

BIS Papers

No 131

The future of the monetary system

Monetary and Economic Department

December 2022

The views expressed are those of the authors and not necessarily the views of the BIS.

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ISSN 1682-7651 (online)

ISBN 978-92-9259-624-8 (online)

Foreword

The 21st BIS Annual Conference took place in Basel, Switzerland, on 24 June 2022. The event brought together a distinguished group of central bank Governors, leading academics and former public officials to exchange views on the topic “Central banking after the pandemic: challenges ahead”. The papers presented at the conference are released as BIS Working Papers, nos 1060, 1061, 1062 and 1063.

BIS Papers no 131 contains panel remarks by Lael Brainard (Vice Chair, Board of Governors of the Federal Reserve System), Stefan Ingves (Governor, Sveriges Riksbank) and Eddie Yue (Chief Executive, Hong Kong Monetary Authority).

Programme

Friday 24 June 2022

- 9:00–9:05** **Welcome** **Hyun Song Shin**, Bank for International Settlements
- 9:05–10:20** **Session 1: Inflation and production networks**
- Chair **Joachim Nagel**, Deutsche Bundesbank
- Speaker **Jennifer La’O**, Columbia University
- Discussants **Şebnem Kalemli-Özcan**, University of Maryland,
College Park
- Frank Smets**, European Central Bank
- 10:20–10:45 **Coffee break**
- 10:45–12:00** **Session 2: Inflation anchors**
- Chair **Rosanna Costa**, Central Bank of Chile
- Speaker **Ricardo Reis**, London School of Economics and
Political Science
- Discussants **Signe Krogstrup**, Danmarks Nationalbank
- Federico Sturzenegger**, Harvard Kennedy School
- 12:00–12:30** **Lunch keynote: Regulating big tech**
- Speaker **Luigi Zingales**, University of Chicago, Booth School of
Business
- 12:30–14:00 **Buffet lunch**
- 14:00–15:15** **Session 3: Cryptoassets**
- Chair **Tiff Macklem**, Bank of Canada
- Speaker **Antoinette Schoar**, MIT Sloan School of Management
- Discussants **Tobias Adrian**, International Monetary Fund
- Bruno Biais**, HEC Paris
- 15:15–16:30** **Session 4: Digital platforms**
- Chair **Nor Shamsiah Mohd Yunus**, Central Bank of Malaysia
- Speaker **Christine Parlour**, University of California, Berkeley,
Haas School of Business
- Discussants **Zhiguo He**, University of Chicago, Booth School of
Business
- Dirk Niepelt**, University of Bern

16:30–17:00 Coffee break

17:00–18:00 Closing panel: The future of the monetary system

Moderator **Agustín Carstens**, Bank for International Settlements

Panellists **Lael Brainard**, Board of Governors of the Federal Reserve System

Eddie Yue, Hong Kong Monetary Authority

Stefan Ingves, Sveriges Riksbank

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Panel remarks, Lael Brainard

Lael Brainard, Vice Chair, Board of Governors of the Federal Reserve System

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, deglobalisation and climate change, it could herald a shift to an environment characterised by more volatile inflation compared with the preceding few decades.¹

Inflation in the United States and many countries around the world is very high (Graph 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

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 Conference on 24 June 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 A Shapiro, "How much do supply and demand drive inflation?", *FRBSF Economic Letters*, no 2022-15, Federal Reserve Bank of San Francisco, June 2022, www.frbsf.org/economic-research/publications/economic-letter/2022/june/how-much-do-supply-and-demand-drive-inflation; and J di Giovanni, S Kalemli-Özcan, A Silva and M Yildirim, "Global supply chain pressures, international trade, and inflation", paper presented at the ECB Forum on Central Banking, Sintra, Portugal, 27–29 June 2022, www.ecb.europa.eu/pub/conferences/ecbforum/shared/pdf/2022/Kalemli-Oezcan_paper.pdf.

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%. Despite this, through September 2022 core inflation in these countries was 9.5% year-over-year, rising 3.5 percentage points since March. See Economist, "Even super-tight policy is not bringing down inflation", 28 October 2022, www.economist.com/finance-and-economics/2022/10/23/even-super-tight-policy-is-not-bringing-down-inflation.

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 (Graph 2). 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. 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% 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% above the level implied by its pre-pandemic trend, while services spending remains a little more than 2% below its pre-pandemic trend (Graph 3).

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 points – 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 (Graph 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. 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

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 W Edelberg and L Sheiner, “The macroeconomic implications of Biden's \$1.9 trillion fiscal package”, Brookings Institution, *Up Front* (blog), 28 January 2021, www.brookings.edu/blog/up-front/2021/01/28/the-macroeconomic-implications-of-bidens-1-9-trillion-fiscal-package.

⁵ See, for instance, M Bodenstein, C Erceg and L Guerrieri, “Optimal monetary policy with distinct core and headline inflation rates”, *Journal of Monetary Economics*, vol 55, October 2008, pp S18–33.

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 (Graph 5).

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.

⁶ Ricardo Reis makes the case that both these factors would have prescribed tighter policy in the current environment. See R Reis, "The burst of high inflation in 2021–22: how and why did we get here?" *CEPR Discussion Paper Series*, no DP17514, July 2022, <https://cepr.org/publications/dp17514>.

⁷ See A Orphanides and S van Norden, "The unreliability of output-gap estimates in real time", *Review of Economics and Statistics*, vol 84, November 2002, pp 569–83.

⁸ For discussions of the time-varying nature of output gap uncertainty, see T Berge, "Time-varying uncertainty of the Federal Reserve's output gap estimate", Board of Governors of the Federal Reserve System, *Finance and Economics Discussion Series*, no 2020-012, revised April 2021, <https://doi.org/10.17016/FEDS.2020.012r1>; and R Edge and J Rudd, "Real-time properties of the Federal Reserve's output gap", *Review of Economics and Statistics*, vol 98, October 2016, pp 785–91. For a discussion of tempering the policy response to the output gap in response to increased uncertainty, see A Orphanides, "Monetary policy evaluation with noisy information", *Journal of Monetary Economics*, vol 50, April 2003, pp 605–31.

⁹ For two recent examples of assessing longer-term inflation expectations, see M Kiley (2022), "Anchored or not: how much information does 21st century data contain on inflation dynamics?", *Finance and Economics Discussion Series*, no 2022-016, Board of Governors of the Federal Reserve System, March 2022, <https://doi.org/10.17016/FEDS.2022.016>; and D Cascaldi-Garcia, F Loria and D López-Salido, "Is trend inflation at risk of becoming unanchored? The role of inflation expectations", Board of Governors of the Federal Reserve System, *FEDS Notes*, March 2022, <https://doi.org/10.17016/2380-7172.3043>.

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 Survey measures suggest that the median of longer-term inflation has remained within pre-pandemic ranges consistent with 2% inflation (Graph 6). However, starting in 2021, there has been a greater dispersion than usual of views about future inflation in survey responses, as shown in Graph 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 five 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 (Graph 7).

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 (Graph 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.

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 (Graph 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

¹⁰ See eg R Reis, "Losing the inflation anchor", *Brookings Papers on Economic Activity*, Fall 2021, pp 307–61, www.brookings.edu/wp-content/uploads/2021/09/15985-BPEA-BPEA-FA21_WEB_Reis.pdf. 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 eg A Carstens, "The return of inflation", speech delivered at the International Center for Monetary and Banking Studies, Geneva, 5 April 2021, www.bis.org/speeches/sp220405.htm.

¹² See eg C Goodhart and M Pradhan, *The Great Demographic Reversal: Ageing Societies, Waning Inequality and an Inflation Revival*, Palgrave Macmillan, 2020.

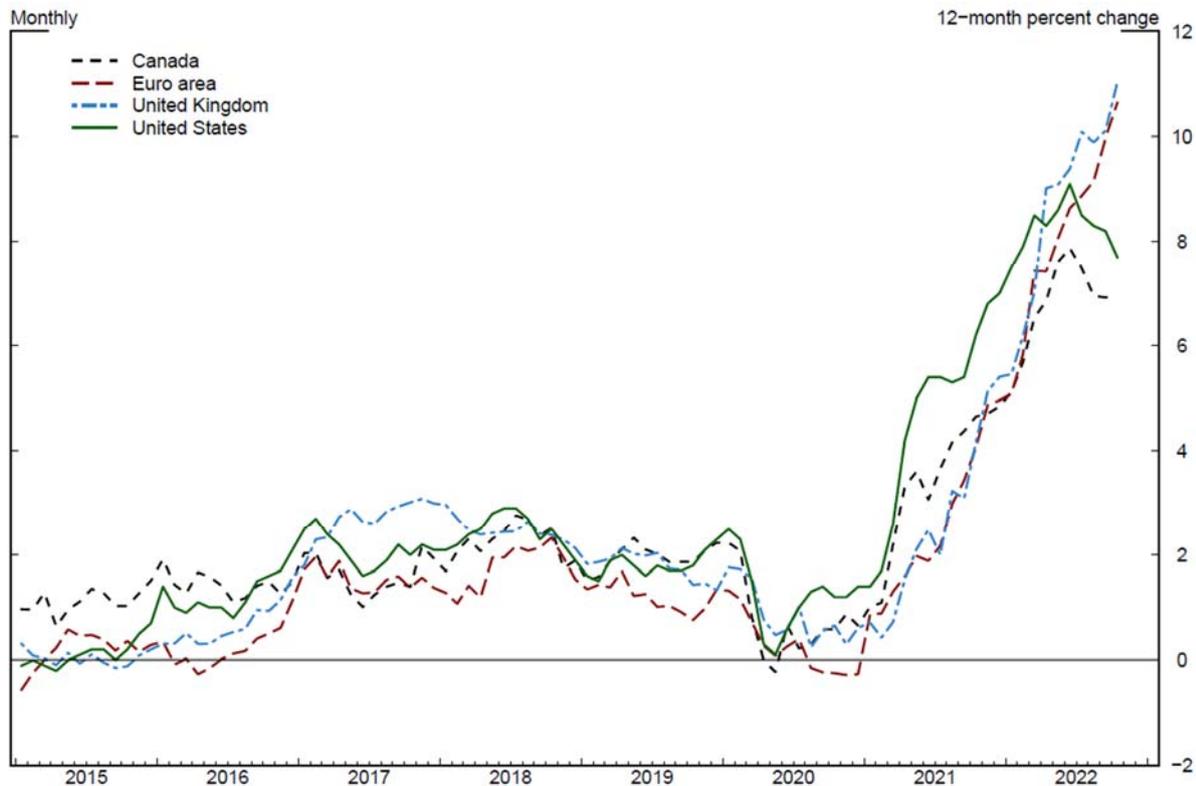
combination of forces – the deglobalisation of supply chains, the higher frequency and severity of climate disruptions, and demographic shifts – could lead to a period of lower supply elasticity and greater inflation volatility.

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

Graphs

Headline inflation for selected countries

Graph 1

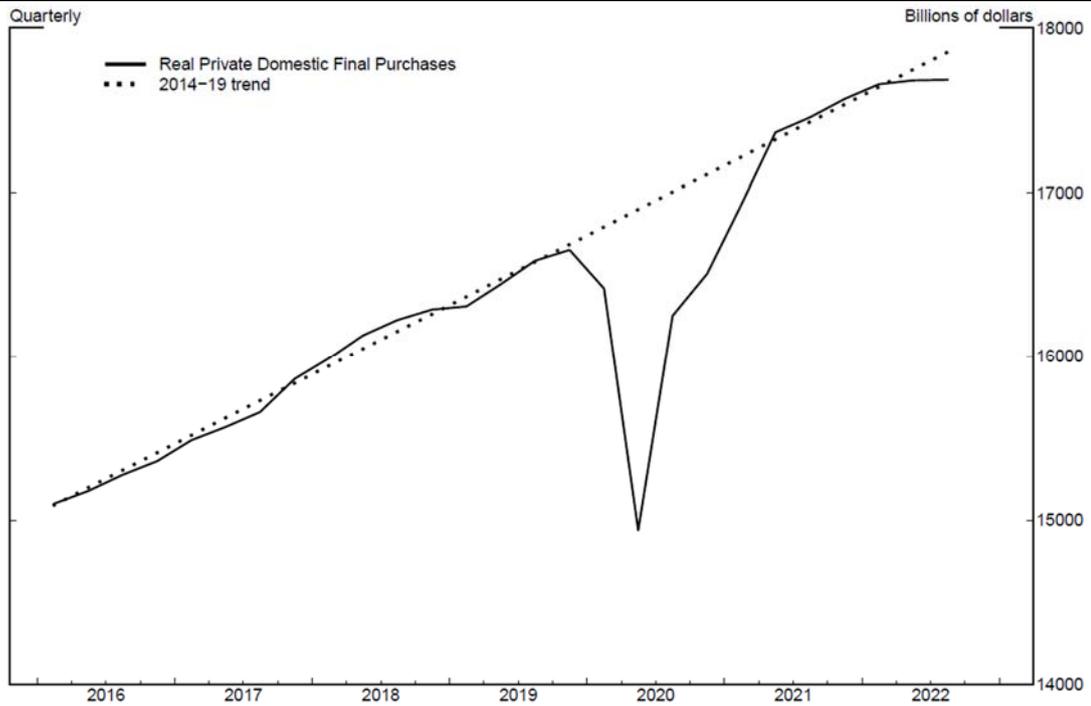


Note: Data go through October 2022.

Source: Haver Analytics.

Real private domestic final purchases

Graph 2

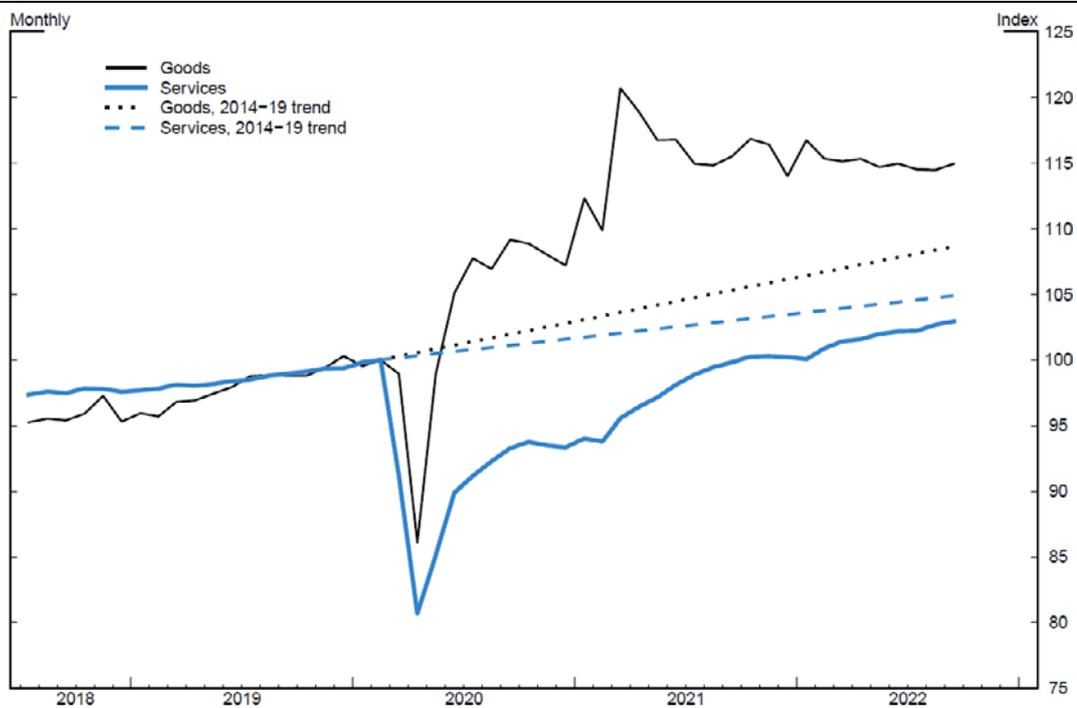


Note: Data go through 2022:Q3.

Source: Bureau of Economic Analysis.

Real personal consumption expenditures

Graph 3

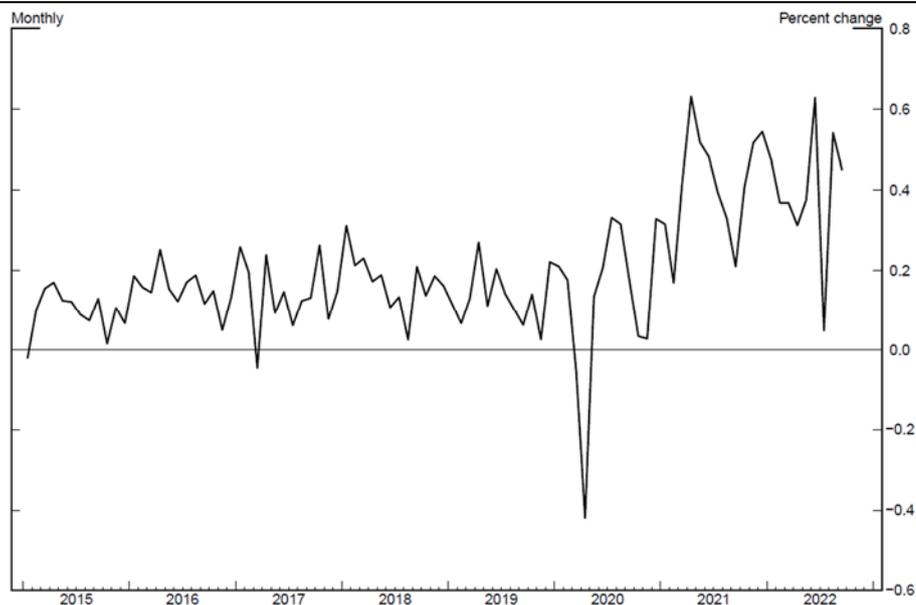


Note: Data go through September 2022.

Source: Bureau of Economic Analysis.

PCE monthly inflation less food and energy

Graph 4

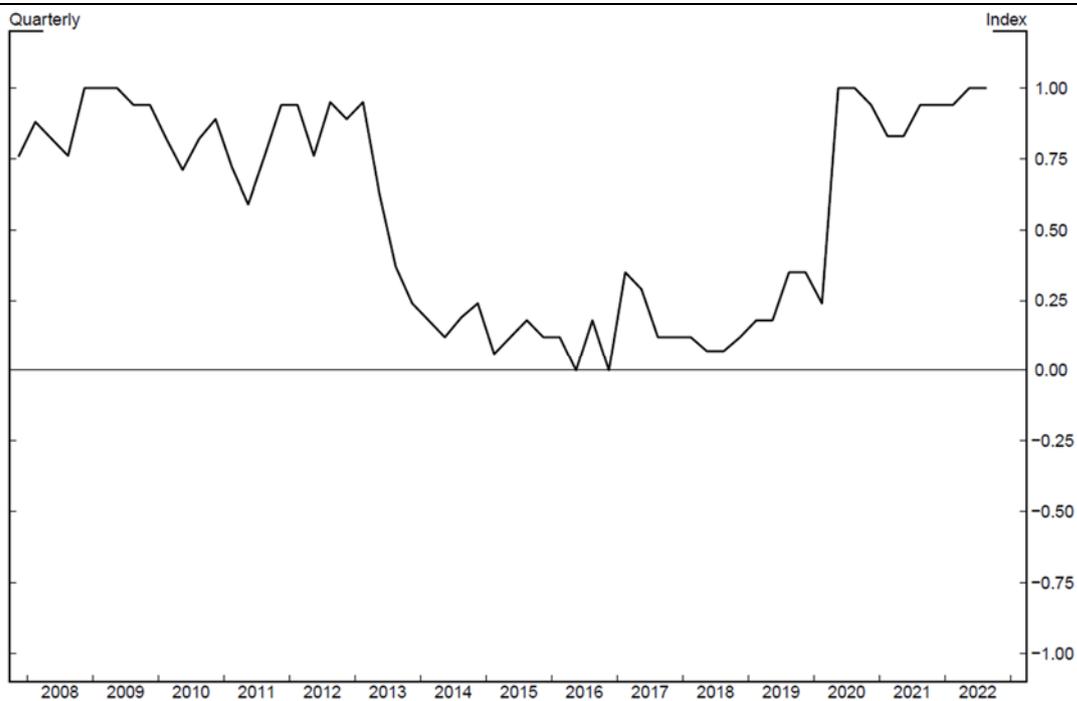


Note: Data go through September 2022. PCE is personal consumption expenditures.

Source: Bureau of Economic Analysis.

Diffusion index of FOMC participants' uncertainty assessments for GDP growth

Graph 5

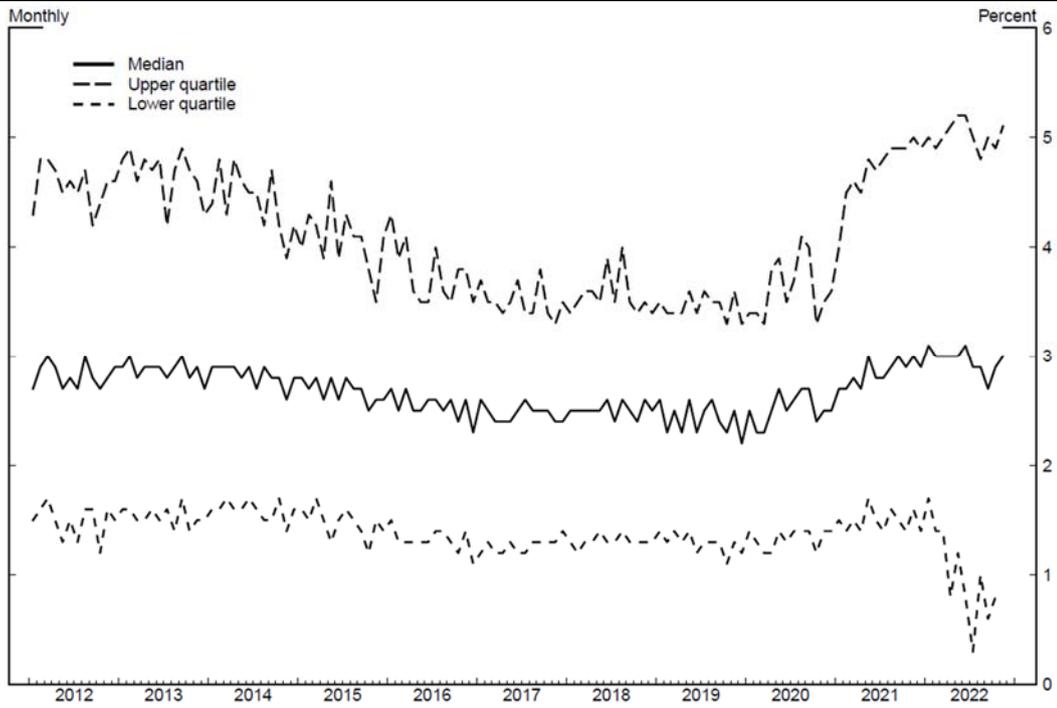


Note: Data go through Q3 2022. FOMC is Federal Open Market Committee; GDP is gross domestic product.

Source: Federal Reserve Board.

Expected price change, next five to 10 years

Graph 6

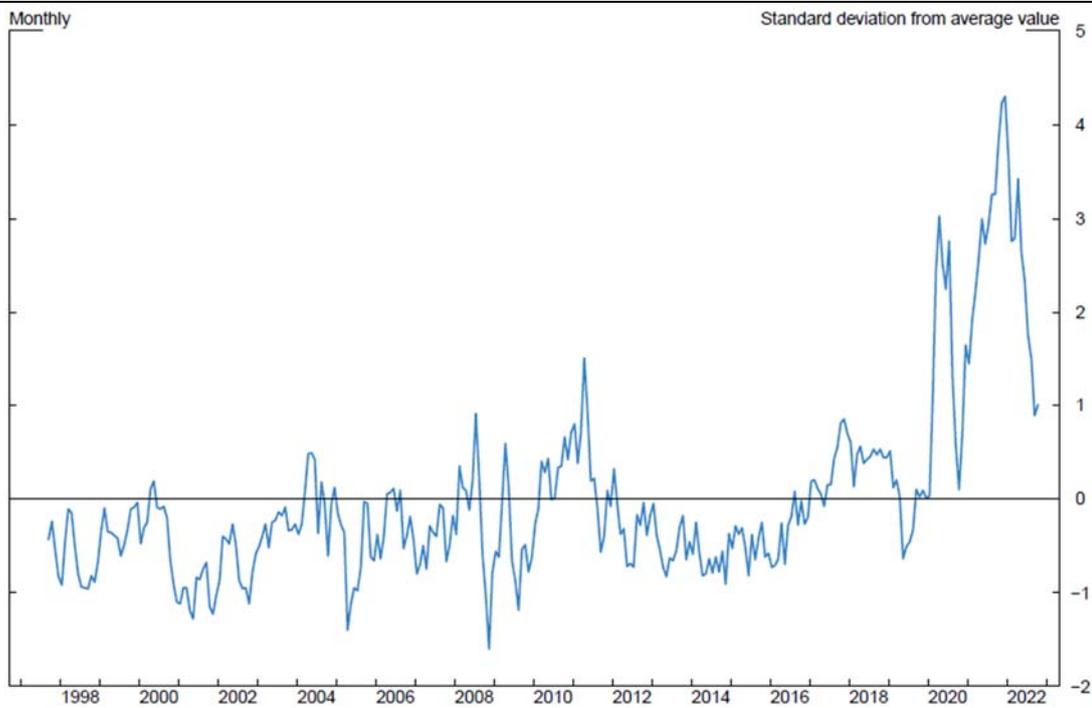


Note: Data go through November 2022.

Source: University of Michigan Surveys of Consumers.

Global supply chain pressure index

Graph 7

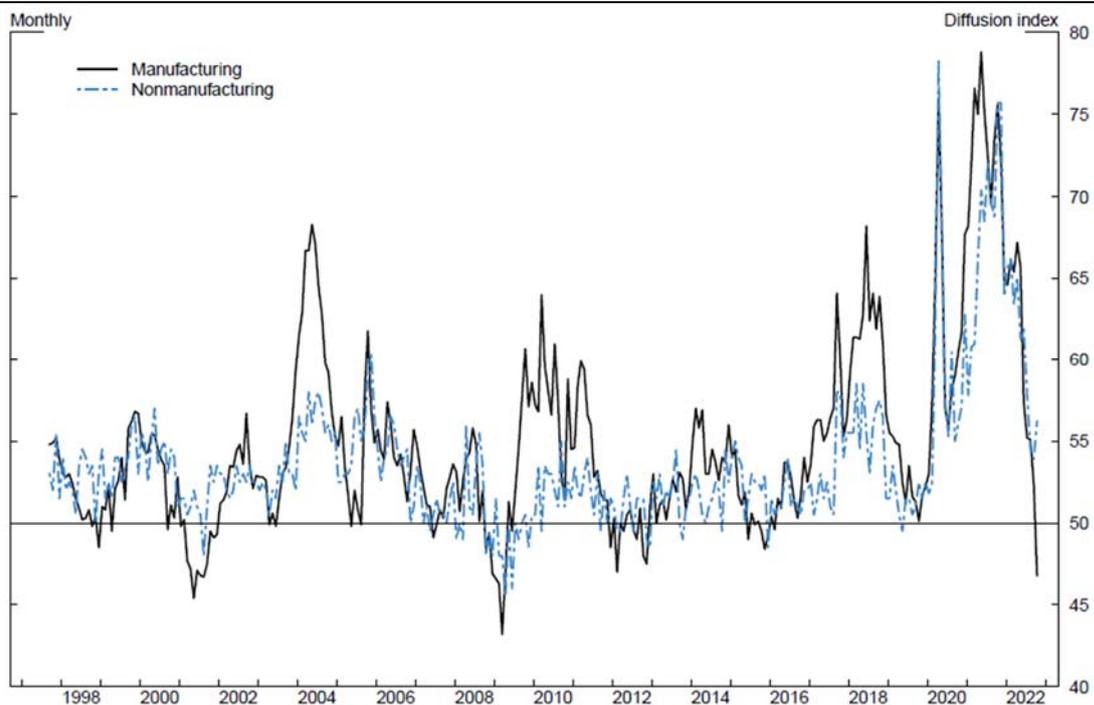


Note: Data go through October 2022.

Source: Federal Reserve Bank of New York.

ISM supplier deliveries index

Graph 8



Note: Data go through October 2022. The ISM Supplier Deliveries Index is an inverse diffusion index, a reading above 50% indicates slower deliveries.

Source: Institute for Supply Management.

Labour force participation rate

Graph 9



Note: Data go through October 2022.

Source: Bureau of Labor Statistics.

Panel remarks, Stefan Ingves

Stefan Ingves, Governor and Chair of the Executive Board, Sveriges Riksbank

Let me underline, from the outset, that everything I say here is from the perspective of a small, very open economy with its own currency.

With this as a starting point, let me note that a well-functioning monetary system is a precondition for a country to be able to use its own currency. And being able to use your own currency is, in turn, a precondition for executing monetary policy. This is very important and often taken for granted, but it shouldn't be, because monetary systems change over time. And central banks need to adapt to those changes. Because if we don't, people have, in most places, the freedom to use someone else's money, and then we lose the ability to conduct monetary policy.

This is not only about keeping inflation in check, even though inflation is certainly one part of this – especially hyperinflation since this will lead to dollarisation or euroisation and all kinds of other things. However, it is also very important to make sure that your own currency is what I call “transactionally efficient” – that it is easy to use, trusted and something people take for granted that they use when making payments.

Jacob and others earlier today have referred to what we think is money: a store of value, a medium of exchange and a unit of account. But, to some extent, private currencies can actually reproduce these features, either all, or parts of them. This can be done by bundling or unbundling things and combining various aspects of money with other types of service that you provide. This is an increasing challenge for central banks, because in the old days it was much harder to do these things. But these days, with new technologies making the marginal cost of transacting much lower, what used to be seen as a given suddenly starts moving around. Central banks need to think about how to deal with this, and what their role should be.

One example of this is digital platform-based ecosystems, because these systems can be used for all sorts of purposes, including sending money back and forth. This is when we get into the discussion of digitalisation of money, what it really means and what will happen in the future. Here we have all the well known names: Apple, Google, Microsoft, Amazon and Facebook. That is the bad news if you are in the central banking business. The good news is that these companies usually don't know much about money – they know how to transact, but that is something different. And that is what often makes it confusing when we talk about these systems, what to do and what not to do. I think Libra was a wakeup call when it comes to what these companies can do, or try to do. But now Libra has come, and Libra has gone, while central banks are still around, thinking about what to do. And the issue, particularly for small open economies, is this – could these new phenomena potentially replace central bank currencies and bank deposits, the way we know them. We really don't know the answer to this, but it is time well spent to think about this.

Currency competition is nothing new, just like with almost everything else when it comes to money. Everything has already happened in the past in one form or the other, because money is essentially about what we have in our heads. It is not technology alone. Money is a convention. If you look at what happened in the United States during the 1800s, but similar things happened in other countries, ultimately you ended up with central bank money. Because purely private money didn't work.

In addition to this, when it comes to fiat money, you need the backing of a legal framework, provided by parliaments. That is why the government, in one form or the other, tends to have the upper hand when it comes to standardisation and making sure that money is also being used. Important issues in this context are, of course, how you define legal tender and what kind of moneys the government accepts when you make payments.

When all these new digital phenomena show up, and people argue that we can do all these new things that we arguably have already seen many times in the past, this raises the issue what to do, what is important, and what is less important in this day and age.

Money also has something to do with sovereignty, and lots of symbolism tied to it. For this reason it is unwise to privatise money completely. And I don't think that this will happen. If you really want to maintain the name of your currency, in addition to stable prices you have to make sure that the convertibility rate between central bank money and private money is one to one. If that is not the case, you just don't know what you have. And then you will have serious problems when it comes to conducting monetary policy.

Here it gets difficult and it takes value judgments, something economists aren't good at. Because you basically need to decide whether you want to do this or not, and this is where a CBDC comes into the picture. The hard question to answer is whether you think it is problematic that the general public has no way of holding retail central bank money, or you think it is fine that everything has been privatised. In the latter case, the central bank would just be dealing with "the back end" of all of this. But since private banks don't trust each other, all of them actually prefer to clear in central bank systems. For this reason, I don't think that central banks will disappear, and I do think there is room for a CBDC that can be held by the general public. Because that will ultimately ensure the exchange rate I was talking about, which is very important both for pursuing monetary policy at the macro level and for maintaining stability in the system as a whole. Otherwise you end up with many different exchange rates in the economy. We tried this in the 19th century and that did not work well.

Finally, something that has struck me over the years. It is one thing to talk about technology, or central banking. But ultimately you need to talk about the legal framework you have. Because if you cannot understand what you own, or what you use when you transact, you will have a problem. This means that eventually we need to come back to a legal definition of money, a definition that needs to be technology-neutral. A definition that is not tied to physical paper, gold or anything else. The term fiat money is not a technological concept. And without a legal definition we will create problems for ourselves in the future, because then you really don't know what you have.

Thank you for your attention!

Panel remarks, Eddie Yue

Eddie Yue, Chief Executive, Hong Kong Monetary Authority

Thank you for having me here today. I would like to focus my comments on the topics discussed in the afternoon session. Our speakers have covered very well how technology impacts finance, so I am not going to repeat that here. I will instead talk about: (1) the risks brought by cryptos and decentralised finance (DeFi); (2) how to manage these risks through regulation; and (3) the role of central bank digital currency (CBDC) in this new development.

Risks posed by cryptos and decentralised finance (DeFi)

Cryptos, stablecoins and DeFi have all developed very fast in the last few years. Yet the recent Terra/Luna death spiral and the collateral damage to crypto platforms such as Celsius Network have highlighted the risks in these new innovations. Prices have nosedived and investors have lost money. While the development might be held back a bit, I do not think cryptos or DeFi will diminish altogether. Indeed, the train has left the station, and the technology and business innovation behind these developments are likely to continue and develop further in our financial system.

Before I get into the risks, I must say we should not overlook the benefits offered by the features of DeFi. Being permissionless and non-custodial means that DeFi could improve efficiency and reduce costs by cutting out intermediaries. Many users also value DeFi's potential in promoting innovation and competition given the composability nature of DeFi protocols, meaning that components of DeFi protocols can be combined or stacked together to create different innovative financial products or services. It is a bit like a financial "Lego" or DeFi "Lego" where you can just build what you want using others' works in an open source environment.

But then as with other new business innovations, there are new risks from DeFi too, and I would group them in three broad categories: (a) market integrity in a broad sense; (b) the financial stability risks of the DeFi platforms; and (c) potential spillovers to the traditional financial system. This last one, the spillover risk arising from the increasing interconnectedness between DeFi and the traditional financial market is, to me, the most important one. The spillover could be through stablecoins, which serve as a bridge linking DeFi and traditional finance, or it could be through banks, which provide financial services to crypto companies, and are acting as a direct linkage between crypto wallets and bank accounts.

As to the financial stability risks of DeFi platforms, apart from run risks and leverage that we also see in traditional platforms, I am also concerned about new risks coming from the nature and design of DeFi, eg coding and cyber risks arising from the heavy reliance on smart contracts, and the possibility of concentration of decision-making powers in the hands of only a few entities (eg validators, developers, miners or those with governance tokens) due to the unique way in which DeFi protocols are governed on the blockchains.

On market integrity broadly, as DeFi presents an effort to mimic the functions of the traditional financial market, the legal compliance risks that conventionally exist in the traditional financial market are also present in the DeFi ecosystem. They include

risk of fraud, money-laundering and terrorist financing. Also, customers and users are not adequately protected due to the lack of appropriate investor protection requirements.

All in all, cryptos and DeFi and the technology behind them have so far demonstrated to us the huge potential of financial innovation. It is therefore important for us to embrace such disruptive technology while guarding against the potential risks associated with these new developments to uphold the integrity and stability of our financial system.

Managing the risks through regulation

In terms of how to put in the guardrails on these new developments, I think there are four areas where we can impose regulations off chain as a starting point:

- First is the asset itself. If the activity falls within the scope of the current regulated activities, under the principle of “same risks, same regulations”, they should be regulated. For example, stablecoins are akin to payment instruments, deposits or money market funds depending on how they are structured, so clearly they should be regulated as soon as possible.
- Second is the trading platform (or the centralised exchange), which is where cryptos interact with the investing public. In Hong Kong, we will soon have a new law regulating virtual asset trading platforms here, both from the anti-money laundering and counter-financing of terrorism (AML/CFT) and market integrity angles. But local regulation alone would not be sufficient; we would need other jurisdictions to have similar regulations too, as these exchange platforms are extremely mobile and they could easily switch operation from one jurisdiction to another within a very short time.
- Third is the interface with the regulated financial entities, or the so-called on-ramping and off-ramping activities, where banks should be required to manage their risks from direct exposures or providing services to clients in trading or custody in both cryptos and DeFi.
- Fourth and final is investor protection, including the need for customer suitability assessments or even restrictions on advertising to retail investors.

Down the road, regulation should also be extended to DeFi platforms, although this is challenging because of the decentralised and globalised nature of these platforms. But this is necessary because, unlike what the DeFi name suggests, the decision powers of many of these platforms are concentrated in only a few entities who are in control of the governance tokens, and we need to be creative in finding ways to identify these control points for regulatory purposes. And given the borderless nature of DeFi’s operations, global coordination would be essential for regulation to be effective.

Role of central bank digital currency (CBDC)

I have talked quite a bit about risks and the need for regulation, but we should also appreciate that DeFi and the blockchain protocol could inspire innovations in finance, not just in DeFi lending or yield-farming which services crypto asset holders, but in time it will also potentially offer innovative solutions related to activities in the real

world or traditional finance. For instance, the blockchain technology could allow the use of smart contracts to execute payments for bonds or other financial assets automatically especially if they are tokenised. It could also allow fractionalisation of asset ownership in art, real estate or in other assets.

If we believe that cryptos and the DeFi ecosystem will continue to develop, a further question to ask is whether DeFi would be better or worse off with sovereign money, in the form of CBDCs. I would argue that it is better. For DeFi to develop or even become more mainstream, three elements would be needed: robust and mature underlying technologies, innovative business models, and very importantly, trust. And I would argue that in money and payments, central banks remain the best placed institution to provide the trust in the digital age. As in traditional finance, private or commercial money will always have to find a way to connect back to public money. After all, trust is the foundation of any financial platform, and public money, or the ability of conversion to public money, can carry that trust through good and stress times.

And as I mentioned earlier, DeFi already has two channels to connect back to the financial system, through stablecoins and banks. For these on-ramp/off-ramp activities, CBDCs should in theory make it easier and also provide more confidence for users. The use of CBDCs could also build stability into the DeFi ecosystem, avoiding the systemic stress that may arise from the failure of any major private money provider. That in turn could provide more comfort for regulators who are concerned about the spillover impact of DeFi to traditional finance.

But I can also understand that some users, particularly the more fundamental believers in DeFi, might be quite put off by the use of CBDCs in DeFi, which seems to run against the idea of not having a centralised payment authority, and which might risk stifling innovation in this very creative space. And these users might also be worried that certain features of DeFi may be lost if CBDCs are used, including for example the anonymity in transactions because of the AML/CFT requirements.

It is still early days. The DeFi space still needs time to mature and CBDCs are only being explored by central banks, though the CBDC projects that we are exploring through the BIS Innovation Hub (BISIH) fit quite well with the DeFi ecosystem, including wholesale securities settlements under Project Jura, asset tokenisation under Project Genesis, and the use of decentralised ledger technology for cross-border payments under mBridge.

Overall I do see more benefit from integrating the development of CBDC into the evolution of DeFi platforms, provided that the risks arising from these platforms can be properly managed, which in turn will depend on the evolution of the regulatory landscape for DeFi. This last point is important. If CBDCs were used on unregulated DeFi platforms, we might run the risk of being seen as “legitimising” or even “endorsing” those platforms where illicit activities might occur or where investors might suffer huge losses.

Again, we are still at an very early stage and much would depend on the evolution of both CBDCs and DeFi in the coming years. While I talk about the need to properly regulate cryptos and DeFi and to explore the use of CBDCs, it is extremely challenging to get the balance right between regulation and the need to promote innovation. If we regulate too soon, central banks could be criticised as stifling innovation. But if we regulate too late, investors might get hurt and lose money, or these platforms might get so large that they might resist regulation. And the how is difficult too. Are there ways to effectively regulate DeFi? How could we drive a globally coordinated

regulatory solution? And for CBDCs, should they be used to complement these new developments? Would we be seen as legitimising platforms that offer highly risky products or where illicit activities might occur?

These are all open questions that we need to collectively think about how best to proceed. These are being pursued in international institutions and forums like the BIS and the FSB, and I think we need to speed up our deliberations and have more conviction in really collectively implementing the recommendations made by the various groupings using a globally coordinated approach.

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