alot, with a capacity of 24,000 containers.

The number of container ships in the global fleet increased from 4,966 in 2011 to 5,534 ships in 2021, while the carrying capacity of the global merchant fleet reached roughly two billion deadweight tons in 2020.

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However, not all is well on the high seas. Between 2011 and 2020, some 876 vessels were lost at sea. The majority of ships lost during this period - around 348 - were cargo ships.

Containers stacked on giant vessels are falling over at an alarming rate, resulting in millions of dollars of cargo lost as pressure to speed deliveries raises the risk of safety errors.

Why the losses?

One immediate cause is the effect of global warming causing storms and unpredictable weather. And time pressure is encouraging captains to risk entering a storm rather than take lengthy diversions.

With megaships, more containers are being stacked higher and to capacity, putting undue pressure on operators to deliver faster as demand picks up for all manner of goods. Coupled with inadequate container locking, whole voyages may be put at risk as seen in the following examples:

- One Apus - weather caused the loss of more than 1,800 containers at an average of $50,000 per box, estimated losses are $90 million in cargo.

- MOL Comfort - broke in two and sank with its entire cargo of 4,293 containers into the Indian Ocean, resulting in $400 million claim.

- Maersk Essen - lost about 750 boxes valued at $12 million.

- Maersk Eindhoven - lost 260 containers when it lost power in heavy seas.

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- Ever Given blocked Suez Canal traffic for a week, affecting hundreds of vessels. Although none of the 20,000 containers were lost, late arrival and disruption sent shock waves through the industry. The impact on global trade is ongoing, with financial loss calculated to be > €2 billion.

- Felicity Ace – carrying 4,000 luxury cars – cargo value of $400 million.

- MSC ZOE - about 200 containers fell into the sea, containing mainly TVs, toys, and furniture on the shores of the Netherlands.

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The importance of insurance

These are just some of the cases, and as the old adage says *“worse things happen at sea,”* clearly showing that you cannot fully protect your cargo from accidents.

Even if it is not client containers that went overboard, those on the ship may be damaged along with the goods being transported inside the container. With this insurance, the importer can receive monetary compensation if the container suffers damage, provided they show the relevant documents.

Containers can be insured against adverse weather conditions or a breakdown. Freight forwarder or carrier liability insurance alone is not enough. If the cargo has not been properly insured, all costs, including rescue cost, pass to companies transporting the goods.

Environment impact

Pollution of the marine environment caused by overboard containers is a growing issue. Once breached, containers may be extremely hazardous to sea ecosystems; they may contain acid, alcohol, biological or radioactive goods,

and heavy plastic manufactured products. They pose not only a threat to the environment, but also watercraft and coastal residents.

So far, none of the recent container accidents has been directly attributed to safety lapses. The International Maritime Organization said it is still awaiting results of investigations into the latest incidents and cautioned about making any conclusions before that.

But many experts say the situation has grown more dangerous because of pressure on supply chains since the pandemic. When ships approach heavy weather, captains have the option to steer away from the danger. But the attitude is *"don't go around the storm, go through."*

There's also the health and safety of the seafarers at stake. Raging storms can easily cause multiple tiers of 40-foot containers to displace and topple over causing panic and potential loss of life. The most effective way forward is for shippers to go around storms and maintain vessels properly.

Bottom of form

Countries whose flags the ships are sailing under are required to take responsibility for issuing safety certificates for vessels, while ports that the vessels call at are responsible for ensuring rules on loading containers are followed. This can clearly vary accordingly across the globe.

And spare a thought regarding the ships themselves. As tighter environmental regulations come into force across the globe, newer ships are needed to replace ageing vessels especially across Asia and the Mediterranean.

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Conclusion

Moving containers on some of the largest ocean-going ships the world has ever seen, with their ever-increasing capacity, is still the safest and cheapest mode of transport for goods across the globe.

And even when containers have reached the end of their ocean-going or road haulage lives, the environment benefits as they can be repurposed as shops, houses, tool stores, playground structures and modern art, effectively recycled and re-used, albeit in a different guise.

Whilst electronic documents, blockchain, AI etc all have their place in making trade easier, it is still the containers, the ships and logistics that power world trade. ■

Dr Graham Bright is Head – Compliance & Operations, at Euro Exim Bank

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The BVI - resilient and rebuilding

Simon Gray discusses the BVI's financial services sector and its role as a pivotal cog in global trade and investment

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The British Virgin Islands has long been a leading player in the international business ecosystem and global economy. For decades, the international finance centre has played a vital role supporting the growth of the global economy and facilitating investment, while remaining resilient in the face of fast-changing circumstances and seismic events.

This resilience was highlighted in September as the BVI commemorated the 5-year anniversary of Hurricane Irma. One of the most powerful storms ever seen in the Atlantic, Irma caused unprecedented havoc to the BVI, destroying or damaging 85% of the buildings on the islands and causing more than $3.6 billion in damage.

Looking back, one of the most extraordinary aspects of this period was the strength and tenacity displayed by both the business sector and local community. In a matter of days after the storm passed, key services of the financial service were back, including access to the company register via the online portal, VIRRGIN. The business community went above and beyond in supporting its staff and the community and by October, 73% of employees were back on the island and working.

This collaborative effort of the financial services sector was crucial for the overall recovery of the islands and played a huge part in supporting the economy whilst other industries – such as tourism – rebuilt. However, it was only two and a half years later when the BVI would be hit with another 'unprecedented' event, causing economic shockwaves through the jurisdiction – COVID-19.

Like Irma, the effect of the global pandemic in the BVI was immediate. The closure of borders and complete void of tourism shook the economy, with the GDP dropping 3.9% – broadly in line with major economies but significantly less than other Caribbean nations.

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The impact of the pandemic on tourism exceeded that of Hurricane Irma. There were more overnight visitors to the BVI in 2018, when the islands were rebuilding than in 2020 and 2021 combined. Yet once again, the BVI demonstrated why it has stood as a world-leading business centre for decades, bouncing back stronger than before.

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The BVI's unwavering success in drawing businesses and entrepreneurs from across the world lies in the depth and breadth of its services and expertise

Building resilience

The economic resilience displayed in the aftermath of these events highlights the competence of the financial services sector in rapidly adapting to shifting circumstances and the unique attractiveness of doing business in the BVI.

The BVI's unwavering success in drawing businesses and entrepreneurs from across the world lies in the depth and breadth of its services and expertise. The BVI financial services sector caters to the entire lifecycle of a company - from incorporation, mergers and acquisitions, public listings, privatisations, through to restructuring and insolvency - and is a trusted partner for companies across the globe due to its tax neutrality, agile framework and strong legal environment.

As a result, the BVI economy has bounced back. For example, in 2021 when the pandemic was still disrupting many elements of economic and social life, annual GDP growth was 2.2 per cent and this year, the BVI is expecting growth of 1.8 percent.

The second year of the pandemic also saw the highest level of new company incorporations by financial services in the BVI since 2018, and in addition, the number of new limited partnerships formed in 2021 was more than three times that of 2019 and 2020.

This continued success has provided the jurisdiction with some of the highest levels of prosperity in the Caribbean. The BVI's resilience and strength has also had global implications, with the BVI remaining a vital cog in facilitating growth and investment.

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Looking ahead

Remaining resilient, however, requires staying with your finger on the pulse of international trends and developments. As an International Financial Centre, this requires keeping pace with the innovations that are transforming the financial and economic landscape and ensuring that the services of the jurisdiction can facilitate the new demands of emerging sectors.

From cryptocurrencies to fintech, the BVI has embraced innovative companies and emerging technologies, establishing itself as a trailblazer in the digital assets sector. For example, in 2015 when most jurisdictions were rejecting digital asset funds, the BVI Investment Fund Association was working with the BVI FSC to create new frameworks to facilitate them and as a result succeeded in created an ecosystem ripe for fast-growing businesses to thrive, attracting businesses from the West Coast to Hong Kong.

Earlier this year, the BVI Financial Services Commission also admitted Fusang, Asia's only fully regulated end-to-end digital securities exchange, to its list of recognized exchanges paving the way for Asian-based, BVI-registered companies to benefit from the efficiencies of listing their shares digitally via equity tokens.

The nature of the crypto and digital asset space has made regulation increasingly complex and the collapse of high-profile companies in 2022, Three Arrows Capital and mostly recently FTX, has underscored the importance of comprehensive frameworks and structures in the sector.

The BVI is well equipped to deal with the fast-moving landscape, with the litigation and restructuring capabilities to deal effectively with such incidents.

Earlier this year, for example, advisory firm Teneo BVI, by appointment of the courts, took control of high-profile Three Arrows Capital assets, the $10 billion crypto hedge fund that the courts ordered liquidated, and

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demonstrated the high calibre of the British Virgin Islands Court system and the jurisdiction's litigators and insolvency practitioners.

The crypto and digital sector is, in many ways, still in its infancy and as it matures, the BVI will continue to evolve its regulatory frameworks to cater to the emerging sector.

Moving forward

The BVI's continued success in recent years has been a testament to the strength of the financial services sector and its role as a pivotal cog in global trade and investment.

While geopolitical challenges and breakneck speed innovation continues to disrupt and shift the global economic landscape, the BVI remains steadfast in its commitment to facilitate economic growth, remaining agile in the face of any challenge. ■

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ABOUT THE AUTHOR

Simon and the BVI Finance team lead the efforts of the BVI in promoting the territory's international business and financial services both locally and overseas. Simon is a senior financial services professional with a strong international background with experience of Europe, the Middle East, North America, Asia, Africa and Latin America and an established track record of success.

Innovation in post trade services

Jon Cunliffe discusses the impact that crypto technologies could have on post-trading infrastructure. He focuses on the possible opportunities, risk and impact on the provision of public infrastructure

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In recent years, regulators and central banks have become increasingly focussed on 'crypto'. No meeting of the international regulatory or central banking community takes place without a discussion of some aspect of the financial products, services and technologies that have come to be labelled 'crypto'.

Not surprisingly, given their explosive growth and wholly unregulated markets, much of the focus has been on crypto assets, particularly the highly speculative, assets like Bitcoin and the so called 'stablecoins' that function as the settlement asset for much of crypto trading and settlement.

This focus has in my view been entirely appropriate. The regulatory community's assessment that crypto assets and platforms carried major risks but did not yet pose risks to the broader financial system was borne out both by the collapse in crypto values and of some coins we saw earlier this year and the lack of wider knock-on impacts.

Nonetheless this is a corner of the financial system that has been growing very quickly and that has begun to develop greater interconnection with the conventional financial system. There are well established concerns around consumer protection and financial integrity, which need to be addressed, and there is a need to think now about systemic consequences. We have seen in other areas the disruptive power of digital technologies and the difficulties of retrofitting regulation once new models have achieved systemic scale.

Regulators need to begin extending existing standards and regulatory regimes to crypto before, not after, it becomes systemically important. And done carefully, the development of regulatory regimes helps not hinders innovation by reducing the risks of confidence-destroying crashes and by giving innovators a framework within which to innovate.

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However, while it has been right to focus attention on assets and platforms of the crypto world, the greater impact on the financial system may well come from the transfer of technologies developed in the crypto world to the 'real' world: for the trading, clearing storing and settlement of 'real' assets (and the making of payments for real things).

So we need to think also about the potentially disruptive impact of crypto technologies on market infrastructure, the trading, clearing, settlement, and custody machinery that enables global capital markets.

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I think the emerging evidence is clear that the technological innovation we have seen in crypto markets offers at least the possibility of a major transformation in financial market infrastructure – and one that could yield significant benefit

This is an important issue for me both as the Deputy Governor at the Bank of England responsible for the regulation and supervision of post trade infrastructure in one of the largest global financial centres and as Chair of the Committee on Payments and Market Infrastructure.

In that respect this first OPTIC conference is very timely. This is an area of finance where lots of experimentation has been happening for a while. In some markets we are now beginning to see real world applications built on exactly this transfer of technologies developed in the crypto world[1].

And as the crypto world continues to innovate, it is likely that we will see not only more technology transfer, but crypto native entities with the ambition to cross the boundary between the crypto world and conventional finance to offer services with tokenised forms of real assets[2].

I want to focus on the potential impacts of this on post trade infrastructure, where the opportunity for technological disruption may well be greatest. And I will use three lenses: opportunity, risk, and the provision of public infrastructure.

First, the opportunity.

European trading platforms have come a long way from the days of exchanging paper certificates and shouting across trading floors, pits and desks which was still the main way to intermediate most financial markets as recently as the early 2000s[3].

Almost all trading is now electronic – investors have gone from placing trades via direct dial up connections in the 1980s, to internet-based trading in the 1990s to the more recent rise of robo-advisors[4]. Investors have a growing

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choice of trading venues, many of which can be accessed on a mobile phone. A growing number of venues allow investors to place trades commission-free.

In the existing system, while it takes nanoseconds (billionth of a second) to strike a trade, there are a number of necessary post trade functions which follow and which at present have to be fulfilled sequentially. This includes trade validation and clearing, before settlement (transfer of assets) can finally take place. Depending on the market, these processes take at least a day and often more. They require a large number of participants to share information with each other -- often through highly manual processes.

Because settlement takes time, a number of risks emerge which all have to be managed. The price of the securities may change, the securities or cash may not be delivered in time and a counterparty could fail during the time it takes for the trade to settle.

These processes are important, but expensive. Precisely because the functions here are spread across a range of players estimates of the total cost are difficult to establish. In 2013 an attempt to do so suggested that around 13% of the total trade value chain was spent by the industry on settlement, custody and collateral management, around $40-45 billion[5].

Innovation over the past thirty years has, to be sure, improved efficiency but there is recognition from the industry that more can be done. The Post-Trade Taskforce, an industry-led body made up of participants in wholesale markets and with the Bank of England as an observer, set out earlier this year that *"innovation in post-trade processes and client onboarding processes has at times lagged behind other parts of financial markets. As a result, processes are often manual and duplicative; and failures upstream can cause significant problems downstream."*

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It is in the context of this 'opportunity' that we should look at the possibilities for disruption of the current post trade landscape that might come from the innovative approaches and technologies that have been developed for the trading, clearing and settlement of cryptoassets.

At the heart of this is the exchange of tokenised representations of the money and the securities traded in the mainstream financial sector today, such as equities and debt instruments. Bringing both components of the trade onto a single ledger facilitates near-instant settlement of trades and, building on modern cryptography, atomic settlement.

Deriving its term from the use of 'atomicity' in computer programming, 'an atomic operation is one which cannot be (or is not) interrupted by concurrent operations'[6]. Put another way, nothing can interfere with the underlying security and money while the operation is running. In its application within securities settlement this process closely mirrors delivery vs payment, given the role for earmarking.

In practice, unlike more conventional settlement processes, atomic settlement is often completed near-instantaneously and can happen without the need for trusted intermediaries, though I should stress that it need not be instantaneous or decentralised.

It is the combination of high-speed and atomicity that created the rationale for much of experimentation with DLT by that has been happening in the financial sector. And it is the foundation for the development in the crypto world of protocols capable of more complex financial operations.

The potential opportunities from innovation in post-trade

I want briefly to highlight a number of ways in which these developments could disrupt the current post trade

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architecture and business models. First, and by far the most significant, is the potential for consolidation across both trade and post-trade functions.

Cryptoasset exchanges have collapsed a large number of activities into a single smart contract undertaking activities that, in conventional securities trading, are split across custody banks, exchanges, central counterparties and central securities depositories.

Where, in the conventional trade and post trade chain there are layers of entities performing specific functions, in the crypto world the functions in the chain can be brought together in a single smart contract.

The potential gains in cost from consolidation could be very large. For the end investor, fewer intermediaries should mean less fees. Moreover, from the point of view of regulators looking at the stability of the system as a whole, a single entity and process carrying out all of these functions would require fewer participants in the chain and, in principle at least, bring resilience benefits from the simplified structure. With fewer critical points in the chain, the potential points of failure in the system are reduced.

Consolidation, by definition, reduces the number of intermediaries. However, some have proposed that this disintermediation could go further into a full decentralisation of the trade and post trade process. There are DeFi platforms for example which purport at least to offer prospect of complete disintermediation.

In these models smart contracts on the permission-less blockchain, using platforms like Ethereum, allow users to transact with pools of assets, rather than each other, and without handing over custody of their assets to a third party.

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Users initiate a trade by proposing a transaction that sends tokens to a smart contract, which in turn calls a function to perform the exchange ie. send the appropriate value of alternative tokens from the pool back to the user. In principle, this could further reduce costs and promote efficiency.

Second, as a consequence of bringing trade and post trade functions into a single smart contract, T+now settlement has become routine in some crypto markets. Such instantaneous settlement offers the prospect of eliminating settlement risk from the equation by collapsing the time during which a party can fail to deliver on its obligations to another party to zero. In centrally-cleared cash markets, this removes the need for a CCP to net security trades. It also removes the need for a CCP to hold and pass through margin when clearing cash trades.

Third, new systems can enable fractionalisation – or breaking up financial instruments into smaller units – which is also being increasingly borrowed from cryptoasset markets with the aim of improving market liquidity. Benefits might be particularly large for illiquid markets (eg. leveraged loans) which don't currently benefit from a CSD. As such, we would expect the potential benefits of Tokenisation/DLT to be more pronounced in these areas.

Perhaps most far reaching, smart contracts appear to have the potential to go much further than integrating trade and post trade functions into a single operation. In a simple case, like that discussed earlier, a smart contract delivers instant settlement by combining checks that the securities and cash being exchanged are available in respective accounts with the execution of the post-trade process.

This may be expanded on, as smart contracts automate actions depending on conditions being met. There is the potential to add layers of additional functionality and features. Given the flexibility of the technology, there is the potential to incorporate related services. For example, the payment of coupons on bonds and the management of

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other corporate actions, or the management of more sophisticated securities trades, for example the selection of collateral in a repo transaction.

I should stress, however, that this is not an exhaustive list. If recent years have taught us anything it is the ability of innovation in this digital space to come up with very different ways of doing things. My point is that we should be ready to see major changes in capital market infrastructures and business models that could in principle bring benefits in efficiency, speed and resilience.

The role of regulators

How should regulators, respond to these developments?

It is important that we start from the position of being technology and business model blind: we not classify new ways of doing things as 'dangerous' simply because they are different. I have set out some of the potential benefits, for efficiency and for financial stability.

But recognising the opportunity does not mean that we should ignore the risks, any more than we ignore the risks in the existing structures. We need to ensure that new approaches deliver the same level of resilience that we expect for the existing system. In short, we need to ensure the same regulatory outcome even where changes in technology and business model mean that we have to find different ways of achieving it.

I set out briefly a few examples of the areas of risks we will need to look at. Like the examples I gave earlier of potential benefits, the list is by no means exhaustive. First, operational resilience of DLT-based systems needs to be proven over time. The technology most widely used in existing cryptocurrencies cannot simply be copied and pasted for wide scale use in capital markets.

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This is not simply because it currently operates in an unregulated environment. Given the systemic nature of the major capital markets, we will need assurance that DLT based systems can work in different contexts and at a different scale[7].

Second, the development of instantaneous settlement also poses challenges for the management of liquidity as it requires all cash and securities to be in place at the time a trade is struck. There would no longer be a window of opportunity to locate the cash and securities or to net trades against each other. And if each securities ledger has its own cash token, aggregate liquidity requirements could be increased further[8]. Given well documented challenges with the potential for a 'jump to illiquidity', including in core funding markets, this has the potential to increase systemic risk.

Third, we have seen from other areas of the financial system, such as retail payments, that the irrevocability that comes with instant transactions can pose problems for risk management. There is simply no time to identify or rectify errors before they are actioned. In short, we may not want wholly instantaneous trading and settlement in all markets.

Fourth, it is unclear how feasible and effective interoperability between DLT platforms would be and how effective interoperability between markets and services running on DLT and those running on conventional systems. This could well lead to a fragmentation where these products become siloed, with only one option available to market participants who would provide for exchange, settlement and clearing.

Finally, supervision of financial market infrastructure places a heavy emphasis on ensuring robust governance procedures are in place. While there are advantages to consolidating functions, as set out above, and there are arguments in favour of decentralisation, it is very difficult to see how risks can be managed to the right level

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without a legal entity accountable for the services provided and responsible for the proper functioning of the system.

And, of course, there are risks in any transition. For example, markets would be subject to two modes of settlement and clearing, as adoption and experimentation with this technology grow. This poses specific challenges, for example managing liquidity across systems, but would also pose operational burdens.

Given the range of policy questions – regulatory, supervisory and legal - these developments raise, market infrastructure regulators will need to and are beginning to step up their engagement. There is a need to understand better emerging technologies and how, as well as to what extent, regulatory regimes need to be extended or otherwise adapted to cover their use.

One example of this greater engagement, in the UK, is the FMI Sandbox, which the Bank of England, the Financial Conduct Authority and HM Treasury have announced and plan to have up and running in 2023. The Sandbox will allow financial market infrastructure providers and other relevant parties to test and adopt new technologies and practices (such as distributed ledger technology) by temporarily disapplying or modifying certain legislation for specific purposes. The initial focus will be exploring the application of distributed ledger technology by firms who want to set up DLT securities settlement systems integrated with trading platforms.

These regulatory considerations around innovation in the trade and post-trade process are being taken forward in multiple jurisdictions internationally, posing the same questions across regulatory frameworks[9]. And given the cross-border nature of many financial infrastructure services, there will almost certainly be a role for CPMI-IOSCO as the international standard setter for financial market infrastructure need to explore[10].

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The public sector as an infrastructure provider and settlement assets

Safe settlement requires a settlement asset which market participants can use and have confidence in to discharge their obligations.

Given the need to ensure such settlement assets, particularly in systemic global capital markets meet the very highest levels of resilience, the PFMI set out the standard, namely that *"An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money."*

It is vital that we maintain at least the same level of robustness for settlement assets used in new, innovative approaches to post trade functions. The CPMI and IOSCO have, in this context, set out for example guidance on how the PFMI standards on settlement assets should apply to systemic stablecoins.

But there is my view a case for public infrastructure in this area. Central bank reserves, as a settlement asset play a key role in the resilience of conventional post trade functions. In addition, the central banks provides the rails on which those assets are transferred in their jurisdictions, typically through real time gross settlement (RTGS) systems. How then should settlement in central bank money evolve to play a similar role to provide resilience in new approaches using atomic settlement and DLT?

There are a number of ways in which central bank money might evolve to play that role. One option would be for central bank could build its own system offering both a tokenised form of central bank money and the rails on which it is transacted. Another route would be for central banks to develop their existing RTGS systems to ensure compatibility with DLT based systems enabling the latter to 'plug in' to settlement in central bank money.

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Alternatively, central banks could allow private sector players that have access to central bank reserves a greater ability to transact those reserves, allowing those firms to organise connectivity to other ledgers amongst themselves.

Different approaches to access to wholesale digital central bank money, are being explored at the international level, in particular through practical experimentation out of the BIS's Innovation Hub. The BIS work has demonstrated a set of model approaches which allow for settlement in tokenised central bank money (project Helvetia). This would allow for the connection of such tokenised assets to DLT based clearing and settlement.

The Innovation Hub is also running Project Meridian, out of its London centre, which will develop a prototype synchronisation operator, an intermediary platform that connects counterparties and coordinates the settlement process directly in central bank money.

In principle this would allow for private firms operating on different ledger technologies to plug into and delivery functionality while using central bank money. These experiments show the range of approaches which are under consideration and highlights the importance of applied experimentation by central banks to understand these new technologies and their implications for policy.

At the Bank of England we are taking forward work on these options. In particular, we are in the process of renewing our RTGS system. This includes consulting on the Roadmap for RTGS beyond 2024, with a view to assessing appetite for many of the features and functionalities which would enable integration with DLT-based services. Examples of the functionalities under consideration here include create a generic interface into RTGS which would allow a range of ledgers to connect to the system, as well as building a system with no technical barriers to 24/7 operation.

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Relatedly, we have already put in place an omnibus account policy, allowing for the co-mingling of reserves held by different entities within one account, overseen by a payment system operator. This allows the payment system operator to pre-fund transactions between these entities using reserves, creating a means of settling transactions which is fully funded in central bank money, thereby enabling the operator to link this to transactions on other ledgers.

Finally, when talking about the public sector's role, we should not forget that legal structures underpin all financial services, given the critical nature of establishing and agreeing ownership. This is particularly true in the process of transferring ownership (ie. exchange and settlement) given the potential, where such processes break down, for ambiguity and contractual dispute. As such, it is critical that legal structures evolve to ensure there is clarity on their application as technologies for trade and post-trade services evolve.

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Work to this effect is ongoing across jurisdictions and in both the public and private sectors. In English law, this process has begun with the clarification in 2019 that *"cryptoassets have all of the indicia of property"* and that smart contracts carried the status of contracts as understood in law[11]. ISDA have extended this analysis further looking at a range of legal issues arising around clearing and settlement across English, French, Irish, Japanese, Singaporean and US laws[12]. Ensuring robust legal underpinning will be an essential part of managing risks in the use of these new technologies.

Conclusion

From the development of double entry book-keeping, to the telex machine, to algorithmic trading, over the centuries successive technological innovations have transformed finance. While this has not been without risk – and there have been problems on the way - the result has generally been deeper, more liquid and more efficient financial markets, better able to serve the real economy.

In this, as in so many other areas, central bankers and regulators do not have a crystal ball. But I think the emerging evidence is clear that the technological innovation we have seen in crypto markets offers at least the possibility of a major transformation in financial market infrastructure – and one that could yield significant benefit. It is also clear that for this to happen, there are important risks that will need to be managed and areas where public infrastructure will need to evolve.

Close engagement between the private sector and public authorities will be crucial to ensuring we reap the benefits while managing the risks. In that respect, as I have said, this conference is very timely and I am grateful for the opportunity to share these thoughts. ■

Sir Jon Cunliffe is Deputy Governor for Financial Stability at the Bank of England

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Endnotes

1. Examples include Onyx Digital Assets – JPMorgan's blockchain-based network for digital assets trading, the HQLAx DLT platform for securities lending and repo, SIX Digital Exchange's (SDX) development of an integrated platform for trading, settlement and custody of digital assets and Depository Trust & Clearing Corporation's (DTCC) Project Ion platform for equities settlement using DLT.

2. See for example Bloomberg 'Crypto Exchange FTX US Expands Stock Trading, Plans Options Next' (2022).

3. BIS (Bech, Hancock Rice and Wadsworth) – 'On the future of securities settlement'.

4. Kalda et al 2021 – 'Smart (phone) investing? A within investor-time analysis of new technologies and trading behavior'. SAFE Working Paper No. 303

5. Oliver Wyman/SWIFT (2014). "The Capital markets Industry. The time they are a-changin'"

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I would like to thank the following for their input to and helpful comments on these remarks: Kushal Balluck, Emma Butterworth, Pavel Chichkanov, Michaela Costello, Bernat Gual-Ricart, Charles Gundy, John Jackson, Amy Lee, Will Lovell, Grellan McGrath, Natan Misak, Danny Russell, Akash Sharma, Andrew Walters, Daniel Wright, Cormac Sullivan. This article is based on a speech given at AFME Conference, London, 28 September 2022

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InterExec are a London based global consultancy working with C-Suite Senior Executives across all major business sectors, as they confidentially seek their next new challenge

With a worldwide network of over 15,000 of the leading Search Consultants, InterExec offers a unique support service and, with over four decades of experience, guarantees a track record which is world leading. The service is individually tailored to the busy Senior Executive who is seeking a choice of opportunities to realise their optimum career enhancement in a new role, with minimum disruption and maximum confidentiality.

The transition from one organisation to another brings with it significant prospects of both short and long term benefit, but equally demands focus and commitment to achieve the best results. InterExec facilitate that process through thorough planning and careful introductions to engage clients with the most relevant search consultants.

The aim is to minimise the client's unnecessary time wastage and marketing exposure and to ensure genuine value from, and validity in, all communication and meetings.

InterExec is uniquely placed to plan and implement such transitions, having done this for nearly half a century. The InterExec team are specialists, with a wealth of experience and knowledge at senior executive level as former company directors themselves.

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There are two stages involved in the InterExec process. Planning to best determine the career target, strongest market proposition and prepare for an intensive campaign. Followed by Implementation, which constitutes the intensive campaign with comprehensive support throughout.

Planning:

Some Clients have a very good idea of their objective in this transition and some are absolutely open minded as to where they should best go for the future. Either way it is important to be certain before commencing the search that the target is likely to be the optimum achievable and that the client presentation, both in word and visual, is best suited to enhance their prospects.

The entire consultation process can be completed in little more than a week, with as little as 5/6 hours input from the client, with InterExec staff working at a time to suit the client wherever they are in the world. By keeping the

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process as streamlined as possible and minimising interruption to normal workflows, InterExec enable executives to stay focused on their current role whilst setting the stage for the next phase of their career.

InterExec then use their market knowledge to identify the people to whom confidential approaches can be made to source relevant unadvertised opportunities. For executives seeking their next new challenge, confidentiality is key. The aim is always to minimise unnecessary market exposure while maximising a client's range of options when it comes to changing role. The world is small at the highest levels of business and executives must tread carefully. The processes are geared to absolute discretion.

Implementation:

Whether the client is seeking full time executive employment, interim management, non-executive, consultancy/portfolio roles or employment in a PE/VC environment, the channels to market are very similar.
Having agreed the focussed market proposition and the client's ideal target an intensive campaign is undertaken to unearth the ideal opportunities. InterExec maintains constant contact with the market globally, managing existing and developing new search consultant relationships. Being in daily contact with the market means InterExec's knowledge is current and covers all regions, disciplines and sectors.

It is crucial that the client's target roles be achievable, based upon their expertise and prior experience, and that the way we present the client enhances their prospects. Standard procedure includes InterExec validating client's qualifications, references, identity, skills, achievements and entitlements – because all this information is set out in advance of our conversations with Search Consultants looking to fill particular roles, time is saved for all involved and the best results can be achieved.

The unique InterExec process and network has proven to be a powerful asset to senior executives seeking their next challenge. ■

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The beginning of the end for cryptocurrencies

Jon Danielsson argues that cryptocurrencies have now reached the beginning of the end as the factors fuelling their success have come to a standstill

Cryptocurrencies have enjoyed a remarkable run from obscurity to a trillion dollar valuation in just over a decade. They are praised and condemned in equal measure by world leaders and have even become legal tender in some countries.

Crypto has had two stages in its short life: rapid price growth and elevation from obscurity, followed by a prolonged phase of global recognition, controversy and volatile prices fluctuating but with no long-term price increases. The signs now point to crypto commencing its final, terminal phase. Cryptocurrencies will leave a fine legacy even if they have not lived up to the crypto evangelists' promises.

The reasons why crypto has entered its final phase have much to do with why it has been successful and what it promises and fails to deliver (Bindseil *et al* 2022, Didisheim *et al* 2022). It is all down to politics, speculation, and efficiency.

Politics is fundamental to crypto. Its foundation myth is a world where technology replaces corrupt human beings and their organisations. Instead of fiat money abused by governments with their extra-low interest rates and repeated quantitative easing, we get digital money created and governed by an algorithm programmed to be fair.

Such a crypto financial system promises to be much more efficient than the setup we have today, with modern algorithms, programming languages, and systems replacing a costly, error-prone, corrupt banking system – one with centuries of legacy practices and more than half a century of incremental changes to its IT systems, with much still based on Cobol written half a century ago, running on IBM mainframes.

The third plank of the crypto mission is speculation, since the number of people buying into crypto's political and efficiency aspects is tiny – much too small to leave much mark on the world. While the true believers are essential

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for shaping the crypto narrative, success and failure come predominantly from speculators fuelled by Bitcoin's spectacular price rise from four cents to $16,000 today.

The foundation myth is essential for crypto's success. Not only because otherwise there is no need to replace the existing financial order, but even more importantly, it is why crypto is not a Ponzi scheme.

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The crypto world is increasingly abandoning its politics. Just about every crypto exchange complies with anti-money laundering, know-your-customer and sanctions requirements imposed by the old school financial regulators

While crypto has become visible and made many speculators wealthy, it hasn't enjoyed the success promised by the foundation myth (Danielsson and Macrae 2022). They might not even make sense (Danielsson 2018). After all, the financial system is still almost entirely based on old school fiat money financial institutions.

And that is a problem because the high price of crypto is based on speculators betting on success. For that to happen, the promises of the foundation myth will have to be seen as within reach. Otherwise, speculators will likely lose heart and abandon crypto. Which can then become a vicious downward spiral. Both politics and speculation have been tested recently.

Start with politics. For the foundation myth to be believable, crypto has to be a credible alternative to the existing order and true to its political origins. However, the crypto world is increasingly abandoning its politics. Just about every crypto exchange complies with anti-money laundering, know-your-customer and sanctions requirements imposed by the old school financial regulators.

The old school financial authorities are just too powerful. Crypto is moving into the mainstream, and crypto evangelists are increasingly using the language of microprudential regulation when discussing how crypto needs to evolve.

While that does not destroy the foundation myth, it undermines and muddles the messaging. Is crypto money that is free from state control, or is it money that is managed with norms set by the state?

The efficiency aspect of the foundation myth has also been undermined. While crypto promises to be much better than the old school financial system, it has run into roadblocks because of the difficult trade-off between privacy, integrity, and efficiency.

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The most popular cryptocurrency, Bitcoin, is inherently inefficient and can only handle a tiny fraction of the transactions needed by the economy. The second most popular, Ethereum, is more efficient and designed for smart contracts (crypto's primary vehicle for joining the mainstream).

However, Ethereum recently abandoned mining for proof of stake to pursue efficiency and political acceptability. While that does mean no more environmentally damaging mining, it is also a licence for Ethereum investors to print money for free, undermining the foundation myth. Meanwhile, its promises of smart contracts have run into serious roadblocks set by the financial regulators and the legal system.

The old school fiat system has not been standing still. The financial authorities and the private sector are alive to the threats crypto poses and have responded by proposing and even implementing much-needed reforms. After all, when financial intermediation is inefficient and exploitative because reform threatens the incumbents' rent, it leaves an opening for crypto.

To forestall that, the authorities have reacted. PIX in Brazil is an excellent example of what the old school system can do when pushed. We can thank crypto for central bank digital currencies.

Meanwhile, crypto is not as attractive to speculators as it used to be when they were motivated by the rise of the price of Bitcoin from four cents to $16,000. Bitcoin was also at $16,000 half a decade ago, going as low as $3,200 while reaching $67,000 at the peak. It doesn't look all that attractive as a speculative investment compared to, say, Amazon or Apple.

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And then we have all the scandals. One of the biggest problems for crypto is that only the most technically competent and determined investors can manage self-custody, controlling their own keys. Most speculators need to use a crypto financial institution. And they have a habit of stealing people's money.

Lately it was FTX that loudly dismissed traditional practices – due diligence, protecting consumers, and the like – as belonging to the old school system, not the new crypto world. Very much a corruption of the crypto political philosophy.

The financial system has always attracted its share of corrupt and incompetent bankers, and there is no reason why it would be any different in the crypto world. The problem is that when speculators face substantial losses because of fraud and those losses are widely reported, it deters new speculation. Driving the price of crypto down.

Then a speculator might ask themselves, why not pick Tesla or Gamestop instead? Meanwhile, it reinforces the narrative of the old school system that its institutions are necessary for protecting the users of the system, further eroding the foundation myth.

The combination of the political mission undermined, efficiency not yet delivered, and speculators hurt suggests that crypto is about to enter its final, declining phase. Of course, that will not happen rapidly, and we will likely see crypto rallies. But unless something fundamental changes, it is the beginning of the end. Perhaps the financial authorities will lose even more control of inflation, boosting the foundation myth.

I don't think that would be sufficient by itself. The strength of crypto is decentralisation, but that is also the weakness. The crypto world can't prevent abusive firms like FTX from setting up shop. It even needs unregulated

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firms to facilitate speculation, and then has to live with the fallout when they fail. Meanwhile, the crypto enthusiasts have all their own views, diluting the messaging.

However, there is little public concern about crypto, either from a macro or microprudential perspective. Little suggests it poses a systemic financial threat to society. If anything, it is so small that it can't be systemic, unlike the old school, too-big-to-fail banks.

Crypto is a microprudential issue in so far as micro concerns itself with protecting the clients of the financial system. But people are allowed to take high risk – smoke, ride motorcycles, buy lottery tickets, jump out of aeroplanes, gamble and speculate on high-risk negative NPV investments. So if the authorities are fine with that, they should be OK with crypto too.

While it is the beginning of the end for crypto, it has brought much good by alerting us to all the inefficiencies and exploitation in the existing system, forcing the authorities and the private sector to reform. And that is the positive legacy crypto leaves. ■

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This article was originally published on VoxEU.

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Reflections on DeFi, digital currencies and regulation

Jon Cunliffe reflects on recent crypto market developments, and discusses the work that authorities are doing on the regulation of crypto stablecoins and a potential central bank digital currency

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I had intended to talk about the work the Bank of England, is doing with the Treasury, the FCA on the regulation of crypto stablecoins and our work on a potential central bank digital currency in Sterling. That remains the bulk of what I will talk about. But between beginning to draft these remarks and delivering them, we have seen what is probably the largest – and certainly the most spectacular – failure to date in the crypto ecosystem, by which of course I mean the collapse of the crypto trading platform FTX and most of its associated businesses.

So I thought it might be worthwhile to start with a brief look at the FTX implosion to frame some of the points I intend to make on regulation of the use of crypto-related technologies to provide financial services and on why, as a central bank, we are actively exploring the issuance of a digitally native Pound sterling.

Untangling exactly what happened at FTX will no doubt take a great deal of time, effort and investigation by the relevant authorities. For anyone interested in the scale of the challenge, I can only recommend a quick read of FTX's bankruptcy filing.

But while we will not know in full how it happened for some time, there do appear to be some general themes that are very familiar to those who regulate and supervise conventional financial firms and financial instruments.

The first are fundamental issues around how financial institutions should be organised, by which I mean their corporate structure, governance, internal controls and record keeping. Regardless of the financial service activity – be it banking, insurance, exchanges, clearing houses – regulation in the conventional financial sector imposes stringent/substantive requirements. Supervision aims to ensure that these are implemented.

These requirements reflect the risks inherent in financial services – risks to the users, risks to other financial firms and risks more broadly to the financial system. Technology in and of itself does not change the need for

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transparency in corporate structures, governance, audit and systems and controls – for example to protect customers' funds.

In a similar vein, and to prevent conflicts of interest, regulation imposes requirements and constraints on the connections between a financial firm and its affiliates, while also requiring controllers to be fit and proper. In this respect, transparency in corporate structures and the relationships between them is the key foundation.

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Our aim is to ensure that innovation can take place but within a framework in which risks are properly managed and which safeguards the sustainability of such innovation

The connections between activities carried out within the firm matter also. Lending, brokering, providing an exchange platform, clearing and settlement perform different economic functions that carry different risks.

For financial market infrastructure firms, such as a central counterparty or an exchange or custody of assets (both/all of which activities FTX sought to undertake, the regulatory system and international standards in place aim to stop these important pieces of financial market infrastructure from taking on credit/liquidity/market risk beyond what is absolutely necessary to discharge their core functions. Where they happen within one group, regulation requires separate, independent governance, to ensure the risks inherent in each is properly managed[1].

FTX, along with a number of other centralised crypto trading platforms, appear to operate as conglomerates, bundling products and functions within one firm. In conventional finance these functions are either separated into different entities or managed with tight controls and ring-fences.

It is worth noting that this bundling appears to have been primarily organisational rather than technological – that is to say, the functions were offered by different parts of the FTX group but were not bundled in the sense of being run as one single piece of code performing multiple functions. I will return to the question of integration of functions in smart contracts later on.

I have mentioned some familiar regulation issues around the organisation and governance of conventional financial firms. There appear, in the FTX case, also to be familiar issues around the financial instruments involved.

Collateral performs a variety of vital function in financial services. It protects lending counterparties from credit risk. It can also serve as margin in clearing processes. The higher the credit quality and lower the volatility of assets used

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as collateral, the better suited it is to serving as assurance against risk. For this reason, there are stringent, material conditions on collateral that can accepted, for example, in central counterparty clearing.

Unbacked cryptoassets are highly volatile, given that they have no intrinsic value. They are subject to runs and their value can change very quickly as we have seen in recent months.

Moreover, a firm accepting its own unbacked cryptoasset as collateral for loans and margin payments, as there are indications may have happened with FTX, creates extreme 'wrong way' risk – ie. when the exposure to a counterparty increases together with the risk of the counterparty's default[2].

Indeed, in the FTX case, there are indications that it could have been a run on its crypto coin, FTT, which triggered the collapse.

Moreover, protection of client funds is crucial. In many of these platforms the platform takes possession of the cryptographic keys and manages transactions on the ledger for a pool of assets. It is far from clear whether these practices deliver the assurance of either custody of assets in the conventional finance world or of a claim on the balance sheet in the way that occurs with accounts at a bank.

'Crypto' was born in unregulated space: indeed, part of the objectives of its early developers was to create a financial system outside regulation. While not yet of systemic scale, the crypto ecosystem has grown very rapidly in recent years and broadened to encompass a range of financial services.

The experience of the past year has demonstrated that it is not a stable ecosystem. Part of this is because, its foundation is completely unbacked instruments of extreme volatility that can swing wildly in value. But part is also

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because the crypto institutions at the centre of the much of the system exist in largely unregulated space and are very prone to the risks that regulation in the conventional financial sector is designed to avoid.

It is in part for this reason that, since September, the FCA has warned publicly on FTX that *"this firm may be providing financial services or products in the UK without our authorisation… you are unlikely to get your money back if things go wrong"*[3].

Some, of course, would argue that the answer is not proper regulation of the risks in centralised crypto platforms, like FTX, but rather the development of decentralised finance in which functions like lending, trading, clearing etc. take place through software protocols built on the permission-less blockchain.

In such a world, it is effectively the 'code' that manages the risks rather than intermediaries. And indeed, there is some tentative and limited evidence that the failure of FTX has stimulated some transfer of activity to decentralised platforms.

From the standpoint of a financial stability authority and a financial regulator, I have yet to be convinced that the risks inherent in finance can be effectively managed in this way. That scepticism is greater if the activity in question is the trading, lending, etc. of super volatile assets without intrinsic value.

The robustness and resilience of the permission-less blockchain has not been demonstrated at scale and over time. And some of the protocols themselves may carry risks – for example automatic liquidation of volatile collateral, no matter how rapid, does not remove the need for liquidity providers to avoid the amplification of fire sale dynamics.

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Moreover, it is not clear the extent to which these platforms are truly decentralised. Behind these protocols typically sit firms and stakeholders who derive revenue from their operations. Moreover it is often unclear who, in practice, controls the governance of the protocols.

More generally, as with driverless cars, they are only as good as the rules, programmes and sensors which organise their operations. We would certainly need a great deal of assurance before such systems could be deployed at scale in finance.

Against that background, the question – more pointed now, following the collapse of FTX - is whether we should bring the financial service activities and the entities that now populate the crypto world within the regulatory framework. And, if so, how?

My answer to the first question is that we should continue to bring these activities and entities within regulation, for three reasons.

First, and most obviously, the need to protect consumers/investors. Whether or not one thinks it is sensible to invest or trade in the highly speculative assets that make up most of the activity in the crypto world, investors should be able to do so in transparent, fair and robust marketplaces, with the protections that they would get in conventional finance.

There will probably always be some who prefer – for a variety of reasons – to invest and trade in an unregulated, opaque world. But we should not push the majority who do not want those risks into that world because there is no regulated alternative.

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My second reason is the need to protect financial stability. While the crypto world, as was demonstrated during last year's crypto winter and FTX's implosion is not at present large enough or interconnected enough with mainstream finance to threaten the stability of the financial system, its links with mainstream finance have been developing rapidly.

We should not wait until it is large and connected to develop the regulatory frameworks necessary to prevent a crypto shock that could have a much greater destabilising impact. The experience in other areas of digitalisation has demonstrated the difficulty of retrofitting regulation on new technologies and new business models after they have reached systemic scale.

It is, of course, possible that neither of these two reasons - investor protection and protection against financial stability risk - will be relevant because the very instability and riskiness of the world of unregulated crypto finance, most recently demonstrated by FTX, will in the end ensure that the sector cannot grow.

Indeed, some have argued for regulators grappling with the crypto world to keep it outside the regulatory framework to ensure that users' 'caveat emptor' concerns prevents both growth and connection with mainstream finance[4].

And that leads to my third reason.

Forecasting the direction and pace of technological innovation is an even more uncertain game than economic forecasting. Promising technologies fall by the wayside; unexpected ones flourish. And technologies combine in ways that cannot be anticipated.

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But the technologies that have been pioneered and refined in the crypto world, such as tokenisation, encryption, distribution, atomic settlement and smart contracts, not only seem unlikely to go away as our everyday lives become more 'digital', but may well have the potential to improve efficiency, functionality and reduce risk in the financial system.

A potential example of this is the integration of functions in 'smart contracts' that I mentioned earlier. A possible use case for such integration, which has been pioneered in the defi world is the combining the functions of trading, clearing and settlement of tokenised financial assets into a single, instantaneous contract, rather than being carried out in sequence by three separate institutions over a number of day.

This, if applied to 'real world' assets, like equities, could offer a substantial improvement in the efficiency of financial market infrastructure and reduce risks by enabling instant settlement – T plus now[5].

There are of course risks in such integration as I mentioned earlier, whether it happens organisationally or technologically. The Bank of England is working with the FCA and the Treasury to set up a regulatory 'sand box' for developers to explore whether and how those risks can be managed to the level of assurance we expect from the current system[6].

So my third reason for bringing the activities of the crypto world within the relevant regulatory frameworks is to foster innovation. This may appear counter intuitive to those who see regulation as opposed to innovation. But, as I have said before, 'people do not fly in unsafe aeroplanes'.

Innovation may start in unregulated spaces. But it will only be developed and adopted at scale within a framework that manages risks to existing standards.

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And by holding innovative approaches, using technological advance, to the same standards as existing approaches we can ensure that the benefits of new technology and new business models actually flow form innovation rather than from regulatory arbitrage.

This in turn, determines the answer to the second question of 'how' regulation should be extended to these areas. The guiding principle should be 'same risk, same regulatory outcome'. The starting point should be our existing regulatory frameworks – for investment products, for exchanges, for payments systems and other financial functions – and the level of assurance we require that the relevant risks have been managed.

Technological change and different business models may mean we have to find new ways to deliver that assurance. We should be under no illusions that this will always be an easy process. For example, as I have said, it remains for me a very uncertain question whether use of the permission-less blockchain could deliver the necessary level of assurance for activities that are integral to the stability of the financial system.

Our approach as regulators should be open – by which I mean we should be prepared to explore whether and if so how the necessary level of assurance – equal to that in conventional finance - could be attained. But we should also be firm that where it cannot, we are not prepared to see innovation at the cost of higher risk.

This is very much the approach we are looking to take in the UK for the extension of the regulatory framework to the use of crypto technologies and business models in finance. The Financial Services and Markets Bill, currently in Parliament addresses the regulation of payment systems using 'digital settlement assets' defined as 'digital representations of value' – in other words digital tokens representing money.

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The objective is to extend the current Bank of England and FCA regulatory regimes for e-money and payment systems to cover the use stablecoins for payments[7].

The powers in the Bill will extend not only to the systems for transferring such coins between parties to make payments, but to the issuance and storing of the coins. The Bank will have responsibility for such payment systems which are systemic or likely to become systemic. This will apply whether such systems exist to make payments for real things or for cryptoassets should the latter activity become systemic in scale.

We intend early next year to consult in detail the regulatory framework that will apply to such systemic payment systems and the services, like wallets, that accompany them. In doing so, we will be guided by the principle of 'same risk, same regulatory outcome' set out above.

In the case of stablecoins used as money to make payments, the regulatory outcome has been expressed by the Financial Policy Committee of the Bank as an expectation that stablecoins used in systemic payment chains should meet standards equivalent to those expected of commercial bank money. And that's in terms of stability of value, robustness of legal claim and the ability to redeem at par in fiat[8].

Some of the likely foundational features of the regulatory regime on which we will consult are already clear. The FPC made clear last year that to deliver that regulatory outcome *"regulatory safeguards will be needed for a non-bank systemic stablecoin to ensure that the coin issuance is fully backed with high quality and liquid assets, alongside loss absorbing capital as necessary, to compensate coinholders in the event that the stablecoin fails"*[9].

It also made clear that in the absence of deposit protection for coinholders, other elements of the regime would need to be strengthened to deliver the necessary level of assurance.

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The consultation will set out in more detail how the coinholders' claims on the stablecoin issuer and wallets should be structured to deliver redemption at par in line with commercial bank money, how the backing assets should need to be managed to ensure they are always available to meet redemptions and, more generally the requirements for corporate structure, governance, accountability and transparency necessary to meet the standards we expect in other parts of the financial system that carry out the same functions. The FTX example underlines how important these aspects are.

The legislation covers the use of crypto technologies for the payments function. The Treasury intends to consult in the near future on extending the investor protection, market integrity and other regulatory frameworks that cover the promotion and trading of financial products to activities and entities involving cryptoassets. At present, in the UK, it is, to a large extent, only the anti-monetary laundering regulatory framework which applies to these activities and entities.

Finally, let me turn to our work with the Treasury on central bank digital currency, or, to put it more plainly on the issuance by the Bank of England of a digitally native pound sterling. Our plan remains to issue a consultative report around the end of year setting out the next steps that we propose.

Recently I have had a few comments both to the effect that the collapse of FTX shows that we need to get on and issue a digitally native pound – and to the effect that FTX shows that we do not need do so.

My initial reaction to both points of view was that there really was no connection between FTX and our work on a digitally native, general purpose form of Bank of England money, for use by households and businesses in making payments.

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But on reflection, I think I understand the comments better. FTX in particular and the crypto ecosystem in general are emblematic of these new technologies and the possibility that they might revolutionise financial services and the forms that money takes in our economy.

For some perhaps the lesson is that tokenisation and digitalisation of finance should not take place in unregulated space and, moreover, needs to be underpinned by a robust and reliable of digital settlement asset.

For others, the message is perhaps that the crypto world and its technologies are a very long way from influencing, let alone changing, the way financial services, including payments, are delivered at scale in the real world.

It is, as I said earlier, very difficult to predict which technologies will be successful and when and how they might begin to change the way we do things. The bursting of the dot.com bubble in the early years of this century did not herald the end of the development of internet commerce though it took longer than its original enthusiasts imagined and emerged in a very different form, dominated by big tech platforms.

Our work on a digitally native pound is driven by the trends we now see both specifically in payments, including the reducing role of cash, and more generally in the increasing digitalisation of daily life.

It is motivated by two primary concerns.

First, that in a world in which new, tokenised forms of money emerge, enabled by new technology, we remain able to ensure that all forms of money that circulate in the UK are robust, interchangeable without loss of value and denominated our unit of account – the pound sterling.

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Physical cash plays a role in ensuring that, at present, all forms of commercial bank money in the UK have to be redeemable in cash - Bank of England money - on demand in cash and without loss of value. Given the trends away from physical cash, which cannot be used in an increasingly digital economy, and, potentially, towards new forms of tokenised money, a digital pound may be needed in future to fulfil the same function.

Second, to ensure that there can be competition and innovation in the development of new functionalities using tokenised money. Given the network externalities around money and the likely cost of developing robust and risk managed tokenised money like stablecoins, it is possible that the development of digital settlement assets will converge on a few large players who will dominate and perhaps control innovation in payment services.

We have seen a similar dynamic in the emergence of large internet platforms and marketplaces. A digital pound would provide a digital settlement asset available to a wide variety of private sector innovators and developers of payment services.

The first concern is primarily for central banks, charged with ensuring the stability of money in the economy. The second is more of a concern for government. And of course there are other motivations, such as financial inclusion and resilience.

I do not have the time to go into those in detail, and, in any event, I do not wish to pre-empt the report on the next steps for this work that we and the Treasury intend to issue soon. But I do want to emphasise that this work, and any future decision to introduce a digitally native pound should not be seen in the context of the status quo but rather in the context how current trends in money, payments and technology might evolve.

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And above all, in this, as in the work on regulation that I discussed earlier, our aim is to ensure that innovation can take place but within a framework in which risks are properly managed and which safeguards the sustainability of such innovation. The FTX events provide a compelling demonstration of why that matters. ■

Sir Jon Cunliffe is Deputy Governor, Financial Stability, at the Bank of England

Endnotes

1. 'CPSS-IOSCO Review of Standards for Payment, Clearing and Settlement Systems. (2010)'.

2. The intuition here is generally quite familiar to people - you probably would think twice before buying fire insurance from a company being run out of the house next door for example.

3. Information for FTX customers | FCA.

4. For an argument of this position see for example 'Let Crypto Burn: Just say no to legitimacy-inferring regulation' – FT Alphaville (17.11.2022).

5. See the discussion of the potential risks and benefits in Cunliffe (2022): 'Innovation in post trade services - opportunities, risks and the role for the public sector'.

6. Financial Services and Markets Bill – Articles 21 and 22.

7. The Banking Act 2009 provides the statutory basis for the Bank's oversight of payment systems. It allows HM Treasury to recognise systems for supervision by the Bank of England as part of the Bank's objective to maintain UK financial stability.

8. Bank of England Record of the Financial Policy Committee Meeting 13 December 2019.

9. Bank of England Record of the Financial Policy Committee Meeting 24 March 2022.

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The views expressed here are not necessarily those of the Bank of England, the Monetary Policy Committee or the Financial Policy Committee. I would like to thank Amy Lee, Teresa Cascino, Emma Butterworth, Katie Fortune, Bernat Gual-Ricart, Jenny Khosla, Grellan McGrath, Marilyne Tolle, Andrew Walters, Daniel Wright and Cormac Sullivan for their help in preparing the text. This article is based on a speech given at Warwick Business School's Gilmore Centre Policy Forum Conference on DeFi & Digital Currencies, November 2022.

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A global climate risk capital

Helen Souza discusses Bermuda's push to become the global climate risk finance capital

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Bermuda is already known as the world's risk capital but now has its sights on becoming the world's climate risk capital, addressing critical needs in key markets, and closing the global protection gap while creating new economic growth opportunities.

Bermuda is unique because it is simultaneously one of the world's most significant property catastrophe (re) insurance markets, as well as a premier captive domicile and the leading global issuer of Insurance Linked Securities (ILS). The climate vertical perfectly complements Bermuda's globally recognised strengths, as well as the professional services expertise which has built up over multiple decades on the ground.

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Helping to close the global protection gap

Just as Bermuda played a critical role helping high risk regions bolster their financial resilience to the rising tide of climate peril (ie. hurricane/tropical storm, wildfire, flood, and other climate-driven property risks) Bermuda will play a leading role in climate risk finance, supported by third party capital and potential new start-ups focusing on innovative technology.

The purpose of the Bermuda Business Development Agency (BDA) is to promote and protect, in collaboration with government and the private sector, sustainable and equitable economic growth, diversification, and prosperity in Bermuda. The BDA is seeking to attract new climate risk finance companies to the Island, offering exciting new career paths for Bermudians.

Bermuda's push to become global climate risk finance capital

To many, Bermuda's climate risk finance drive officially began with the Bermuda Government's climate change commitment announcements on Earth Day, April 22, 2021, and the BDA's first climate risk finance roadshow in New York City in September 2021.

Across four days, from September 27-30, the BDA delegation – led by Bermuda's then Minister of Finance, the Hon. Curtis Dickinson, JP, MP – held 16 meetings with key decision makers from some of New York's leading law firms, advisers, and asset managers. These firms represented revenues of $3.28 billion and maintain offices in 54 cities worldwide.

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Bermuda has built a notable wealth of climate change-related risk experts on the ground over the past three decades

After this first strong showing of support, further outreaches were held at the 26th United Nations Climate Change Conference (COP26) in Glasgow as well as in London, UK in October 2021.

As COVID-19 restrictions started to improve on-Island, the BDA held its inaugural Bermuda Risk Summit from March 14-16, 2022, attracting over 80 delegates from overseas. It was so great to get off zoom and connect with everyone again, and the immediate economic impact of the event, which had a total of 350 delegates, including lodging, transportation, food and beverage, retail and recreation was estimated at over one million dollars, and supported around 200 jobs.

The successful Bermuda Risk Summit was followed by climate risk finance roadshows in San Francisco and Silicon Valley in April, and New York in May.

Also in May, the BDA led a two-day, invite-only Bermuda Climate Summit on May 24, that drew some 150 attendees, including 70 from overseas, to discuss myriad wide-ranging climate issues, including the science of climate change, the regulatory needs of green investors, and Bermuda's leadership role in this new era.

Building on these successes, the BDA championed Bermuda's climate credentials during business development missions to London in June, Toronto in September, and Singapore in October.

To round off a busy year, the BDA is excited to be heading to COP27 in Sharm El Sheikh, Egypt in November, to provide updates on Bermuda's vision to be a global leader in climate risk finance, including developing solutions, and financial mechanisms to mitigate the impact of climate risk.

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Bermuda is already an expert in climate risk finance

At all of these speaking opportunities, meetings and events, the BDA reminded climate risk finance prospects that Bermuda has built a notable wealth of climate change-related risk experts on the ground, including scientists in the public and third sectors, over the past three decades.

For example, the Bermuda Institute of Ocean Sciences (BIOS) has a rich history of supporting the (re)insurance sector; reaching as far back as 1994 when it established the Risk Prediction Initiative (RPI) a collaboration of BIOS scientists and (re)insurance experts.

In addition, Bermuda's integrated financial services regulator, the Bermuda Monetary Authority (BMA) also understands the importance of climate change issues, and in April 2021 announced the creation of an innovation and ESG subject matter team to increase its focus on climate change matters. This work progresses; in May 2022, the BMA released its most recent *Climate Risk Exposure Report*.

Committed to climate – learn about our aspirations

As an isolated 21 square mile island, located 640 miles from the closest point of land, Bermuda feels the effects of climate change first-hand in the form of increasingly frequent and severe storms, erratic rainfall, and rising sea levels.

If you would like to find out more about Bermuda's aspirations to become the world's climate risk finance capital, or want to get in touch with the BDA's dedicated concierge service to make your entry into Bermuda as smooth as possible, please contact us at info@bda.bm

Helen Souza is the Business Development Manager at the Bermuda Business Development Agency (BDA)

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The European Climate Law and the ECB

The EU has adopted the European Climate Law. Frank Elderson considers how the ECB will be affected

A topic close to my heart – apart from the law – is the ongoing climate and environmental crises. I am glad that we have long since moved on from the time when only scientists and activists were concerned with this topic. It is now high on policymakers' agendas, as we saw at the recent United Nations Conference of Parties (COP27) at Sharm el-Sheikh, at which – along with world leaders and a wide range of policymakers and interest groups – the ECB was also represented.

I was struck by one story in particular[1]. The tiny Pacific nation of Vanuatu is badly exposed to cyclones and rising sea levels. To the inhabitants of Vanuatu, climate change is a human rights issue. And, as Vanuatu's president, Nikenike Vurobaravu, stated, *"we are measuring climate change not in degrees of Celsius or tonnes of carbon, but in human lives."*

Vanuatu now plans to ask the UN General Assembly to seek an opinion from the International Court of Justice on the human rights implications of the climate crisis. That opinion could determine the rights of countries most exposed to climate change. It could also touch on the obligations of those most responsible for driving the climate crisis.

Let's now focus on Europe and the possible implications of these developments in international law for my own institution, the ECB. Under the Paris Agreement adopted at COP21 in 2015, many countries committed to the long-term goal of holding the increase in the global average temperature to well below 2°C above pre-industrial levels[2].

To fulfil its commitment as one of parties to the Paris Agreement, the EU last year adopted the European Climate Law[3]. The implications of the Climate Law are significant. Before going into why, let me first explain what the Climate Law does.

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The Climate Law has three key elements. The first is its objective that the EU reduce its greenhouse gas emissions by at least 55% by 2030, with a new reduction target to be set for 2040. The EU should achieve climate neutrality by 2050 and aim to achieve negative emissions thereafter.

The second important element is to ensure that we move towards that objective. The European Commission has established a framework for assessing concrete progress and checking whether national and Union measures are consistent with the objective. It will issue regular reports on the conclusions of these assessments.

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If we waiver, the costs will only increase both in a moral and financial sense. I will be even more forceful: our mandate requires us to be ready

The third and last element is to ensure that we use the most effective instruments to achieve the objective. The introduction of a European Scientific Advisory Board on Climate Change promotes the idea that all policies should be based on up-to-date scientific insights.

It is hard to overstate the importance of the Climate Law. The EU is setting the bar high. Allow me to quote what the law says about the transition to climate neutrality. It *"requires changes across the entire policy spectrum and a collective effort of all sectors of the economy and society […] all relevant Union legislation and policies need to be consistent with, and contribute to, the fulfilment of the climate-neutrality objective while respecting a level playing field"*[4].

We are starting to see this happen. From housing to energy and from transport to finance, the EU is introducing reforms to put Europe on track to become the first climate-neutral continent by 2050.

So how will the Climate Law affect the ECB? For me, as a member of the ECB's Executive Board and the Vice-Chair of its Supervisory Board, this question is relevant to both our monetary policy and banking supervision tasks.

This question matters because, in the field of the environment, the ECB is a policy taker, not a policymaker. So what does the ECB need to take from the policy and objectives reflected in the Climate Law? To answer this, we first need to consider whether the ECB is bound by the Climate Law. If so, the ECB would have to take measures towards achieving the climate-neutrality objective.

There is more, though. If the ECB is bound by the law, it would also have to ensure continuous progress in enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change. Moreover, it would have to ensure that its policies on adaptation are coherent with and supportive of other such policies in the Union[5].

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That is quite a full plate. So, is the ECB bound by the Climate Law? There are definitely indications that it is. The Climate Law is addressed to *"relevant Union institutions and the member states."* In the European Anti-Fraud Office (OLAF) judgment[6], the European Court of Justice made it clear that, in principle, the ECB is bound by all regulations which bind the Union. There is no distinction to be made between the different institutions, bodies, offices and agencies. All are equal under the law, so to say.

However, the word 'relevant' is ambiguous. Does it refer to any institution, where relevant? That would mean that every EU institution should comply with the Climate Law, whenever it develops policy or takes action relevant to the objective of the law.

Or does it refer only to those institutions with competence to create policy relevant to achieving the objective of the Climate Law? The ECB would be directly bound by the law under the first interpretation but not under the second.

The Climate Law is not crystal clear on this point. It does not define 'relevant institution'. But there are a number of strong indications that the ECB is not a relevant institution under the Climate Law. Let me explain why.

The Climate Law does not contain many specific obligations. The law sets out a destination: climate neutrality. It does not tell us how to get there. How we do so will depend on environmental and economic policymaking. This is a Union competence the ECB does not have.

There are further arguments that support this interpretation. If the ECB is deemed to be a relevant institution, then it would have to submit its policies to the Commission for assessment and the Commission would monitor progress.

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That would be a fundamental change to the ECB's accountability framework. Under current law, the ECB is only directly accountable to the European Parliament and the European Court of Auditors[7].

A final reason for this view is institutional. If the ECB were deemed to be a relevant institution within the meaning of the Climate Law, this would be an implicit acceptance that the Council of the EU and the Parliament could set additional objectives for the ECB through the ordinary legislative procedure.

However, the ECB's objectives are laid down in the Treaty on the Functioning of the European Union (TFEU)[8], and their scope cannot be changed by secondary legislation. That would be a violation of the Treaty. Changing the ECB's objectives requires a special procedure.

The ECB is – it seems – not directly bound by the Climate Law. So, can we ignore it? Not at all. To do so would be a violation of the Treaties. Article 11 of the TFEU provides that environmental protection requirements must be *"integrated into the definition and implementation of the Union's policies and activities."*

This imposes an obligation on the ECB to take into account and consider the objectives of the Climate Law when performing its tasks. In addition, Article 11 could be understood as supporting measures which incorporate environmental considerations as secondary aims. This means the ECB could rely on Article 11 to support the climate neutrality dimension of measures falling within its monetary policy or supervisory competences.

But it does not go so far as to establish an autonomous competence to adopt environmental measures. In addition, under Article 7 of the TFEU, the activities and policies of the ECB need to be consistent with Union law and therefore also with the Climate Law.

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We have diligently assessed how these provisions of the Treaty, together with the Climate Law, affect our tasks, always being guided by and staying within our mandate. The ECB is not an environmental policy institution. The ECB is a central bank and banking supervisor. As such, let me share with you what we have done to reflect these legal requirements in the common fight against the climate crisis within our mandate.

First of all, when defining and implementing monetary policy, we need to take into account environmental protection requirements, such as the climate-neutrality objectives contained in the Climate Law. And that is what we have done. Last year the Governing Council adopted a comprehensive action plan[9] to further incorporate climate change considerations into its monetary policy framework.

There are a number of actions to which the ECB is committed under this plan. Let me now give a very concrete example of how the ECB has taken into account climate change considerations in the context of its corporate sector purchase programme (CSPP).

Under the CSPP, the Eurosystem purchases corporate bonds for monetary policy purposes. Right now we are in the reinvestment phase which means that we are no longer increasing our portfolio but only reinvesting bonds that mature. Up until October 2022, the Eurosystem purchased these bonds in accordance with the 'market benchmark'.

However, owing to the way the corporate bond market functions, this 'market benchmark' has been criticised as leading to the purchase of a larger proportion of bonds from carbon-intensive firms.

Therefore, from October 2022, the ECB started to implement its decision to 'tilt' CSPP reinvestments to increase the share of assets from issuers with better climate performance, rather than those with poorer climate performance. There are two main reasons for this decision.

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First, the ECB considered this essential in order to effectively pursue its primary objective of maintaining price stability. Given that carbon-intensive issuers are more vulnerable to physical and transition risks arising from climate change, large holdings of bonds from such companies pose higher financial risks to the Eurosystem's balance sheet, which has an impact on the implementation of its monetary policy.

Second, 'tilting' the CSPP also serves the ECB's secondary objective of supporting the general economic policies in the Union. 'Tilting' its corporate bond reinvestments towards 'greener' companies enables the ECB to align these reinvestments with the objectives set out in the Climate Law, which form part of those economic policies. This action was assessed as also being conducive, and not prejudicial, to price stability.

More generally, this measure ensures that the CSPP complies fully with the ECB's obligations under Article 11 TFEU by integrating the objectives of the Climate Law into the definition and implementation of the ECB's policies and activities.

This is one of the first steps in the ECB's climate action plan, but the ECB is also looking into other ways to take climate-neutrality objectives into account in its monetary policy – for example, through the collateral that we ask when providing liquidity to banks.

For banking supervision, there are several dimensions that I will briefly discuss. Again, we do not directly apply the Climate Law. The Climate Law does not directly relate to our tasks as a banking supervisor nor does it relate to prudential supervision. Therefore the ECB does not impose an obligation on banks to take the necessary measures to contribute to the achievement of the objectives of the Climate Law.

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However, we cannot ignore it. Not only because we need to integrate environmental obligations into our policies due to Article 11 TFEU, but also since the law will have prudential implications. Therefore, the Climate Law and its consequences feature in our supervisory assessments, interactions with the banks and measures we take.

Why is that? Banks will be at the forefront of the energy and climate transition, whether they want to be or not. Their clients will face increasing hazards from climate change and environmental degradation as well as increasing regulation. Some clients will have to wind down their operations, others will be stuck with stranded assets.

A mandatory energy label has been introduced for real estate[10], affecting the value of banks' mortgage portfolios. Therefore, the ECB has identified exposure to climate-related and environmental risks as a key risk driver in the Single Supervisory Mechanism (SSM) Risk Map for the euro area banking system[11].

In order to guide banks regarding their risk management, the ECB has published supervisory expectations in its *Guide on climate-related and environmental risks*[12]. In addition, we have conducted a comprehensive review of banks' practices related to strategy, governance and risk management on climate risks – the 2022 thematic review.

We will continue to set expectations for banks to progressively manage risks on this front. These expectations are certainly not open ended. By the end of 2024, banks need to be in full compliance with all the supervisory expectations we set out in 2020.

Banks need to build their capabilities to withstand climate and environmental risks. We are happy that the Commission and the Council have acknowledged that this needs to have a foundation in prudential regulation as well. In the new banking package, the concept of 'transition plans' is important.

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Under Article 76 of the proposed amendments to the Capital Requirements Directive (CRD VI)[13], a bank's management board is required to monitor and address environmental risks arising in the short, medium and long term[14].

Banks have to make sure that their business model and strategy are not misaligned with the relevant Union policy objectives towards a sustainable economy and they need to manage potential risks from such misalignments.

Article 11 TFEU, the requirement to integrate environmental requirements into the policies and activities of the Union, plays a role in supervision. The ECB has a duty to integrate the Climate Law's neutrality objectives into its supervisory policies and activities. However, we have some discretion as to how we do this.

After all, the climate neutrality objective affects the ECB's mandate in many respects and Article 11 TFEU does not prescribe how the ECB should integrate the environmental requirements. Do not expect us to act to regulate or enforce environmental policies.

We will stick to our mandate. Our mandate is to keep under control the risks that banks and the financial system are facing, and in that capacity we have to look closely at the risks that are building up in the banking sector as a consequence of the climate crisis.

Lastly, I would like to draw your attention to the work of the Central Banks and Supervisors Network for Greening the Financial System (NGFS). In November 2021 the NGFS published an important report on climate-related litigation[15] which seeks to raise awareness about the growing source of litigation risk for public and private actors not convincingly supporting the climate change transition.

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Understanding the risks arising from climate-related litigation is clearly crucial for central banks and supervisory authorities, and the NGFS is continuing to monitor this field carefully. It plans to publish a further report next year with an update on the many developments since 2021.

I hope I am leaving you with the right impression. The ECB is not an environmental activist, but rather a prudent realist. It is our job to point out risks, whether they are macroeconomic, macroprudential, microprudential or related to litigation, and to ensure that the financial sector takes them duly into account.

Before I finish, let's turn back to the brave fight of Vanuatu. You cannot blame Vanuatu's president for seeking to defend the rights of countries most exposed to the ongoing climate and environmental crisis. Nor can we blame him for wanting to impose obligations on those most responsible for driving the crisis.

Vanuatu's mission is a stark example what the fight against the climate crisis is about. It underpins the task we have on our side. Europe has realistically no other choice than to deliver on the objectives of the Paris Agreement.

If we waiver, the costs will only increase both in a moral and financial sense. Speaking as a European citizen, I would like us to be ready for the challenge ahead. As European central banker, supervisor and scholar of the law I will be even more forceful: our mandate requires us to be ready.

Frank Elderson is a member of the Executive Board of the European Central Bank

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Endnotes

1. "The looming legal showdown on climate justice", Financial Times, 10 November 2022.
2. Article 2(1)(a) of the Paris Agreement.
3. Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ("European Climate Law") (OJ L 243, 9.7.2021, p. 1).
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7. Article 284(3) TFEU and Article 15.3 of the Protocol on the Statute of the European System of Central Banks and of the European Central Bank.
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14. See also Articles 73 and 74 CRD VI.
15. "Climate-related litigation: Raising awareness about a growing source of risk", NGFS, November 2021.

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This article is based on a speech delivered at the Lustrum Symposium, organised by Dutch Financial Law Association, Amsterdam, 1 December 2022.

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Scaling up sustainable finance

Ulrich Volz and Dirk Schoenmaker discuss the climate investment and SDG financing gap

Emerging market and developing economies (EMDEs) have enormous investment needs in climate mitigation and adaptation as well as other areas to attain better and more inclusive economic, social and ecological conditions and to achieve the Sustainable Development Goals (SDGs). Most countries in the Global South also face significant impacts and risks from climate change and nature loss that need to be accounted for by the financial sector.

Before COVID-19, the UN estimated that developing countries were facing an annual financing shortfall of $2.5 trillion for advancing the SDGs and the Paris climate goals. The pandemic has widened this financing gap substantially. There clearly is a need to scale up financing for development, and to make sure that all financial flows are aligned with climate and other sustainability goals.

The trajectory to date suggests that international private capital flows are unlikely to fill the gap, despite new ambitious initiatives like the Glasgow Financial Alliance for Net Zero (GFANZ) that aim to mobilise private climate finance to emerging and developing economies.

Likewise, official development assistance (ODA) from the member countries of the Organisation for Economic Co-operation and Development's Development Assistance Committee (DAC) – which accounted for $179 billion in 2021 (OECD 2022) – and from other donors can provide important impetus to further economic development and help to leverage private international finance, but it will not be nearly enough to meet climate investment needs and the SDGs.

To address the climate investment and SDG financing gap, mobilising domestic financial resources through the local banking system and capital markets and channelling them into domestic investments will be crucial. The successful implementation of low-emission development strategies and National Adaptation Plans can only be

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achieved if domestic resource mobilisation is strengthened. Multilateral funds and development finance institutions need to complement domestic investments with grants and concessionary finance (Kraemer *et al* 2022).

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Tackling climate change is a global and urgent issue, and so is the Agenda 2030. We need to join forces, and learn from each other, to scale up sustainable finance and investment in the North and the South

A new CEPR eBook (Schoenmaker and Volz 2022) brings together a group of eminent scholars and practitioners who examine the challenges and opportunities of scaling up sustainable finance and investment in the Global South, and who review existing practice.

The first part of the eBook comprises thematic chapters discussing the role of different stakeholders and instruments. The second part comprises regional and country case studies.

EMDEs savings go to developed markets

Currently, a large portion of EMDEs savings is invested – often at low or negative returns – in financial centres in advanced countries. These capital exports are often channelled back to EMDEs in the form of high-yielding, short-term debt or portfolio investments, which increase financial vulnerabilities.

Over the past decades, many EMDEs, particularly in Asia and the oil-producing Middle East, have been running current account surpluses and building up foreign currency reserves as well as overseas assets. Between 2000 and 2021, EMDEs excluding China accumulated current account surpluses of $892 billion ($4.8 trillion including China).

These are only net capital exports; gross capital exports are much larger. In other words, while capital should be flowing from advanced countries, where it is abundant, to developing economies, where investment needs are much larger, aggregate capital flows are going in the other direction – they are flowing 'uphill'.

Even in countries that are net capital importers (including most countries in sub-Sahara Africa), significant amounts of domestic savings are invested abroad in safe, hard-currency assets, instead of the local economy.

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There are various reasons why developing countries may export capital, including a desire to build up foreign exchange reserves to build buffers and cushion against shocks; the repayment of old debt; a diversification of investments; domestic financial and macroeconomic instability; political instability; illicit flows; and a lack of long-term investment opportunities at home due to underdeveloped capital markets.

Strengthening domestic financial resource mobilisation is key

Going forward, efforts need to be reinforced to strengthen domestic financial resource mobilisation for scaling up local climate-friendly, sustainable investments and reducing capital exports from developed to advanced economies.

A key element here is the development and strengthening of local currency bond markets. Digital technologies – including artificial intelligence, distributed ledger technologies, and the internet of things – provide an opportunity for emerging markets to develop new, innovative fundraising approaches and reinvent how capital market infrastructure and instruments are built to serve the specific financing needs of companies in emerging markets, as well as the needs of the local investor base (Chen and Volz 2021, Dikau *et al* 2022).

Fintech and blockchain-based solutions can facilitate domestic resource mobilisation for sustainable investments and at the same time improve the implementation of infrastructure projects throughout the entire life cycle by facilitating processes and enhancing transparency (Chen and Volz 2021).

The tokenisation of bonds and shares can enable citizens in emerging markets to become investors with smaller amounts of savings, while digital aggregation of these micro-investments helps to raise additional sustainable investment capital.

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For instance, the Government of Kenya has raised money for infrastructure projects by issuing retail bonds that could be bought by small-scale individual investors on their mobile phone. Such approaches have the added benefit of not only unlocking more local currency capital, they also help to diversify the investor base with local investors (Dikau *et al* 2022).

This also helps to shift accountability and interest payments from often being a relationship between the government (for government securities) and foreign creditors to also becoming a relationship between the government and the national population.

Activating institutional investors and multilateral development banks

While tokenisation helps to attract a new investor base, there is also a need for aggregation to entice institutional investors, both domestic and foreign, who usually have minimum investment requirements (Schoenmaker and Schramade 2019).

Aggregation is needed as many renewable energy and energy efficiency projects are small in scale. Through standardisation and aggregation, smaller loans and assets can be bundled to reach the size institutional investors are demanding. Efforts should thus be undertaken to grow aggregation facilities to enable smaller borrowers (including corporations and municipalities) to tap capital markets.

For example, municipal finance agencies, modelled on those in Europe and North America, could be set up to borrow on wholesale markets – supported in an establishment phase by guarantees from the government or multilateral development banks (MDBs) – and channel funds to small and medium-sized cities.

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MDBs as well as national development banks (NDBs) need to assume a much greater role in financing infrastructure development and in advancing a just transition to a low-carbon, climate-resilient economy than they have done so far.

To achieve the Paris climate target of limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C, high upfront investment is needed. This constitutes a big problem for EMDEs given that they face much higher cost of capital (Figure 1), a problem that is further aggravated by their climate vulnerability (Buhr *et al* 2018, Kling *et al* 2018).

Concessional finance by MDBs is even more important at a time when interest rates across the major advanced economies are rising, a large number of EMDEs are facing severe debt problems, and private capital flows to EMDEs are drying up.

Because MDBs can refinance themselves cheaply, they can provide much-needed concessional financing to EMDE governments. Importantly, both MDBs and NDBs – whose missions should be updated with the goal of supporting a just, net-zero transition – can use a tried-and-tested method of leveraging private sector finance for development: they can issue (sustainable) bonds and borrow from markets.

MDBs in particular can absorb large amounts of private domestic and international capital at cheap rates and on-lend it to developing country governments at low rates, or directly finance projects through equity or loans.

Empowering national development banks

MDBs and development finance institutions, along with global funds such as the Green Climate Fund, the Global Environment Facility and the Climate Investment Funds, can also capitalise existing or new NDBs and make sure

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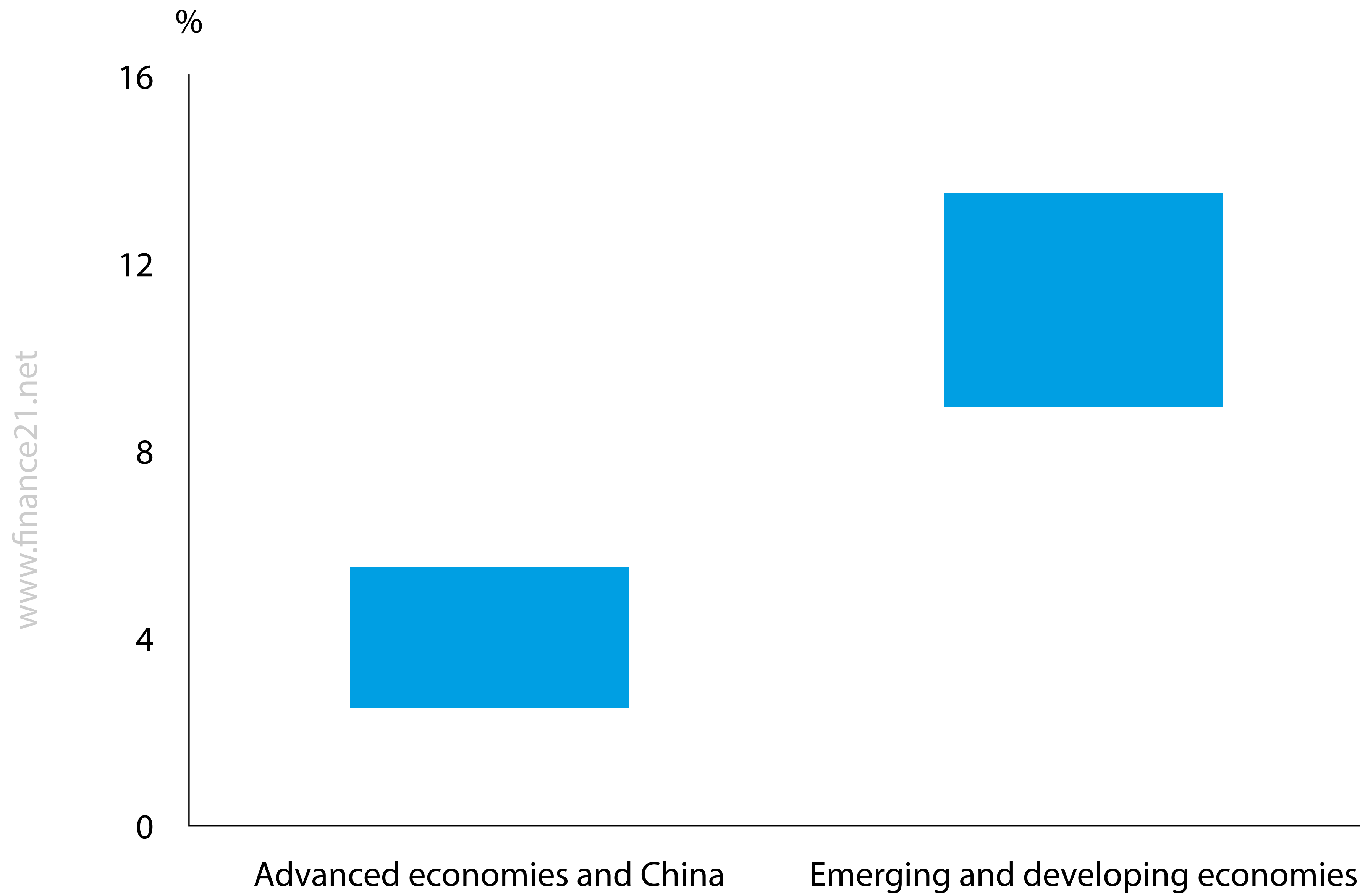
Figure 1. Cost of capital for a solar PV project, 2021



Source: IEA (2021).

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they have high governance standards. They can thus improve the standing and credit ratings of NDBs in capital markets and help them raise further capital in private markets more cheaply.

As mission-oriented institutions, national and international public development/climate banks can finance activities with uncertain returns and positive externalities that private finance is unwilling to fund (Griffith-Jones and Ocampo, 2018).

Importantly, key areas of development such as physical infrastructure, education, and healthcare will (and should) never generate the returns that private investors are looking for, creating a gap that NDBs and MDBs need to fill.

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While domestic resource mobilisation needs to be a priority for most emerging economies, efforts should also be undertaken to attract more patient international capital. Country platforms, which are now being explored by GFANZ, could act as aggregation facilities that attract international private capital.

However, expectations need to be set straight. Whereas targeted public subsidies can be catalytic for financing development, limited amounts of ODA must be employed carefully and should not be used to de-risk private investment and guarantee double-digit returns for international banks and asset managers. If public guarantees are involved, the public should also reap the benefits and not merely take potential losses to safeguard private returns.

Getting the framework conditions right

The availability of capital at affordable cost is just one precondition to unleash the potential for long-term sustainable investment. A critical factor for any kind of private investment, be it national or international, is to get the broader framework conditions right. Besides political and macroeconomic stability, investors need predictable and transparent national laws and administrative procedures for investment operations.

It will be also important to address the looming debt crisis in the Global South that is impeding much-needed investment. Governments that are overindebted cannot invest, and countries facing a sovereign debt crisis will not attract private investment either.

Many EMDEs will need to have their debt restructured before public and private investment can resume. The G20 should therefore reform the Common Framework and turn it into a useful structure for delivering speedy and efficient debt relief for all EMDEs (and not just low-income countries) that need it.

Debt relief should not only provide temporary breathing space; it should empower governments to lay the foundations for sustainable development by investing in strategic areas of development, including health, education, digitisation, cheap and sustainable energy, and climate-resilient infrastructure (Volz *et al* 2020, 2021).

Debt relief should hence be linked to strategies that align the policies and budgets of debtor countries with the Agenda 2030 for Sustainable Development and the Paris Agreement.

Concluding remarks

Concerted efforts are needed to scale up sustainable finance and investment in the Global South. There are no silver bullets, but a host of measures that can help to generate much-needed investment in climate action and other areas needed for achieving the SDGs.

There is an urgent need to take stock of current approaches to mobilising and scaling domestic and international climate and development finance; assess the successes, limitations, and failures of these approaches; and put forward policy recommendations for development cooperation for helping partner countries in strengthening domestic financial resource mobilisation and attracting patient international capital.

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Tackling climate change is a global and urgent issue, and so is the Agenda 2030. We need to join forces, and learn from each other, to scale up sustainable finance and investment in the North and the South. ■

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This article was originally published on VoxEU.

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