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EURO EXIM BANK

Facilitating Global Trade

Agustín Carstens considers innovation and the future of the monetary system

Jon Cunfiffe discusses a digital pound and where it may sit in the digital payments landscape

Jerome Powell warns against central banks widening their remits and scope too far

21ST CENTURY FINANCE

Foreword

Welcome to the Spring 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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The innovation imperative: modernizing traditional banking

Michelle Bowman discusses innovation in the US financial system, the emerging trends that are shaping the industry, and the influence of regulatory approach on this evolution

Before turning to the main theme of my remarks, I would like to take a moment to acknowledge the events of the past week, and the actions taken by regulators in response. As you are aware, last Friday, March 10, the California Department of Financial Protection and Innovation closed Silicon Valley Bank. On March 12, the New York Department of Financial Services closed Signature Bank.

In both cases, the Federal Deposit Insurance Corporation (FDIC) has been appointed as receiver. One significant factor leading to the stress and subsequent closure at each institution was the rapid outflow of deposits, specifically uninsured deposits above the FDIC-guaranteed amount of $250,000 per depositor, per account type.

On Sunday, several specific actions were announced that are intended to limit the direct and indirect risks to the US financial system resulting from the closure of these two financial institutions. The Federal Reserve Board announced that it will make additional funding available to eligible depository institutions through a newly created Bank Term Funding Program[1].

This program will offer one year loans to institutions that pledge US Treasury securities, agency debt and mortgage-backed securities, and other qualifying assets as collateral. The facility will provide an additional source of liquidity to banks and eliminate the need for institutions to quickly sell these securities during a time of stress.

The FDIC also took action to protect all depositors, including uninsured depositors, of both Silicon Valley Bank and Signature Bank. Beginning Monday morning, these depositors were able to access all of their funds on deposit with these banks. The federal regulators, including the FDIC, the Federal Reserve Board and US Treasury Secretary Janet Yellen approved the actions to protect depositors.

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The US banking system remains resilient and on a solid foundation, with strong capital and liquidity throughout the system. The Board continues to carefully monitor developments in financial markets and across the financial system.

Now, turning to the main theme of my remarks, I will discuss the imperative of fostering innovation in the banking system.

Often, when innovation is discussed within the context of the banking system, the focus is not on traditional banks engaged in core banking activities, like taking retail deposits and making loans. I think this perception misses the

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For all areas of innovation that banks are interested in pursuing, regulators should continue to prioritize timely, clear, and transparent guidance

mark. Innovation has always been a priority for banks of all sizes and business models, from small community banks to the largest global systemically important banks (G-SIBs), and for good reason.

Banks in the US have a long history of developing and implementing new technologies. Innovation has the potential to make the banking and payments systems faster and more efficient, to bring new products and services to customers, and even to enhance safety and soundness.

Yet, some have criticized the banking regulators for being hostile to innovation, at least when that innovation occurs within the regulated financial system. Regulators are continually learning about and adapting to new technologies, just as banks are, and regulators can play an important, complementary role, making the regulatory rules of the road clear and transparent to foster bank innovation.

Innovation does pose challenges within the regulated banking system, which can be amplified for community banks. Along with presenting new opportunities, innovation can introduce new risks and create new vulnerabilities.

Banks, and really, any business today that adopts new technologies must be prepared to make corresponding improvements to manage these risks and vulnerabilities, including improvements to risk management, cybersecurity, and consumer compliance.

Regulators must continue to promote efforts that are consistent with safe and sound banking practices and in compliance with applicable laws, including consumer protection laws. As I am sure you appreciate, this is not always an easy task, and the regulatory response to innovation must reflect the changes in how banks engage in this process.

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It is absolutely critical that innovation not distract banks and regulators from the traditional risks that are omnipresent in the business of banking, particularly credit, liquidity, concentration, and interest rate risk[2].

These more traditional risks are present in all bank business models but can be especially acute for banks engaging in novel activities or exposed to new markets, including cryptoassets[3]. Whatever the cause, many traditional risks can be mitigated with appropriate risk-management and liquidity planning practices, and effective supervision, and without stifling the ability of banks to innovate.

Today, I will address three issues related to innovation. First, I will briefly discuss how bank regulation and supervision can best support responsible innovation. Second, I will touch on the unique challenges that apply to smaller and community banks pursuing innovation.

Finally, I will mention a few key actions that the federal banking regulators have taken to date, and how I think about future regulatory and supervisory actions to support innovation. And before I conclude, I will also quickly touch on a few other issues that may be of interest to you.

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Supporting responsible innovation

In the past, I have spoken about the principles that I believe should guide bank regulation and supervision[4]. I have noted the value of independence—tempered by public accountability—in the Fed's role as a bank supervisor. I have also stressed the need for clear rules of engagement and predictability in the bank applications process.

And I have emphasized that transparency of expectations in rules and guidance are critical to a bank regulatory system that is fair and efficient. I think these principles are instructive when it comes to how regulators should address innovation.

As both consumer needs and their preferences in accessing financial services change, so too must the banking industry. Banks of all sizes see new opportunities to develop enhanced and customized products for their customers, introduce faster payments, and improve efficiency.

If our goal is a banking system that leverages the many benefits of innovation, regulators need to make deliberate choices about how we regulate and supervise. Further, we need to be aware of and sensitive to the unintended consequences of our regulatory framework.

The Federal Reserve and the other federal banking agencies have an important role to play in helping ensure banks can innovate in a safe and sound manner, and that role includes transparency in expectations. And of course, we must ensure that regulation and supervision do not place unnecessary burdens on small banks.

The vast majority of banks want to meet regulatory expectations. By publishing clear guidance and developing tools to help assist these banks, regulators can improve regulatory transparency and facilitate compliance.

Transparency is a tool that can serve the supervisory goal of promoting a safe, sound, and fair banking system, particularly when it comes to innovation. In exercising supervisory and regulatory authority, the federal banking agencies must be aware of not only the risks to the US financial system, but also the harm that can be caused to US consumers and businesses when we don't achieve sufficient clarity and transparency in our expectations and when our regulations are disproportionately burdensome to the risks they are intended to address.

With innovation, the risk is that a regulatory approach based on subjective, ad hoc judgments—as opposed to clear guidance and regulatory expectations—could cause new products and services to migrate to the shadow

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banking system. We have already seen a similar phenomenon in some markets, as with nonbank lending, which has proportionately increased when compared to bank lending in recent years.

A lack of transparency, and the corresponding limits on bank innovation, has adverse consequences for consumers, businesses, and communities. Therefore, it should be a regulatory priority to ensure our approach continues to support innovation that is conducted in a safe and sound manner and is consistent with applicable laws, including consumer protection.

The innovation challenges for community banks

I think everyone recognizes the valuable role that small banks play in the US financial system, and just as important, in the communities they serve[5]. Small banks provide credit and financial services to businesses and individuals through personalized services and relationship banking. Small banks have a deep commitment to their communities and understand their unique customers, including how they may weather the ups and downs of economic cycles.

If we look at the financial health of small banks today, we see an industry that is well-positioned to support economic growth. Across a broad range of metrics, including capital, liquidity, earnings, credit quality, and loan growth, small banks have been performing well.

But small banks also face unique challenges, especially when it comes to innovation. Small banks tend to have fewer resources to devote to these activities and fewer staff members with the technological expertise to develop products in-house. Therefore, small banks tend to be more reliant on third-party relationships to support innovation, including the critical relationship between small banks and their core service providers.

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However, third-party relationships can also increase operational risk, data security and cybersecurity vulnerabilities, and create other compliance issues. And of course, a bank's use of third parties does not diminish its responsibility with respect to the activities conducted by the third-party service provider.

I think the principles I mentioned earlier can be particularly relevant when thinking about how regulators can support small bank innovation. Transparency in expectations is important for the smallest banks, who may view innovation as a strategic priority, but may lack the resources of larger peers to engage in innovation and third-party partnerships or cover costs of legal advice to address ambiguous regulatory expectations.

One way we can adopt a tailored approach is by providing additional resources and tools for smaller institutions to assist with compliance. Regulators have already successfully developed compliance tools. These include the Board's recently developed tools to assist community banks estimate their losses under the Current Expected Credit Loss, or CECL, accounting standard. The federal banking agencies also published a guide for community banks on conducting due diligence for financial technology companies[6].

I think these types of efforts are very important as we introduce new regulations and requirements. Clear guidance and practical implementation tools can reduce the burden of regulation while also promoting compliance.

The evolving regulatory response to innovation

Innovation allows banks to become more efficient and better meet customer demands. So, while bank regulators do not want to hinder innovation, we also have a responsibility to ensure that the banking industry adopts new technologies appropriately.

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To help balance these two goals, it is incumbent upon regulators to prioritize clear guidance to banks. Having clear (and public) regulatory expectations not only supports public accountability, but also gives banks greater flexibility to innovate and experiment with new technologies.

Across a range of activities, both banks and regulators are working to make innovation accessible to all banks, with clear guidance and additional tools and resources to help small banks. I'll now turn to a few specific examples where regulators have been working to develop transparency and clear expectations.

Cryptoasset activities

Many bank customers have expressed interest in cryptoassets over the past several years, with some banks exploring how they can meet this customer demand. There are a multitude of design and use cases for new and innovative technologies, such as distributed ledger technology and cryptoassets, which can pose unique challenges for regulators.

The variability of these activities complicates the development of clear regulatory expectations around safety and soundness and risk management, and raises questions about legal permissibility. The lack of clear and timely regulatory guidance creates a real challenge for banks interested in exploring these activities.

Cryptoasset activities remain an important focus for the Federal Reserve and other bank regulators. While some banks continue to explore offering cryptoasset-related products and services to their customers, the extreme volatility of these assets creates significant challenges for banks.

These assets also vary widely in terms of their structure, the markets for trading, and whether they are backed by any assets. Until clear statutory and regulatory parameters exist to govern these types of assets and the exchanges

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on which they are traded, I think some of the uncertainties about how the banking system can engage in crypto activities will remain unsettled.

While there is more to do, there have been some helpful initial steps to provide clarity on regulatory expectations. First, the Board published guidance clarifying that all state member banks should notify their lead supervisory point of contact prior to engaging in cryptoasset-related activities[7].

The letter also clarified the broad requirements of a firm's obligations, including the need to analyze the legal permissibility of the activities, and to develop adequate systems, risk management, and controls to conduct these activities in a safe and sound manner and consistent with all applicable laws.

More recently, the bank regulators published additional guidance to highlight the risks of cryptoasset-related activities. In January, the federal agencies released a statement highlighting cryptoasset risks and recently issued a statement on liquidity risks resulting from cryptoasset market vulnerabilities[8].

Federal Reserve staff continues to develop guidance on cryptoasset activities, including on custody, trade facilitation, loans collateralized by cryptoassets, and the issuance and distribution of stablecoins. I think these are critical next steps to provide clarity around regulatory expectations.

Third-party risk management

Third-party relationships can provide smaller banks access to new products, services, and technology. The scope of these partnerships can be quite broad, including fintech companies, partners who use the bank's 'Banking as a Service' products, cloud service providers, and many others.

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But third-party partnerships designed to bring innovation into a bank can also create risk-management and due diligence challenges, particularly with respect to identifying the risks that a third-party partner may pose and to managing these risks.

For small banks, these compliance problems can be amplified by a number of factors. Small banks may have limited experience and in-house expertise conducting due diligence on third-party partners like fintech companies. And small banks likely have limited leverage in negotiating contracts and informational rights with third-party partners.

Small banks may also encounter friction with nonbank partners who fail to understand the bank's ongoing responsibilities to ensure that even outsourced activities are conducted in a safe and sound manner and in compliance with consumer protection laws.

The Federal Reserve and other federal banking agencies can play an important role in helping banks continue to innovate through third-party partnerships. Specifically, the agencies have been working to develop joint guidance to clarify regulatory expectations around third-party risk management, which will be an important step in supporting innovation built on third-party partnerships.

This guidance could be particularly helpful for small banks. But clearer guidance and regulatory expectations will not fully address these challenges. Guidance alone cannot address the challenges that a small bank faces in conducting due diligence on third parties and the difficulty in negotiating a contract with larger nonbank service providers and partners.

ICBA has taken some important first steps in determining if there are opportunities to fill these knowledge gaps by leveraging collective action to help with due diligence. In addition, some interesting preliminary work has been

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done to consider whether a standards-setting organization, in the form of a public–private partnership, could expedite due diligence on third-party fintech partners.

A centralized, standards-setting organization could help develop minimum standards to ensure better consistency in the diligence banks apply to these partnerships. I see a great deal of promise in these efforts, and I support continued work to develop these mechanisms to help small banks innovate through third-party partnerships.

Another area in need of attention is in assisting small banks achieve similar treatment in their contracts in comparison to larger nonbank service providers and partners.

All banks should understand regulatory expectations with respect to due diligence, risk management, and ongoing compliance when engaging in third-party relationships. Banking regulators can support this approach by providing clear expectations and the tools smaller banks may need to help them meet these expectations.

For example, in 2021 the Federal Reserve began providing state member banks with supervisory reports on their third-party partners that are subject to supervision under the Bank Service Company Act. These reports contain information that may provide helpful insight in assessing the performance of bank service providers, depending on the services used and the risk the services pose.

As we are considering additional opportunities to provide resources in this space, your feedback and experience would be helpful to understand where we should focus our future efforts.

Bank service company oversight

Another area that complements third-party risk management is the agencies' regulatory authority over bank service

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companies. While banks who engage in partnerships with third parties continue to bear responsibility for due diligence and compliance, we should also consider whether the bank itself, or the third-party service provider, is best positioned to address risks.

The regulatory burden of third-party relationships falls heavily on banks (particularly small banks), and sometimes bleeds over to their core service providers, because the core service providers often make the technical changes to core systems to enable integration with innovative new products and services.

Core service providers are already subject to activities-based supervision under the Bank Service Company Act. But with the expansion of third-party relationships, it is worth considering whether this allocation of responsibility remains sound, or whether additional parties—like fintechs and other technology companies—should be subject to closer scrutiny for the products and services they provide to banks.

If third parties provide products and services to bank customers, it also may be appropriate for these providers to bear greater responsibility for their own products and services, including to ensure that they are provided in a safe and sound manner and in compliance with financial and consumer laws and regulations.

Cybersecurity

We do not often talk about cybersecurity in the context of innovation, but improving cybersecurity can complement innovation. When a bank is planning to develop new technology or pursue innovation, those new activities often bring new risks.

As you know, bankers often refer to cybersecurity as one of the top risks facing the banking industry, and the Federal Reserve has issued guidance and examination procedures on a range of cybersecurity issues to help banks prepare for cyber events when they occur.

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Cyber threats constantly evolve, and banks' cybersecurity efforts must be dynamic in response. Banks must respond to emerging threats by adapting risk-management practices, engaging with regulators and law enforcement when an attack occurs, and participating in training and exercises to ensure cyber preparedness. As I have noted in the past, the Federal Reserve continues to work closely with banks to support these efforts[9].

Other important trends

I would like to address a few other issues that may be of interest to this group related to bank regulation and supervision.

Community Reinvestment Act reform. As you all know, last May, the federal banking agencies issued a notice of proposed rulemaking that would amend the Community Reinvestment Act. The agencies received extensive comments on the proposal, including comments describing the costs and benefits of the proposal and how it would impact banks. Chair Powell noted that there is essentially agreement among the three agencies. While we are hard at work, it is expected that it will take some months to complete.

I am continuing to review and understand this proposal and the costs it will impose. From my perspective, it will be important to consider how the costs imposed by any final rule compare to the benefits of the rule, not just in the aggregate, but for institutions of different sizes and engaged in different banking activities.

Climate risk management and regulation. Climate risk-management and regulation efforts include the recent launch of a climate scenario exercise for the largest firms and a climate guidance proposal for a broader range of large firms. The Federal Reserve's role in this space is very limited and generally is confined to ensuring banks operate in a safe and sound manner, relying on appropriate risk management.

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With respect to climate change risks, it is important to think carefully about the costs and benefits of any guidance and the scope such guidance may include. As proposed, the climate risk-management guidance would apply only to the largest firms.

Of course, all banks below this threshold, including small banks, would remain subject to robust risk-management expectations, which includes managing all material risks. In many instances, these expectations may require banks to manage a range of related risks, especially from extreme weather and natural disasters.

Capital. As you know, the banking agencies are currently engaged in a holistic bank capital standards review and are working to implement the Basel III 'endgame' reforms. With respect to the Basel III capital reforms, the agencies recently reaffirmed their commitment to implement these standards to strengthen the resilience of the US financial system.

As I think you all know, there are no plans to propose changes to the community bank capital framework as part of this capital review. It remains to be seen how broad the proposal will be, and for the larger firms, which firms will be affected.

Bank merger policy. There are significant consequences for firms when applications are not acted on in a timely manner, including increased operational risk, the additional expense associated with running two institutions in parallel over a longer period, employee retention issues, and perceived reputational risk. In my mind, this is an area that we need to improve; delays in the processing of applications are not exclusively an issue for large banks.

Small banks are also subject to timing issues when engaged in bank merger transactions. In fact, small banks that operate in more rural areas with few competitors who try to merge with other local banks can raise competitive concerns under the Federal Reserve's traditional merger standards.

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As I've previously noted, one way to improve the timing of small bank merger transactions is by considering all competitors when evaluating the competitive effects of mergers[10]. In many rural markets, credit unions, farm credit system institutions, banks without a branch presence, and nonbank lenders can all be significant competitors in different product markets.

In some cases, these smaller banks face greater issues in pursuing merger transactions than larger banks that operate in dense urban centres with many bank competitors. For all banks engaged in merger transactions, delays should be the exception, not the rule.

Efforts to support minority depository institutions. Minority depository institutions, or MDIs, play an important role in our financial system. MDIs often provide credit and financial services to low and moderate income and minority communities.

The Federal Reserve is committed to preserving minority ownership of depository institutions, and providing technical assistance to MDIs, through the Fed's Partnership for Progress program. Federal Reserve staff frequently meets with MDI management teams to discuss emerging issues, provide technical assistance, explain supervisory guidance, and respond to management concerns.

This engagement not only furthers our efforts to support these banks, but also provides valuable insight and feedback on the challenges facing MDIs. It is also an opportunity to gather feedback on regulatory proposals.

Overdraft fees. Banks often provide limited overdraft protection to customers and historically have charged a fee for this service. Recently, as you know, this practice has come under some regulatory scrutiny. For example, many banks have taken a close look at their practices to ensure that they are subject to appropriate disclosures and are operated in a way that is fair to consumers.

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The Federal Reserve's approach in evaluating overdraft practices has been to prioritize compliance through the review of these practices, ongoing engagement with bank management, and most importantly, transparency in our regulatory expectations. Regulatory expectations should never come as a surprise to regulated institutions, and our examiners find that transparency is an effective tool to promote compliance.

I would like to address one specific overdraft practice that has been the focus of recent attention—authorize positive, settle negative (or APSN) transactions. These transactions occur when a bank authorizes a consumer's point-of-sale transaction based on sufficient funds in the consumer's account, but at the time the transaction posts, the consumer's account has insufficient funds. In some cases, the institution imposes an overdraft fee on the consumer when this occurs.

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Over the past decade, the Federal Reserve has focused on this issue as part of our supervisory activities. For example, in July 2018, we published an article in the Consumer Compliance Supervision Bulletin that explained our concerns that charging consumers overdraft fees based on APSN can constitute an unfair practice[11].

At the same time, we recognize that some of this risk is driven by system limitations of the core service providers, which can pose a real challenge to community banks confronting this issue in their own transaction processing operations.

In some cases, core service providers need to implement changes to their systems to allow banks to avoid charging these fees. While this issue is a narrow one in the context of broader discussions about overdraft fees, it is important.

We encourage banks to continue working with their service providers to implement fixes to system-based issues, and we encourage service providers to support their bank clients in providing compliant products.

Conclusion

Innovation has long been a high priority for banks, and I expect it will continue to be a key issue for the future. New technologies have created significant opportunities for banks to become more efficient and competitive and to provide improved products and services for customers. While innovation brings new opportunities, it also introduces additional risks.

But a transparent regulatory posture for these activities can help banks of all sizes embrace new technologies, to the benefit of their customers and the broader economy. The specific innovations I mentioned only scratch the surface of the technologies and innovations that banks are exploring, which also include the use of artificial intelligence and machine learning; efforts to develop faster payments, clearing, and settlement technologies; and many others.

For all areas of innovation that banks are interested in pursuing, regulators should continue to prioritize timely, clear, and transparent guidance. ■

Michelle W Bowman is a member of the Board of Governors of the Federal Reserve System

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Endnotes

1. Board of Governors of the Federal Reserve System, "Federal Reserve Board Announces It Will Make Available Additional Funding to Eligible Depository Institutions to Help Assure Banks Have the Ability to Meet the Needs of All Their Depositors," news release, March 12, 2023.

2. As part of our ongoing outreach and dialogue to community banks, I along with colleagues at the Federal Reserve Bank of Kansas City conducted an "Ask the Fed" session this past December, discussing unrealized losses at community banks in a rising rate environment. Ask the Fed, a Program of the Federal Reserve System, "A Discussion of Unrealized Losses at Community Banks in a Rising Interest Rate Environment" (December 16, 2022).

3. See Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency, "Joint Statement on Liquidity Risks to Banking Organizations Resulting from Crypto-Asset Market Vulnerabilities (PDF)," news release, February 23, 2023.

4. See Michelle Bowman, "Welcoming Remarks" (speech at the Midwest Cyber Workshop, organized by the Federal Reserve Banks of Chicago, Kansas City, and St. Louis, February 15, 2023); "Independence, Predictability, and Tailoring in Banking Regulation and Supervision" (speech at the American Bankers Association Community Banking Conference, February 13, 2023); "Brief Remarks on the Economy and Bank Supervision" (speech at the Florida Bankers Association Leadership Luncheon Events, January 10, 2023); "Large Bank Supervision and Regulation" (speech at the Institute of International Finance Event: In Conversation with Michelle Bowman, September 30, 2022); "Technology, Innovation, and Financial Services" (speech at the VenCent Fintech Conference, August 17, 2022); "My Perspective on Bank Regulation and Supervision" (speech at the Conference for Community Bankers sponsored by the American Bankers Association, February 16, 2021).

5. For purposes of these remarks, I will refer to regional banking organizations and community banking organizations as "small banks."

6. Board of Governors of the Federal Reserve System, FDIC, and OCC, "Conducting Due Diligence on Financial Technology Companies: A Guide for Community Banks (PDF)" (Washington: Board of Governors, FDIC, OCC, August 2021).

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7. Board of Governors of the Federal Reserve System, "SR 22-6 Letter / CA 22-6 Letter: Engagement in Crypto-Asset-Related Activities by Federal Reserve-Supervised Banking Organizations," August 16, 2022.
8. Board of Governors of the Federal Reserve System, FDIC, and OCC, "Joint Statement on Crypto-Asset Risks to Banking Organizations (PDF)" (Washington: Board of Governors, FDIC, OCC, January 3, 2023); "Joint Statement on Liquidity Risks to Banking Organizations Resulting from Crypto-Asset Market Vulnerabilities (PDF)," February 23, 2023.
9. See Michelle W Bowman, "Welcoming Remarks" (speech at the Midwest Cyber Workshop, organized by the Federal Reserve Banks of Chicago, Kansas City, and St. Louis, February 15, 2023).
10. See Michelle W Bowman, "The New Landscape for Banking Competition" (speech at the 2022 Community Banking Research Conference, sponsored by the Federal Reserve, the Conference of State Bank Supervisors, and the Federal Deposit Insurance Corporation, St. Louis, Missouri, September 28, 2022).
11. See Board of Governors of the Federal Reserve System, Consumer Compliance Supervision Bulletin (PDF), (July 2018).

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I would like to thank the ICBA for the invitation, and also to recognize the incredible commitment and efforts of the bankers in this room and beyond in support of their communities and the ongoing strength of the US economy. The views expressed in these remarks are my own and do not necessarily reflect those of my colleagues on the Board of Governors of the Federal Reserve System or the Federal Open Market Committee. This article is based on a speech delivered at the Independent Community Bankers of America ICBA Live 2023 Conference, Honolulu, Hawaii, March 14, 2023.

Innovation and the future of the monetary system

Agustín Carstens considers a monetary system that embeds the best of new technology in the solid foundations of the current two-tiered structure

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I would like to make the point that, to reap the greatest benefits of innovation in money and payments, we must think big. We need to have a vision for the future monetary system, and for the role of central banks in driving innovation that meets evolving needs.

This is no easy feat, thanks to the nature of innovation itself, which is rarely linear and often unpredictable. A great example of that is the evolution of smartphones. When Steve Jobs strode on to the stage to unveil the first iPhone in 2007, it was described as a laptop in the form of a phone. Its connection to the internet did not receive much attention. And by many accounts, Apple's leaders were reluctant to let outsiders develop applications to use on it.

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It's hard to believe that this was only 16 years ago. Nobody could have predicted how fundamentally the smartphone has changed the way we work, communicate and interact. All these changes happened not because smartphones imitated computers, but because they let others use their creativity to develop new products and services through apps.

The smartphone offers a couple of lessons about innovation:

- First, for innovation to flourish, it requires a stable and safe infrastructure that unleashes the private sector's creativity and ingenuity.

- And second, the various components on a platform must be able to work together seamlessly, just like when I use my phone to take a picture and share it on social media. This is closely related to the notion of 'composability', which I will develop further.

But in looking at these examples, we must also be aware of what not to do. Dominant technological platforms can often exploit network effects to stifle competition and lock customers inside 'walled gardens'[1].

This is one aspect in which the role of central banks in innovation diverges from the private sector. As accountable public institutions, central banks strive to serve the public interest rather than private profits.

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What makes central bank money and commercial bank money indistinguishable today is a complex and well-developed network of institutional arrangements, including regulation, supervision, deposit insurance and settlement on the central bank's book

With these points in mind, let me elaborate on how we can translate these lessons into the world of financial innovation, especially from a central bank perspective. Even though it is inherently difficult to predict what form innovation will take, we must make sure that we have the right infrastructure in place to promote it in a sound and open way.

I put forward the case that central banks, as the guardians of trust in money, are uniquely positioned to lay the foundations for such next generation infrastructure.

A unified programmable ledger in a public-private partnership

Around the world, central banks are exploring how to give money new capabilities. The BIS is supporting much of this work, as it incubates projects and catalyses new ideas in the world of central banking.

This includes work on central bank digital currencies (or CBDCs) at both wholesale and retail levels, as well as fast payment systems and their interlinkages across borders. We are also experimenting with the tokenisation of different assets, including tokenised deposits.

But to fully realise the transformative potential of these new financial technologies, we need some way to bring them all together. In this regard, there is great promise in developing the idea of a 'unified ledger' with a common programming environment.

A unified ledger is a digital infrastructure with the potential to combine the monetary system with other registries of real and financial claims. It would need to be a public-private partnership with a clear division of roles, and where the central bank is tasked with underpinning the trust in money.

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Like smartphone platforms, a unified ledger allows various components to work seamlessly together. But unlike them, it is enabled by open architecture that promotes financial inclusion and greater competition.

Such a ledger allows for the use of smart contracts and composability. A smart contract is a computer program that executes conditional 'if/then' and 'while' commands. Composability means that many smart contracts, covering multiple transactions and situations, can be bundled together, like 'money lego'.

With these new functionalities, any sequence of transactions in programmable money can be automated and seamlessly integrated. This reduces the need for manual interventions that delay transactions and reduces dependency on intermediaries, and also allows for simultaneous and near-instant payments and settlement.

Greater interoperability and automated transfers could ultimately benefit consumers through more convenient and cheaper products that are better tailored to their needs, thereby enhancing financial inclusion.

These foreseeable gains may just be the tip of the iceberg of additional transformations. Think about how the smartphone displaced digital cameras. It was not because it takes better pictures, but because it's easier to share these pictures with friends through the same device.

Importantly, programmability and composability do not require decentralised or permissionless platforms. All the potential benefits I just outlined can be achieved in permissioned platforms with various degrees of centralisation. What really brings the benefits of these projects together is the use of money as a means of payment and settlement.

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As the provider of the ultimate settlement asset in the economy, the central bank therefore has an important role to play in the governance of a unified ledger. But it would do so in partnership with other public agencies as well as with private sector participants.

In designing these new infrastructures, there has to be clear thinking on the respective roles of the central bank and the private sector. The central bank stands at the core of the monetary system. It continues to issue central bank money as the economy's unit of account and ensures the ultimate finality of payments through settlement on its balance sheet. However, the consumer-facing activities are best taken on by the private sector.

So, a guiding principle for the unified ledger is to preserve this partnership between the central bank and the private sector. The aim is to tap into private sector creativity and ingenuity to develop new products and services, rather as the smartphone makers decided to open up their platforms to outside developers. Without the almost 2 million apps that exist today, the smartphone ecosystem would be that much poorer.

Trust in the central bank and the regulatory and supervisory infrastructure preserves an essential feature of the monetary system: the singleness of money[2]. Singleness refers to the fact that private monies issued by different banks and central bank money all trade at par: 1 Singaporean dollar deposited in my bank is worth 1 Singaporean dollar in another bank, and I can convert my deposits into the same amount of cash at any ATM.

Viewed through this lens, it is clear that CBDCs and tokenised deposits do not represent new types of money. Instead, they replicate existing forms of money in a technologically superior way. CBDCs, for example, will play the role that central bank money plays in today's system. Tokenised deposits will play the role of commercial bank money.

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What makes central bank money and commercial bank money indistinguishable today is a complex and well-developed network of institutional arrangements, including regulation, supervision, deposit insurance and settlement on the central bank's book. The same should be true of CBDC and tokenised deposits.

But how are we to take full advantage of these technologically superior forms of money?

This is where the unified ledger comes in. CBDCs and tokenised deposits would appear in separate partitions in the unified ledger. Because they share a common ledger, they can be brought together and used in an efficient way, through smart contracts. This would facilitate inclusion and lower transaction costs. Other partitions of the ledger could be used for other assets.

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The novel functionalities arising from this design can enable money to work more efficiently. This takes me to my next point.

Leveraging public goods for private innovation in digital money

When combined with programmability and composability, the additional functionality could open up a whole new range of services that impact our daily lives. One example is by enabling micro-payments that are currently not economical, such as tips to the providers of social media content, or direct payments between 'internet-of-things' devices.

Tokenised deposits and CBDCs could also open the door for more efficient payment arrangements in business settings or for larger purchases. For example, the BIS Innovation Hub's Singapore Centre plans to experiment with embedding policy and regulatory measures in smart contracts, with a view to automating compliance and

increasing transparency. Compliance costs are large. But, by using tokenised deposits and smart contracts, costs would fall, making payments more efficient. This would facilitate inclusion.

Another example would be the process of escrow for buying a house. Escrow accounts secure the funds provided by the buyer until the conditions of a real estate contract are fulfilled. As escrow accounts are usually handled by a third party, the escrow process involves the transfer of funds across different accounts, often at different banks.

Using a smart contract, the escrow process could be automated by locking the respective funds in the buyer's account. Once the escrow process is concluded, the smart contract transfers the money to the seller automatically, and instant settlement is achieved via digital central bank money. By relying on the same institutional structure and using the same trusted settlement asset as in today's system, the singleness of money is preserved.

The full benefits of this revamped escrow process arise from having commercial bank deposits and central bank money in the same programmable form on an integrated platform – a unified ledger.

Thinking even further ahead, we could envisage both assets and multiple regulated entities (commercial banks, payment service providers, asset registries etc) in coordination with the central bank on the unified ledger. The idea is to put complementary things (central bank money, commercial bank money, digital assets) in the same place so that they can interact in efficient ways – like apps on a smartphone. This 'tokenisation' could make buying, selling and transferring assets faster, cheaper and more transparent[3].

Indeed, it could even make delayed settlement of different assets like bonds, stocks and foreign exchange a thing of the past. The level of certainty in financial markets would increase markedly.

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There may be broader economic advantages. As data are recorded on the unified ledger, we can create common and trusted knowledge in a secure and privacy-protecting way. This can open the door for contracts that are not feasible today and which can help individuals and firms to better manage risks[4].

What about stablecoins?

Of course, there are alternative visions of what a future monetary system and digital money could look like. For example, many crypto proponents argue that stablecoins should be the future of money. But what this view forgets is that what sustains fiat money is not the application of novel technologies but all the institutional arrangements and social conventions behind it. And it is precisely these arrangements and conventions that make money reliable for the public.

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Indeed, the past year's events have cast serious doubts on the ability of stablecoins to function as money. Stablecoins must import their credibility from sovereign fiat currencies. They do not benefit from the regulatory requirements and protections applying to bank deposits. They do not settle in central bank money, or enjoy lender-of-last-resort support. Accordingly, they cannot guarantee the singleness of money.

Admittedly, most stablecoins trade close to par when all is well. But things are not always well, and when that happens, exchange rates across payment instruments creep in and the singleness of money is broken. By departing from this core principle, we lose an important part of the soul of money.

Tokenised deposits, in contrast, embody the key aspect of our current system, whereby central bank money and commercial bank money are indistinguishable and come with certain assurances[5].

However, there is an important lesson to be taken from stablecoins from a public policy perspective. Stablecoins arose in part because some of the technical capabilities they provide cannot currently be met by existing forms of money.

It is incumbent upon central banks to make sure they contribute to developing an infrastructure that meets these demands: if central banks do not innovate, others will step in. In the meantime, we must ensure that stablecoins do not harm investors and consumers, or contribute to a fragmentation of the monetary system that undermines the singleness of money[6].

Conclusion

Central banks must embrace innovation. They have a powerful and important mandate, to provide safe and stable money, and in the most efficient and useful way. To embrace its evolution and potential, they should build on the strong foundations that exist, but not be limited by them.

Facilitating the existence of CBDC and tokenised deposits would provide the technological representation of money that further innovation needs. Bringing them onto a unified ledger would have a catalytic effect on further innovation conducted by the private sector.

The good news is that central banks around the world are actively working towards a monetary system that embeds the best of new technology in the solid foundations of the current two-tiered structure[7]. The goal is to build a future monetary system that is adaptable and enables innovation by the private sector in a safe and sound way – in whichever form it may come.

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Endnotes

1. See BIS, "Central banks and payments in the digital era", Annual Economic Report, Chapter III, June 2020.

2. On the importance of the singleness of money see T Padoa-Schioppa, "Shaping the payment system: a central bank's role", Bank of Korea's Conference on Payment Systems – Seoul, 13 May 2004.

3. See I Aldasoro, S Doerr, L Gambacorta, R Garratt and P Koo Wilkens, "The tokenisation continuum", BIS Bulletin, forthcoming.

4. An example involving supply chains is provided by LW Cong and Z He, "Blockchain disruption and smart contracts", Review of Financial Studies, vol 32, no 5, 2019, pp 1754–97.

5. See R Garratt and HS Shin, "Stablecoins versus tokenised deposits: implications for the singleness of money", BIS Bulletin, forthcoming.

6. See F Boissay, G Cornelli, S Doerr and J Frost, "Blockchain scalability and the fragmentation of crypto", BIS Bulletin, no 56, June 2022.

7. See BIS, "The future monetary system", Annual Economic Report, Chapter III, June 2022.

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This article is based on a speech delivered at the Monetary Authority of Singapore (MAS), Singapore, 22 February 2023. I would like to thank the Monetary Authority of Singapore (MAS) for inviting me. It is an honour to deliver this speech on innovation and the future of money here in Asia and especially in Singapore, a true hotbed of financial technology and innovation.

Central bank independence and the mandate—evolving views

Jerome Powell makes a strong case for limited independence within a democratic framework, warning against a central bank widening its remit and scope too far

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I will address three main points. First, the Federal Reserve's monetary policy independence is an important and broadly supported institutional arrangement that has served the American public well. Second, the Fed must continuously earn that independence by using our tools to achieve our assigned goals of maximum employment and price stability, and by providing transparency to facilitate understanding and effective oversight by the public and their elected representatives in Congress. Third, we should 'stick to our knitting' and not wander off to pursue perceived social benefits that are not tightly linked to our statutory goals and authorities.

Central bank independence and transparency

On the first point, the case for monetary policy independence lies in the benefits of insulating monetary policy decisions from short-term political considerations[1]. Price stability is the bedrock of a healthy economy and provides the public with immeasurable benefits over time.

But restoring price stability when inflation is high can require measures that are not popular in the short term as we raise interest rates to slow the economy.

The absence of direct political control over our decisions allows us to take these necessary measures without considering short-term political factors. I believe that the benefits of independent monetary policy in the US context are well understood and broadly accepted[2].

In a well-functioning democracy, important public policy decisions should be made, in almost all cases, by the elected branches of government. Grants of independence to agencies should be exceedingly rare, explicit, tightly circumscribed, and limited to those issues that clearly warrant protection from short-term political considerations.

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With independence comes the responsibility to provide the transparency that enables effective oversight by Congress, which, in turn, supports the Fed's democratic legitimacy.

At the Fed, we treat this as an active, not passive, responsibility, and over the past several decades we have steadily broadened our efforts to provide meaningful transparency about the basis for, and consequences of, the decisions we make in service to the American public. We are tightly focused on achieving our statutory mandate and on providing useful and appropriate transparency[3].

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In a well-functioning democracy, important public policy decisions should be made, in almost all cases, by the elected branches of government

Sticking to our mandate

It is essential that we stick to our statutory goals and authorities, and that we resist the temptation to broaden our scope to address other important social issues of the day[4]. Taking on new goals, however worthy, without a clear statutory mandate would undermine the case for our independence.

In the area of bank regulation, too, the Fed has a degree of independence, as do the other federal bank regulators. Independence in this area helps ensure that the public can be confident that our supervisory decisions are not influenced by political considerations[5].

Today, some analysts ask whether incorporating into bank supervision the perceived risks associated with climate change is appropriate, wise, and consistent with our existing mandates.

Addressing climate change seems likely to require policies that would have significant distributional and other effects on companies, industries, regions, and nations. Decisions about policies to directly address climate change should be made by the elected branches of government and thus reflect the public's will as expressed through elections.

At the same time, in my view, the Fed does have narrow, but important, responsibilities regarding climate-related financial risks. These responsibilities are tightly linked to our responsibilities for bank supervision[6]. The public reasonably expects supervisors to require that banks understand, and appropriately manage, their material risks, including the financial risks of climate change.

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But without explicit congressional legislation, it would be inappropriate for us to use our monetary policy or supervisory tools to promote a greener economy or to achieve other climate-based goals[7]. We are not, and will not be, a 'climate policymaker'. ■

Jerome H Powell is Chair of the Board of Governors of the Federal Reserve System

Endnotes

1. In the past several decades, support for arrangements in which central banks made monetary policy decisions in pursuit of legislated goals of economic and price stability has been buttressed by theoretical and empirical research contributions, including by Kenneth Rogoff, on the benefits of central bank independence. See Rogoff (1985) as well as the discussion below of the distinction between goal independence and instrument independence. With regard to empirical evidence on the matter, see Alesina and Summers (1993) as well as the subsequent research literature of the past three decades, including Crowe and Meade (2008). Bernanke (2010) and Tucker (2018) provide overviews of the development of central bank independence.

2. Our situation is different from that of the European Central Bank, whose independence is enumerated in Article 130 of the Treaty on the Functioning of the European Union, which is available from the European Union at https://lexparency.org/eu/TFEU/ART_130.

3. We continue to strive to improve our transparency. Over my five years as Chair, I have pursued this aim by extending post-meeting press conferences to all FOMC meetings and instituting ongoing personal dialogue with legislators. This continuous dialogue goes well beyond the regular testimony, established by statute, in which I report to the congressional committees that have oversight responsibilities regarding monetary policy.

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4. Although the Federal Reserve has been independent since its inception in 1914, its dual mandate only became part of the law in 1977 (see Bernanke, 2010). The existence of the dual mandate reflects the fact that the Federal Reserve's monetary policy independence corresponds to operational, or instrument, independence, rather than goal independence. See Debelle and Fischer (1994) for an analysis of the distinction between types of independence.
5. Like our monetary policy independence, our independence in this area comes with a high level of transparency about our policies and procedures.
6. For details, see Board of Governors (2022).
7. While US monetary policy has the dual mandate of maximum employment and price stability, some other central banks have somewhat more expansive mandates. The Bank of England and the European Central Bank both have a primary mandate to maintain price stability but a secondary mandate to support the economic policies of the UK government and the European Union, respectively; see the Bank of England Act 1998, part II(11), available from the UK National Archives at https://www.legislation.gov.uk/ukpga/1998/11/contents, and the Treaty on the Functioning of the European Union, Article 127(1), available from the European Union at https://lexparency.org/eu/TFEU/ART_127.

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The cooperation imperative

The world's international economic institutions have helped reduce conflict and support growth. Tim Sargent, Paul Samson and Hector Torres discuss why we need to fix our international economic organizations

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Since the Bretton Woods Agreement of 1944, international economic organizations (IEOs) — including the International Monetary Fund (IMF), the World Bank Group (WBG) and the World Trade Organization (WTO) (and its predecessor, the GATT) — have laid the foundation of the rules-based system that has reduced economic conflicts and supported global economic growth.

They help countries to cooperate to address global challenges

For example, the IMF provides a way to pool financial resources so that a country can borrow when it falls into financial difficulty, helping to prevent and mitigate debt crises that could imperil growth across the world.

Similarly, the WBG provides a mechanism that promotes economic development and alleviates poverty. The WTO, through its negotiation mechanism, allows countries to lower trade barriers in a coordinated and reciprocal fashion, and through its dispute mechanism, prevents the escalation of trade disputes into all-out trade wars.

But these institutions are being undermined

Especially given current global challenges, the relevance of these institutions' policy objectives has not gone away, nor has the need for countries to cooperate to achieve them. However, the IEOs have come under increasing attack in recent years.

The IMF has been criticized for not reflecting the increased economic weight of large emerging economies

One quite valid criticism is that the IEOs are lagging behind changes in the world economy. They have not kept pace with the increasing weight of large emerging market economies. For example, the voting system at the IMF is based on quotas that blatantly underweight large emerging market countries such as China and India.

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And the WTO has also been criticized, for not recognizing that these same emerging economies are ready to compete on an equal footing, and for 'judicial activism' by its Appellate body

In stark contrast, at the WTO, some of these large emerging market economies, rather than assuming full trade responsibilities, cling to special and differential treatment provisions reserved for countries that are not ready to compete on an equal footing.

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Reforming the IEOs will not happen at once, nor will it eliminate the national rivalries playing out on the world stage

As a result, many countries have lost faith in the WTO's capacity to foster further trade liberalization, preferring to negotiate their own deals with select partners. The WTO's dispute settlement function has also been questioned by countries that believe it has overstepped its mandate by indulging in 'judicial activism,' prompting Washington to virtually paralyze the dispute settlement process by holding up appointments to the Appellate Body.

Geopolitical polarization is straining IEOs and the pressure on them has only intensified in the past year or two.

- National security concerns linked to China-US rivalry, the Russian invasion of Ukraine and the initial trade restrictions applied by some countries during the COVID-19 pandemic have shaken confidence in the dependency and the reliability of global supply chains.

  Many economies are now promoting 'onshoring,' 'nearshoring' or 'friendshoring' of supply chains, which is inconsistent with extending most-favoured nation status to all partners — a fundamental principle of the WTO.

- The urgency to achieve climate change goals is being used to justify a resurgence in subsidies' local content requirements — for example, the recently enacted Inflation Reduction Act, which provides large subsidies to electric vehicles but only those produced in a country with which the United States has a trade agreement, thereby excluding most of the world. Such requirements, again, undermine the WTO's most-favoured nation and national treatment principles.

- Use of the global financial system as a foreign policy tool — for example, the proliferation of financial and investment restrictions that have raised concerns about the dollar's dominance of the international financial

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system — has led the developing countries of Brazil, Russia, India and China (the BRICs) and some other countries to explore parallel payment and reserve currency systems.

Rather than weakening these institutions, we need to make them more responsive to changes in the world economy

While IEOs will need to accommodate legitimate domestic policy concerns, policies that lead to further sidelining and undermining of multilateral institutions are counterproductive and will weaken economic growth, which in turn may effectively compel middle-power and developing countries to go against their economic interests and 'take sides' at a time when geopolitical tensions are escalating.

To avoid what the IMF calls 'geoeconomic fragmentation,' we will need to buttress the rules-based trading system, making it more predictable, fair and effective in avoiding the escalation of trade disputes into trade wars.

We will also need to reinforce its global financial safety net, keeping the IMF at its centre by allowing the world's most dynamic economies to increase their contributions to its pool of financial resources.

Any changes must be incremental and carefully balanced

Updating and recalibrating the IEOs will not be easy. It will require building consensus on a package of incremental reforms that could be regarded as balanced — with something for advanced, emerging and developing countries alike.

Ideas are out there: what is needed is brokering consensus on feasible fixes

Fortunately, there are good ideas out there (see, for example, this piece by one of us, *The IMF and the WTO Need Symmetrical Reforms*). The key question: how to get a group of systemic countries to buy into a policy dialogue

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aimed at identifying a balanced package of incremental reforms? How to rekindle a kernel of hope for international cooperation so that countries could accept engaging in a quiet consensus-building dialogue?

The G20 should meet the challenge

We believe that as the premier forum for global economic cooperation the G20 needs to step up and provide a policy space to reconcile economic dynamism with multilateral rules. The G20 has the key economic players—the large economies and the main IEIs (it can also invite others to ad hoc meetings), and it can readily mobilize the expertise required to engineer innovative ways forward.

The New Delhi Leaders' summit should call for a policy dialogue to frame a set of actions

Leaders at the September 2023 G20 Summit in New Delhi, India, should call for an exploratory 'policy dialogue,' aimed at having a frank discussion to identify which reforms could restore confidence in the effectiveness of IEOs by making them more reflective of current economic realities.

The goal should be to come back to leaders with a set of incremental and balanced reforms that can command widespread support.

A kickstart on IEO reform could spark a renewed spirit of cooperation in other places it is desperately needed

Reforming the IEOs will not happen at once, nor will it eliminate the national rivalries playing out on the world stage. But if the world is able to come together on some sensible reforms to the IEOs, that renewed spirit of cooperation could breathe new life into other areas where international cooperation is desperately needed. ■

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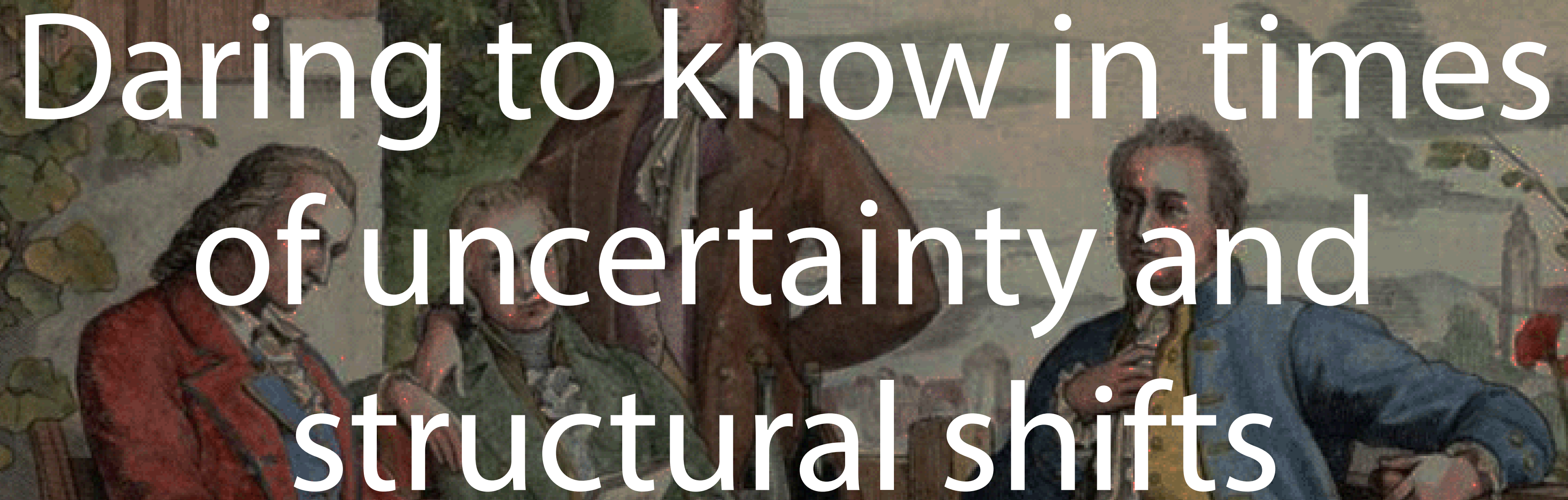

Daring to know in times of uncertainty and structural shifts

Klaas Knot considers three structural shifts in the global economy: NBFI, cryptoassets and climate change, which affect the resilience of the global financial system

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This beautiful wood engraving[1] depicts a scene in 1794. You can see four well-dressed men, sitting in a flourishing garden in Jena – a city a few hours east from Frankfurt. The four men are sitting around a table, filled with wine and grapes– and they appear to be engaged in a civilized discussion.

The four men on the drawing are the brothers Wilhelm and Alexander von Humboldt, respectively statesman and explorer, the poet Friedrich von Schiller and, of course, scientist, writer and poet, Johan Wolfgang von Goethe.

The four of them were the intellectual fab four of late 18th century Germany. They strongly believed in the powers of reason – as opposed to royal decrees or religious dogmas. They strongly believed that individuals were to be enlightened – through science, art, and literature. They strongly believed in *"sapere aude"* – in daring to know.

I was asked to talk about systemic risks. More precisely, about where the next systemic financial crisis might come from. And truth be told – this is hard to say. We can't predict that with any reliability.

One only needs to recall the way that the COVID pandemic hit us to know that a crisis can emerge unexpectedly. This is exactly why predicting the next crisis is not what we aim to do at the Financial Stability Board (FSB).

Instead of predicting, our aim is to approach financial stability with a different way of thinking. Financial stability is the capacity of the global financial system to withstand shocks, by containing the risk of disruptions in the financial intermediation process that would be severe enough to adversely impact the real economy.

In short: our work is about enhancing the resilience of the global financial system. So that, when the next crisis materialises, the system as a whole can cope with it.

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In order to increase that resilience, we try to know as much as possible about the vulnerabilities in our financial system. And we do this by relying on the powers of reason, logic, cooperation and data. In other words, by following the brothers von Humboldt, Friedrich von Schiller, and Johan Wolfgang von Goethe in *sapere aude*.

So how do we go about that?

To increase the resilience of the global financial system and to enhance financial stability, we rely on the FSB's financial stability surveillance framework. Let me start by walking you through this framework, and then I will illustrate how we apply it.

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It is better to prevent vulnerabilities from growing in the first place, rather than having to reduce them once they already pose a global threat

The FSB's financial stability framework is based on four guiding principles.

First, we need to identify the vulnerabilities that may threaten global financial stability. I say 'vulnerabilities' instead of 'shocks' or 'risks'. That is intentional.

The pandemic is a shock. The war in Ukraine is a shock. A rapid shift in financial market conditions would be a shock. Shocks are by definition unpredictable – so they don't offer a solid starting point for financial stability policy. Risk – that is the risk of a shock large enough to have a financial stability impact – is similarly very difficult to assess.

Vulnerabilities, on the other hand, can usually be measured, at least to a certain extent. Think for instance about the build-up of imbalances, like a rise in leverage during a credit boom. And so, they do offer a starting point for financial stability policy – policy that is aimed at reducing these vulnerabilities. Through this approach we can mitigate potential systemic disruption, once a shock hits our global, highly interconnected financial system.

And so, in the spirit of Alexander von Humboldt, who measured and mapped large parts of the world, we, in turn, try to map and measure global vulnerabilities – rather than the shocks that may or may not materialise.

Second, once mapped and measured, we monitor these vulnerabilities, taking into account the potential interactions between them. We also deploy a forward-looking perspective, by considering emerging vulnerabilities in addition to current ones.

It is better to prevent vulnerabilities from growing in the first place, rather than having to reduce them once they already pose a global threat.

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Our third guiding principle is that we recognise the differences among countries. The FSB's membership reflects the diversity of our global financial system, with members from both emerging market and advanced economies. And these differences are reflected in our assessment of vulnerabilities.

We fully recognise that some vulnerabilities may be more relevant for emerging market economies, and others for advanced economies, or for different sets of jurisdictions.

For example, the urgency policymakers ascribe to some of the risks relating to cryptoassets and crypto-markets differs across countries. In some economies, the most pressing concern is the potential loss of monetary sovereignty. In other economies, the risks of money laundering and fraud are perceived to be more urgent.

The fourth and final guiding principle, is that the FSB leverages on this diversity of its membership. There lies tremendous strength in that diversity. FSB members not only come from different kinds of economies, but they are also represented by different kinds of authorities: ministries of finance, central banks, and securities and market authorities.

Our members also include global standard-setting bodies and international organisations. Many of those members carry out and publish financial stability assessments. The FSB's vulnerabilities assessment therefore builds on those analyses.

With these four guiding principles, I have given you a brief and mainly theoretical outline of the FSB's financial stability surveillance framework. I hope that this approach, this way of thinking about how to enhance the resilience of the global financial system, provides you with some stimulus for today's discussions.

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But what does it look like when we actually apply this framework? To illustrate this, allow me to touch on several of the key FSB priorities.

First, I will focus on the cyclical vulnerabilities that emerge from the current outlook. The combination of rising inflation, tightening financial conditions and the fallout from Russia's invasion of Ukraine has led to a synchronised slowdown in global economic activity. This is occurring against a backdrop of high levels of debt of households, non-financial corporates and sovereigns.

The latter implies that some governments have limited fiscal space to provide additional targeted policy support. And given the increases in inflation, central banks also have less policy space to react to financial stability shocks.

Although this outlook is challenging, so far the global banking system has shown itself to be resilient. Global financial markets have largely coped in an orderly manner, with limited and temporary support when necessary. And systemic financial institutions have shown resilience to market strains – in large part due to the financial reforms, following the 2008 Global Financial Crisis, that were coordinated through the FSB.

However, there is no room for complacency. Financial institutions and market participants have not experienced sharply rising interest rates for a long time. Very low interest rates may have become embedded in business models, making the adjustment to a world of higher rates challenging. Companies and households that have borrowed money will also need to adjust to higher interest payments, and problems may materialise only with a lag.

So, we need to remain vigilant. A deterioration of banks' asset quality may still occur, and other vulnerabilities, like the ones on today's agenda, need to be monitored closely. Some of these vulnerabilities may have been previously prevented from materialising by authorities' COVID-19 support measures. But now these measures are being lifted.

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So it is important to address debt overhang issues of non-financial corporates, and to respond to potential issues of underinvestment due to excessive indebtedness or misallocation of resources to unviable companies.

All of these are what I would call cyclical vulnerabilities. But, more fundamentally, we also need to be wary of vulnerabilities that stem from structural shifts in the global financial system. So allow me to say a few words on three structural shifts that the FSB is currently focusing on, and the associated vulnerabilities.

First – the structural shift in the provision of finance from banks to non-banks. In our *Global Monitoring Report* on non-bank financial intermediation, from December 2022, we highlighted that the NBFI sector reached 239 trillion US dollars in 2021.

If a number on that scale is hard to put into context, a more telling figure is perhaps that the NBFI sector increased its relative share of total global financial assets to 49% in 2021, compared with 42% in 2008. Almost half of all global financial assets are now being intermediated by non-banks.

While diversifying the sources of credit can make the global economy more resilient, the growth in NBFI has exposed important vulnerabilities in the non-bank sector. We have seen the problems that these vulnerabilities can cause several times in recent years: for instance, the 'dash for cash' episode during the onset of the pandemic, the strains in commodity markets last year, and more recently the challenges faced by UK pension funds.

Thankfully, these strains have proved temporary, but only after massive official sector interventions were deployed. These examples therefore serve as a warning to remain vigilant on the recurring themes of leverage, including hidden leverage, liquidity mismatches, and data gaps.

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The FSB's NBFI work programme and policy proposals aim to address these vulnerabilities. In 2023, we will continue to focus on some key vulnerabilities within the sector.

Apart from monitoring systemic risk in NBFI, we will review the effectiveness of our money market funds policy proposals from 2021; revise our recommendations from 2017 on liquidity mismatches in open-ended funds; and conduct follow-up work on margining practices and hidden leverage in NBFI.

A second structural shift we have witnessed, is the digitalisation of finance. This comes in many shapes and forms, but I will focus on the rapidly developing cryptoasset ecosystem. Cryptoasset markets and activities bear a multitude of risks and vulnerabilities.

While the technology behind cryptoassets is often being promoted as game-changing, the vulnerabilities associated with them are in fact quite similar to those we know from traditional finance.

Liquidity mismatches, hidden leverage, and counterparty credit risk are all examples of well-known financial risks that have also materialised in crypto-asset markets in the past year.

National regulatory authorities have recognized that these activities are in essence financial activities and have begun regulating them. This is challenging for national authorities, however, because cryptoasset markets are inherently global in reach.

So, in the presence of structural vulnerabilities and in the absence of globally consistent regulation, the FSB is concerned cryptoasset markets may soon pose a challenge to global financial stability.

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The FSB therefore concluded that cryptoasset activities and markets must be subject to effective regulation and oversight commensurate to the risks they pose, both at the domestic and international levels.

To this end, the FSB proposed a comprehensive global framework for the effective regulation of cryptoasset activities, including stablecoins, in October last year. This framework embeds the principle of 'same activity, same risk, same regulation'. Finalising these recommendations and monitoring their effective implementation across all jurisdictions will be a priority for the FSB in 2023.

Of course, the FSB does not operate alone. Just like in the traditional financial sector, there is a myriad of functions that the cryptoasset ecosystem covers or otherwise touches. So it is key to have solid cooperation between the different standard setting bodies, all with their different mandates.

Third – it is impossible to talk about systemic risk without mentioning one of the most fundamental challenges of our time: climate change. The events of the past year have again emphasised the importance of addressing these vulnerabilities.

The volatility in energy markets, exposures to hard-to-predict physical risks and the challenges of the transition to net zero are all examples of vulnerabilities that have an impact on the financial sector. So addressing the financial risks stemming from climate change is, and will remain, high on the FSB agenda.

One way we are working on this, is with our roadmap. With that roadmap, we are coordinating the international efforts to address climate-related financial vulnerabilities. It consists of four key elements: disclosure, data, vulnerability analysis and supervisory and regulatory tools.

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One of the main priorities is the reliability and consistency of data, because that is what good risk management starts with. A key priority for this year is the finalisation and implementation of a global climate-related disclosure standard. Other priorities are analysing the use of transition planning and the improvement of our framework for monitoring climate-related vulnerabilities.

Let me wrap up. NBFI, crypto and climate-related financial risks – these are just three priorities for the FSB and the global financial system I wanted to touch on.

But for every risk or vulnerability we focus on, be it cyclical or structural, the same principle applies: the FSB diligently maps, measures and monitors all threats to the stability of our global financial system.

We provide a global, crossborder, cross-sectoral and forward-looking perspective on the vulnerabilities we identify. And we do this by drawing on the collective perspective of the broad membership of the FSB.

And this way of working, fearless and in the spirit of *sapere aude*, does not allow me to predict where the next systemic crisis might come from, but it does allow us to enhance the resilience of the global financial system, to whatever may come its way.

In that spirit, the FSB decides where coordinated action is required, monitors the effects of its actions, and assesses where further adjustments are needed. Or, as Goethe said: *"Knowing is not enough; we must apply. Willing is not enough; we must do."*

The four men in the wood engraving continue to be an inspiration today. Each with their own merits – and together, as an example of how reason advances humankind.

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After Friedrich von Schiller's death, and as an introduction to the correspondence between the two men, Wilhelm von Humboldt wrote an essay on his close association with the famous poet. And in that essay, he stresses the importance Schiller attached to conversation – to how conversation, expressing ideas, exchanging views, ultimately leads to deeper understanding.

To how conversation, you could say, embodies *"sapere aude."* Or in Schiller's words: *"Erkühne dich, weise zu sein."*

And this is just the kind of conversation I hope you will have. ■

Klaas Knot is the President of the Netherlands Bank and Chair of the Financial Stability Board

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Endnote

1. "Schiller, Wilhelm and Alexander von Humboldt and Goethe in Jena" (Event date: 1794, image date: 1860). Wood engraving after drawing by Andreas Müller (1831-1901).

This article is based on a speech delivered (virtually) at the 11th ILF Conference on the Future of the Financial Sector "The Next Systemic Financial Crisis – Where Might it Come From?": Financial Stability in a Polycrisis World, at the Goethe University's Law and Finance Institute, Frankfurt am Main, 24 January 2023.

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Navigating international trade through economic turbulence

International trade is returning to pre-pandemic levels, but threats are emerging. Graham Bright discusses potential obstacles to trade

As the logistics of trade become smoother and returning to pre-COVID levels, new threats are emerging, requiring all players in the trade ecosystem to take notice and act. Political upheaval, wars, rising energy prices, raw material shortages and transport costs have compounded to make the past six months the most challenging, not only for major economies, but in emerging economies also. This is no longer an isolated issue, but a global situation.

International trade is complex enough, and the immediate problems and how these may be navigated can be categorised as follows.

Proximity

Buyers and sellers are geographically distanced, never meet, must establish trust, agree modes of operation, agree timelines for order placement and delivery and contend with high transport costs and risk.

There are few solutions to help here, although companies are actively seeking more local providers, or at least countries with closer borders or ports. The rising cost of import from some countries traditionally thought of as cheap, has led to buyers actively seeking out new markets, not only for closer product but with shorter transit times and a better view of all the players involved, through the lifecycle of transactions.

Language

With emerging markets and with many spoken languages, even though English may be the most common language in trade, as is the US Dollar for settlement of deals, documents must be translated and interpreted to ensure that the conditions required and goods you order are the goods received according to agreed contracts.

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Just as SWIFT and the ISO collaborated to standardise the format and meaning of structured financial instructions, the international trade arena is yet to find a common language for proforma invoices, sales contracts etc as buyers will still require local language and nuances in each document for their purchases and contracts.

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With every crossborder transaction comes risk. Whether by road in countries with poor infrastructure to the high seas, where freak storms, piracy, loss or damage of cargo and even sinking are thankfully rare, these are still substantial risk events

The top four languages spoken in the world are currently English, Mandarin, Hindi and Spanish, followed by Arabic and French. As a financial institution, to assist our clients with their local documents, we recommend authorised and certified translation services into English, still the most common language used in international trade.

Transport

Container prices have risen substantially, as has the fuel for trucks to physically transport them. Critical raw materials such as precious metals for batteries are also in short supply. This is further affected by the conflict in Ukraine, displacement of containers and rising general material costs including food.

With every crossborder transaction comes risk. Whether by road in countries with poor infrastructure to the high seas, where freak storms, piracy, loss or damage of cargo and even sinking are thankfully rare, these are still substantial risk events.

Whilst there is insurance available to cover such risks, there is the inevitable increase in cost.

Know your foreign customer

Do we really know enough about our customer 5,000 miles away? With no direct relationship, the issue of identity, the critical requirements of means and intent to pay always arises.

Databases of financial information to assist in working out creditworthiness do exist, and are extensively used, however there is always a doubt on authenticity of paperwork, reputation of banks providing proof of funds and potential collusion between parties to defraud financial guarantors etc.

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This is especially difficult in some emerging markets jurisdictions where there is no equivalent of a Companies House or official register, use of trusts to mask the true beneficial owners, shareholders and directors.

In trying to ascertain the true extent of credit risk, EEB use the additional network of agents and partners to meet the client, procure the financial statements and ensure collateral, trust and confidence are obtained. Our use of blockchain in ensuring the validity of documents and identity for KYC and compliance as golden records also assists in this area.

Trade restrictions

Whether to preserve home industries or prevent financial flight in low liquidity economies, all countries have customs duties on imports and suffer tariffs on exports. In addition to these restrictions, each country has its own regulations, which are changing frequently and usually in isolation.

Firms need to be aware of the International Chamber of Commerce recommendations, all geared around trying to standardise the way in which all players in the ecosystem are armed with the same information, details, rules agreements, conditions and contract terms to facilitate rapid, secure, electronically backed trade.

Documentation

We have talked about the complexity of rules, and documentation is no different. Trade documents have unstructured data, with the addition of Free Trade Agreements, many of the trade barriers are being swept away by the introduction of the Model Law on Electronic Transferable Records (MLETR) aimed to enable the legal use of electronic transferable records both domestically and across borders.

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This model law is of critical importance, adopted by the United Nations Commission on International Trade Law allows the use of transferable documents and instruments in electronic form, such as bills of lading, warehouse receipts, bills of exchange, promissory notes and cheques. Importantly it allows title and possession to pass instead of waiting for paper documents.

This key piece of legislation, which will benefit all economies will allow merging of logistics and supply chains, and regulatory documents, in a single electronic transferable record.

Foreign markets

While we always think about KYC elements, knowing the market is also key to successful trade, especially as we deal in over 150 countries. Even if they are geographically close, each market is different, with their own customs, regulations, type of goods, consignees, middlemen, agents, weights and measures, minimum and maximum deal size, etc.

As a financial institution we analyse the goods, the market conditions, which instruments are acceptable, so understanding foreign markets is essential. Again, having people on the ground, well versed in how local commerce works, the local players, regulation and custom is vital to sustainability of healthy business.

Payment and liquidity

Apart from bad debt risk, companies in many economies are now constrained by the high value of the US dollar, costly and often prohibitive exchange rates vs local currency, lack of liquidity where local banks are unable or unwilling to support foreign transactions, and few payment channels supporting remittance to foreign countries on an exceptional basis, again attracting major fees.

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In some cases we hear of charges being so punitive that small buyers are discouraged from buying from abroad and being disintermediated in international trade deals. To counter this, our institution assists clients by mitigating their risks and requirement for 110% of collateral required by major banks for the entire period of a trade.

Imagine you are a small SME wanting to import goods for USD 250,000, but your bank demand you lock those funds in an escrow account for one year. This is clearly untenable for smaller clients as this effectively kills their cashflow, the lifeblood of business.

So, as one example of how we assist, we take a more proactive approach in charging fees for issuance of instruments, assigning title after receipt of full settlement at the end of the transaction. Their business is preserved, enabling them to remain competitive and to build more sustainable transactions.

In conclusion, despite market fluctuations, FX pressure, liquidity, transport cost rises, identity, paperless digitised trading and regulatory pressures being as strong as ever, additionally influenced by geopolitical, environmental and governance issues, EEB remains ever vigilant, confident and well positioned to understand, and manage the constantly changing environment in which the world of trade finds itself tackling every day. ■

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

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Lending and market making as a last resort

Willem Buiter, Stephen Cecchetti, Kathryn Dominguez and Antonio Sánchez Serrano summarise central bank policy frameworks used when stabilising financial markets

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Starting with the 2007-2009 crisis and continuing with the COVID-19 pandemic, financial markets have faced a series of adverse liquidity shocks. As a result, central banks expanded their policy frameworks as enhanced lenders of last resort and market makers of last resort. This column summarises the key features of these expanded policy toolkits and how they have been used to protect financial stability. It also outlines a set of desirable features of these facilities to maximise effectiveness while minimising risks in the future.

Market liquidity disappears when there are no willing buyers, or when the only bids are at prices far below any reasonable estimate of fundamental or fair value. This can happen when the normal purchasers of the instrument vanish or when the market makers malfunction.

Starting with the 2007-09 financial crisis and continuing through the COVID-19 pandemic, financial markets faced a series of adverse shocks that severely impacted liquidity. In response, central banks scrambled to update their policy toolkits as enhanced lender of last resort (LOLR) and as market maker of last resort (MMLR) (Buiter and Sibert 2007, Cecchetti and Tucker 2021).

To ensure financial stability, safeguard the monetary policy transmission mechanism, and guarantee the continued flow of credit to the real economy, central banks expanded their lending operations to restore funding liquidity and intervened in financial markets directly, purchasing securities to restore market liquidity.

Looking at the actions of 40 central banks for the period from March 2020 to March 2021, Cantú *et al* (2021) catalogue 527 interest rate changes, 59 adjustments in reserve requirements and reserve remuneration rates, 143 lending support actions, 101 actions related to exchange rate policy (including swap lines), and 54 asset purchase operations.

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Advanced economy central banks are clearly less hesitant now to intervene in a variety of markets than they once were. These interventions were on an ad hoc basis[1].

After all, without well-functioning financial markets and a stable financial system, the monetary policy transmission mechanism would not function properly, and policymakers would not be able to meet their price stability or dual mandates.

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It is essential that we continue refining a framework for stabilising systemically important financial markets

Rising policy rates aimed at restoring price stability, combined with high public and private sector debt, raises the risk that market liquidity and funding liquidity for systemically important financial instruments and market participants could suddenly disappear once again.

In a recent report of the Advisory Scientific Committee of the European System Risk Board (Buiter *et al* 2023), we discuss the implications of lending and market making as a last resort to stabilise systemically important financial markets.

In their traditional lending operations, central banks make loans to banks and a limited range of other intermediaries against a restricted set of high-quality collateral. Today, a much wider range of collateral is accepted from a broader range of eligible counterparties in enhanced lending operations directed at ensuring credit flows to non-bank financial institutions (NBFIs) and non-financial firms.

Furthermore, the experience following the 2007-09 financial crisis shows that central banks' enhanced lending to impaired market makers has often succeeded in restoring their market making capacity, obviating the need for direct purchases.

While a credible announcement of a market maker of last resort facility could suffice to stabilise markets without the need for any asset purchases, on a number of occasions central banks (or entities they controlled) acquired bonds outright and expanded their lending operations, both within and across borders.

Reflecting on central bank interventions

Clearly, advanced economy central banks are now less hesitant to intervene directly in markets, purchasing both government and privately issued securities in an effort to stabilise financial markets they view as systemic. At least initially, policymakers considered such policies to be extraordinary measures for extraordinary circumstances.

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However, as policymakers intervened massively during the 2007-09 financial crisis and in the early stages of the COVID-19 pandemic, markets are likely to expect policymakers to use these instruments again if faced with similar circumstances.

As a result, there is now less of a distinction between (permanent) standing facilities that are only active in exceptional circumstances and ad hoc strictly temporary facilities.

Our report begins with the observation that central banks are now extensively employing enhanced lender of last resort and market maker of last resort facilities, often putting them in place quickly and in a manner that leaves little time to reflect on their design and structure. With that in mind, we reach the following conclusions:

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- The enhanced lender of last resort and the market maker of last resort are public sector entities (or government-funded and government-guaranteed entities) that aim to ensure that systemic financial markets for domestic currency denominated securities remain liquid.

- An important justification for having enhanced lender of last resort and market maker of last resort facilities is that, in addition to their central role in the monetary policy transmission mechanism, financial markets are increasingly becoming a significant source of financial and systemic risk.

- Establishing an enhanced lender of last resort or market maker of last resort creates moral hazard, encouraging excessive risk taking and distorting prices. Reducing risk-taking incentives and minimising the impact on prices requires that authorities strike a complex balance.

  The cost of borrowing from the enhanced lender of last resort or selling to the market maker of last resort should be set at penalty terms, so that both options are unattractive in normal times but appealing relative to the expensive (or non-existent) alternatives in stress periods.

In addition, rigorous regulation and supervision during normal times of those that may benefit from enhanced lender of last resort and market maker of last resort facilities can further mitigate moral hazard during periods when markets are disorderly.

- It is essential that the enhanced lender of last resort and the market maker of last resort have balance sheets that can expand quickly, lending to qualified counterparties or purchasing securities in almost unlimited amounts. This means that the enhanced lender of last resort and the market maker of last resort must be either the central bank itself or an agent with unlimited access to the central bank whose solvency is unquestioned.

- The evidence suggests that in many instances, authorities can achieve their market stabilisation objective either as an enhanced lender of last resort, lending in domestic currency to regulated private agents acting as market makers or as normal purchasers, or as a market maker of last resort that stands ready to buy any quantity of a given domestic currency denominated security offered at a set price.

- The enhanced lender of last resort and the market maker of last resort are capable of achieving the same stabilisation goal except in the following circumstances: (1) when concerns about the quality of the securities cause the market to disappear, (2) when private market makers become concerned that they will be the only participant left in a market as a buyer, (3) when regulatory constraints on balance sheet size bind, (4) when speed is of the essence, and (5) when it is impossible for the authorities to establish the solvency (or identity) of potential borrowers. Under these conditions only the market maker of last resort can do the job.

Desirable attributes of a framework for stabilising financial markets

Since authorities may feel compelled to use both facilities again, we ask how they might design an enhanced lender

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of last resort and market maker of last resort to maximise their effectiveness while minimising the damage that they might cause. This leads us to develop a set of desirable attributes.

- Be transparent and clear. When lending or buying, explain the objectives, instruments, and terms, and provide a clear justification for the establishment of the facility. If the purpose of a facility changes, describe what is happening and provide a justification. Note that a facility can serve multiple objectives at the same time.

- Support only financial markets deemed essential. In the choice of target markets and instruments, be clear that the purpose of interventions is to address financial stability risks. The aim is to address market dysfunction, not to steer credit to favoured sectors, firms, individuals, or governments.

- To be able to ascertain their solvency, lend only to regulated and supervised counterparties. As a market maker of last resort, buy from all sellers that can reliably deliver, say by insisting on delivery versus payment.

- Set up facilities so that counterparties initiate loans and purchases. For lending, offer loans with clear terms and let borrowers choose whether and how much to borrow. For purchases, set a price and offer to buy however much sellers wish to sell.

- Develop and maintain an ongoing capacity to price often illiquid securities that could be accepted as collateral in a lending operation or be purchased outright.

- Control moral hazard by offering pricing that would be unattractive in normal times. Lending rates and haircuts should carry costs that are high in normal times. When purchasing outright, offer to buy at prices that are below the bids offered when financial markets are operating normally.

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- Lend or buy as little as possible and, when feasible, sterilise the interventions to distinguish them from expansionary monetary policy.

- Recognise that credible announcements may reduce the scale of required interventions. Experience suggests that when markets become illiquid and market participants believe the central bank will lend or purchase a sufficiently large amount, it may not be necessary for the central bank to do much.

- Exit quickly while minimising the impact on asset prices. Have an announced policy in place that establishes the timing and trajectory for normalisation (including the sale of assets acquired through the market maker of last resort operation and the unwinding of loans made through the lender of last resort operation).

- Control balance sheet risk. State clearly who bears the credit and market risk associated with the transactions. Indicate whether the fiscal authority is providing indemnification or whether losses will be borne by the central bank.

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Final considerations

To conclude, given that central banks are likely to continue to intervene, it is essential that we continue refining a framework for stabilising systemically important financial markets.

First and foremost, we need an agreed-upon procedure for determining which markets are systemic and deserving of central bank support. Any decision to intervene requires judgement on whether these markets are strictly necessary for a well-functioning financial system, as well as an understanding of how financial markets are related to each other and how financial market disruptions can influence the real economy and the operation of the monetary policy transmission mechanism.

Second, central banks need to develop a continuous capacity to price securities when markets disappear. Collateral frameworks already require estimation of fundamental values, but these will need to be expanded to include valuation of a potentially wider set of securities.

Third, an appropriate expansion of counterparties, likely including non-bank financial institutions, need to be identified for the enhanced lender of last resort.

Fourth, decisions need to be made about whether enhanced lender of last resort and market maker of last resort facilities should remain ad hoc or become permanent but usually dormant facilities.

Finally, facilities need to be structured in ways that mitigate moral hazard. This means improving our understanding of how we can adjust the prudential regulatory and supervisory regime to reduce the reliance of financial intermediaries on the central bank backstop in episodes of illiquidity. ■

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Endnote

1. Prominent examples include the Bank of England's Corporate Bond Purchase Scheme (launched in August 2016, expanded in 2020, and expected to be fully unwound by the end of 2023), Sveriges Riksbank's corporate bond purchases (which began in September 2020 and was discontinued in December 2022), the Federal Reserve's Primary and Secondary Corporate Credit Facility (created in March 2020, with purchases of eligible assets ceasing at the end of 2020), and the Bank of Canada's Corporate Bond Purchase Program (initiated in May 2020 and discontinued in May 2021). Descriptions of ECB policy responses to the March 2020 turmoil are referred to in de Guindos and Schnabel (2020a, 2020b).

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Central banks are facing an epic battle

Where next for inflation, interest rates and economic growth? Steve Schifferes believes that fears of a 1970s-style stagflation could become a reality

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Some of the world's biggest economies – and their central banks – face a tricky task this year taming inflation via higher interest rates without triggering a recession. And whether they like it or not, the US Federal Reserve, the Bank of England and other central banks are now being thrust into the center of a political debate that could threaten their independence as well as their ability to act decisively to curb rising prices.

I've been following and covering politics and finance for four decades as a reporter and now as an economics research fellow. I believe there are two key ways politics may interfere with central bank plans in 2023.

An inflationary challenge

High inflation is perhaps the biggest challenge facing the world economy over the coming year.

Inflation has rapidly accelerated and is now at or near its highest rate in decades in most developed economies like the US and in Europe, causing living standards to stagnate or decline in many countries. This has particularly hurt the poorest people, who suffer a higher rate of inflation than the general population because they spend more of their income on food and energy.

The sharp rise in inflation caught central banks by surprise after two decades of low and stable inflation. They reacted by aggressively raising interest rates in the second half of 2022, with the Fed leading the way. The US central bank lifted rates 4.25 percentage points over a six-month period, and the Bank of England, the European Central Bank and others followed in its footsteps.

Their strategies seem to be working. Inflation in the US has slowed, while in the UK and the eurozone, recent data suggests inflation may have peaked – although it's still very high, at around 10% – and might start trending down.

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But interest rate hikes – which are expected to continue in 2023, albeit at a slower pace – could further cloud the outlook for economic growth, which already looks grim for developed economies.

The Organization for Economic Cooperation and Development predicts that in 2023 both the US and the eurozone will grow by only 0.5%, well below their historic averages, while Europe's largest economy, Germany, will actually shrink by 0.3%. In the UK, the Bank of England projects that the economy will continue to shrink until the middle of 2024.

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Both governments and central banks are entering uncharted waters in their attempt to curb inflation without stifling growth. If their projections prove overly optimistic, the political as well as the economic costs could be high

Fiscal spending and inflation

That brings us to the first political problem that could upset central bank plans: government spending.

The politics is playing out in different ways. In the US, spending has increased substantially, most notably with the $1.2 trillion infrastructure bill signed into law in late 2021 and the $1.7 trillion budget bill passed in December.

This kind of expansionary fiscal policy, which may be in place for years, could undermine attempts by central banks like the Fed to fight inflation. As the central banks seek to reduce inflation by curbing demand, increased government spending has the opposite effect. This could force the Fed and other banks to raise rates even higher than they otherwise would have.

In Europe and the UK, governments have been forced to spend billions to subsidize the energy bills of consumers and businesses, while the economic slowdown has reduced their tax revenue, leading to soaring government deficits

Nevertheless, in the UK the Conservative government has prioritized the fight against inflation, announcing cutbacks to consumer subsidies for energy, plus higher taxes and further cuts in public spending if it wins the next general election, which is expected to take place in 2024. While these actions are deflationary, they are politically unpopular.

The Bank of England is now split on whether, or how fast, to continue to raise rates.

Central bank independence under threat

The other political problem is more existential for central banks and makes their task all the more delicate.

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For the past 20 years, their independence from government interference and the setting of public inflation targets at around 2% have helped them gain credibility in fighting inflation, which stayed at historic lows for much of the 21st century.

Now both their credibility and independence may be under threat.

Central bankers, especially in Europe, are acutely aware of public concerns about how higher interest rates might stifle growth, in part because their economies have been more severely affected than the US by the Ukraine war. Meanwhile, consumers are being hit by higher mortgage payments, which may tank the housing market.

At the same time, central bank efforts to persuade workers not to ask for higher wages to compensate for inflation, which would help reduce the need for more interest rate hikes, have spectacularly backfired, especially in Britain, where a wave of strikes by public-sector workers shows no sign of abating.

Long-standing political tensions over the role of the European Central Bank have been exacerbated by the election of right-wing governments in several eurozone countries.

Traditionally, under the influence of Germany's Bundesbank, the European Central Bank has worried about inflation more than other central banks. Under competing political pressures, it has moved more slowly than some other central banks to unwind its policy of low – and even negative – interest rates.

On the other side of the Atlantic, where Fed Chief Jerome Powell has rejected any attempt to mitigate his focus on inflation, political pressures may grow from both left and right, particularly if Donald Trump becomes the

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Republican presidential nominee. This ultimately may lead Congress or a new administration to try to change the central bank's approach, its leadership and even its mandate.

Uncharted waters

None of this might be a problem if central bank projections of a sharp fall in inflation by the end of 2023 come to pass. But these projections are based on the belief that energy prices will continue to remain below their peak or even fall further in the coming year.

Just as in 2022, when central banks failed to grasp the inflationary threat early enough, other risks beyond their control, as well as political developments, may derail their hopes. These include an escalation of the war in Ukraine, which could raise energy prices further, more supply chain disruptions from China, and domestic pushes for higher wages.

With the cost-of-living crisis now at the top of the public's agenda in many developed countries, the setting of interest rates has ceased to be just a technical matter and has instead become highly political. Both governments and central banks are entering uncharted waters in their attempt to curb inflation without stifling growth. If their projections prove overly optimistic, the political as well as the economic costs could be high.

All this means that the outlook for inflation is highly uncertain. And fears of 1970s-style stagflation – high inflation and stagnant economic growth – could become a reality. ■

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Monetary policies that do not subsidise banks

Paul De Grauwe and Yuemei Ji argue that a better policy would avoid transferring central bank profits to commercial banks

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Central banks pay interest on commercial banks' holdings of cash reserves at the central bank. Thus, recent rate increases imply larger interest payments to commercial banks and loss of revenue for national governments. This column argues that a better policy would be to combine sustained sales of government bonds with higher minimum reserve requirements. This would avoid transferring central bank profits to commercial banks, which essentially amounts to a subsidy paid by the central bank.

The recent increases in the interest rates have important implications for the profits and losses of central banks. Since major central banks pay interest on commercial banks' holdings of bank reserves (held at the central bank), interest rate increases also lead to larger interest payments by the central banks to these commercial banks[1].

Taking the example of the Eurosystem: bank reserves held by credit institutions at the national central banks and the ECB amounted to €4.6 trillion at the end of 2022 (ECB, Statistical Data Warehouse). In December 2022 the remuneration rate on these bank reserves held by commercial banks was raised to 2%.

This means that the Eurosystem will be paying out €92 billion interest to credit institutions during 2023. These interest payments are probably going to be even larger as the ECB has announced further interest rate increases.

One way to give an indication of the size of these interest payments is the following. The extra €92 billion interest payments to the banks means that the Eurosystem will have to reduce its profit transfers to the national governments by €92 billion. This loss of revenue of national governments amounts to 0.75% of euro area GDP and will lead to an increase in the budget deficit of 0.75% of euro area GDP, requiring additional fiscal austerity in the future.

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Given that the short-term interest rate is likely to be raised further, the fiscal squeeze will likely reach 1% of euro area GDP in 2023. And this is likely to happen when the euro area enters a recession.

Several issues arise here. First, why should commercial banks be remunerated for holding liquid reserves at the central bank? Second, is this remuneration necessary to conduct monetary policy? Third, do there exist alternative policy procedures that avoid making large interest payments to banks?

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It is difficult to find an economic justification why bankers should be paid when they hold liquidity while everybody else should accept not to be remunerated

Why should commercial banks be remunerated for holding liquid reserves?

Many economists today take it for granted that bank reserves are remunerated. Yet this remuneration is a recent phenomenon. Prior to the start of the euro area in 1999 most European central banks, with the exception of the Bundesbank, did not remunerate banks' reserve balances.

Under pressure from the Bundesbank, the ECB started this practice in 1999. The Federal Reserve introduced the remuneration of banks' reserve balances only in 2008. Thus prior to 2000 the general practice was not to remunerate banks' reserve balances.

This made good sense: commercial banks themselves do not remunerate demand deposits held by their customers. These demand deposits have the same function as bank reserves at the central bank: they provide liquidity for the non-bank sector. These are not remunerated.

It is difficult to find an economic justification why bankers should be paid when they hold liquidity while everybody else should accept not to be remunerated.

The lack of economic foundation for paying interest on banks' liquid reserves becomes even more striking when considering the following. When the central bank makes interest payments to commercial banks it transfers part of its profits to the banking sector.

Central banks make profit (seignorage) because they have obtained a monopoly from the state to create money. The practice of paying interest to commercial banks thus amounts to transferring this monopoly profit to private institutions.

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This monopoly profit should in fact be returned to the government that has granted the monopoly rights. It should not be appropriated by the private sector, which has done nothing to earn this profit. The present situation of paying out interest on banks' reserve balances amounts to a subsidy to banks paid out by the central banks.

The paying of interest on banks' reserve accounts has another unfortunate consequence. It transforms long-term government debt into a short-term debt. Most of the government bonds held by the Eurosystem (and other major central banks) have been issued at very low interest rates, often even zero or negative. This implies that governments are immune for some time from the interest rate rises.

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By paying an interest rate of 2% on bank reserves and thus reducing government revenues in the same amount, the central bank now transforms this long-term debt into highly liquid debt forcing an immediate increase in interest payments on the consolidated debt of the government and the central bank. There is no good economic reason why a central bank should do this.

We show the cost for the national treasuries of this operation in Table 1. With the exception of Italy and Portugal, euro area countries had government debts with average interest payments of less that 2%. By the payment of interest on bank reserves is now transformed into a debt with an interest burden of 2%.

When the ECB raises interest rates further in 2023, these governments will be facing even higher interest burdens while their long-term debt on the balance sheet of the Eurosystem is kept unchanged at the low levels shown in Table 1.

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Table 1. Average interest rate on government debt, 2021

Country	Rate
Belgium	1.7
Germany	0.9
Ireland	1.5
Spain	1.7
France	1.4
Italy	2.5
Netherlands	1.4
Austria	1.5
Portugal	2.0
Finland	0.6

Note: Data for Greece are not available.
Source: Eurostat

Is the remuneration of bank reserves necessary to conduct monetary policy?

The standard answer of many economists is positive. Here is the conventional argument. Today, there is an oversupply of bank reserves thanks to the large-scale quantitative easing (QE) operations of the past.

There is, in other words, no scarcity of liquidity; on the contrary, there is an abundance. This creates a problem for the central banks when they want to raise the interest rate.

We show this in Figure 1. This represents the demand for reserves (by banks) and the supply (by the central bank). The demand is negatively related to the money market interest rate (interbank rate). The supply is determined by the central bank. The latter increases (reduces) the supply by buying (selling) government bonds.

Figure 1 presents the regime of reserve abundance: the central bank has bought large amounts of government bonds in the past and thereby created excess supply of reserves. As a result, without remuneration of bank reserves the interest rate is stuck at 0% and the central bank cannot raise the interest rate.

In order to raise the interest rate in this reserve abundance regime the central bank can remunerate bank reserves. In the context of the Eurosystem this amounts to raising the interest rate on the deposit accounts held by credit institutions (banks).

In doing so, the demand curve becomes horizontal at the level of the deposit rate, ie. the deposit rate, rD, acts as a floor for the interbank interest rate. The reason is that banks will not be lending in the interbank market at an interest rate below the (risk-free) deposit rate. Given the abundance of bank reserves this is the only way to raise the money market interest rate.

An increase in the interest rate on bank reserves (deposit rate) is then transmitted into an increase of the money market interest rate and to the whole structure of interest rates (Ihrig and Wolla 2020, Baker and Rafter 2022). Today such an increase in the interest rate is necessary to fight inflation.

Therefore, in the present regime of reserve abundance, the only way to raise the interest rate is to remunerate banks' reserves and to increase this rate of remuneration.

There are other possibilities for the central bank, however, to raise the interest rate without having to transfer its profits to the commercial banks.

Alternative policies that avoid making large interest payments to banks

The first method is to sell government bonds (in today's parlour, quantitative tightening, or QT). This has two effects. First, the sales of government bonds reduce the amount of bank reserves, and therefore the amount of liquidity in the system. We show this in Figure 2.

By selling a sufficient amount of government bonds the supply of reserves shifts to the left until it intersects the demand curve in the downward sloping part. The interbank interest rate is then determined by the intersection point of demand and supply of reserves.

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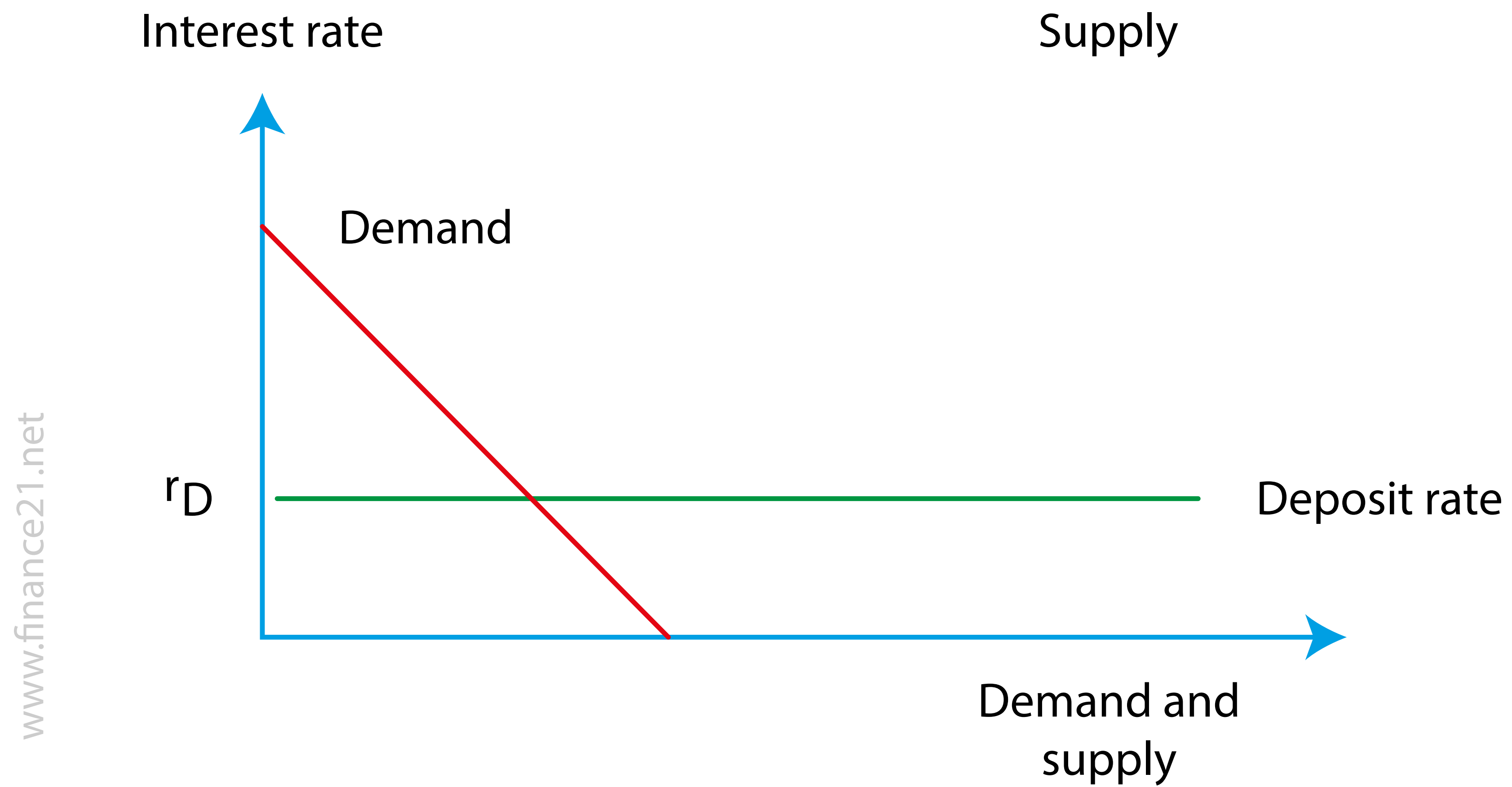
Figure 1. Demand and supply of reserves in reserve abundance regime



Note: This is a stylised representation of the market for bank reserves. It does not show the marginal lending rate (in the case of the ECB) which acts as a ceiling and is raised together with the deposit rate.

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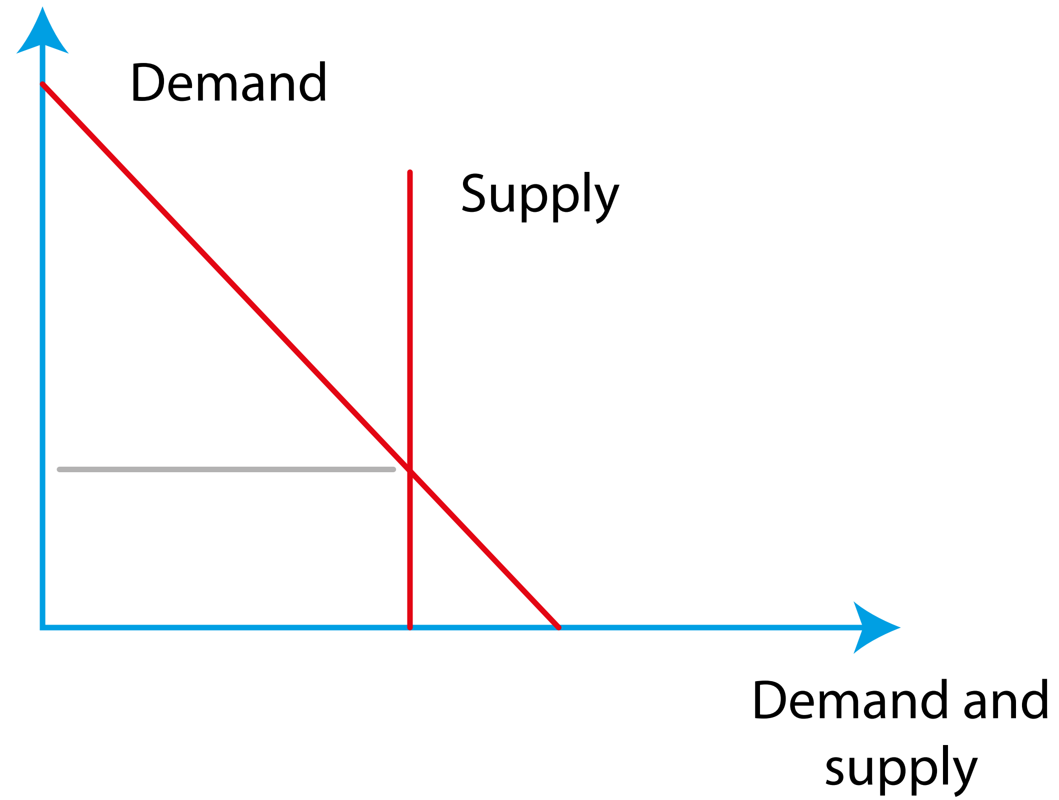
Figure 2. Demand and supply of reserves in reserve scarcity regime: No remuneration



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This recreates the situation that existed prior to quantitative easing. This was a regime of reserve scarcity. The central bank would set a target interbank interest rate and would guide the market rate towards this target by manipulating the supply of reserves.

This operating procedure would then determine the interbank rate without the need for the central bank to remunerate bank reserves (see Ihrig and Wolla 2020 for more detail).

The problem with this approach today is that the central banks would have to sell large amounts of government bonds. For example, the ECB today holds €4.9 trillion of bonds (mostly government bonds). This has led to reserve balances of the banking system of €4.4 trillion, 99% of which are reserves in excess of minimum reserve requirements (of 1%).

In order to bring back the supply curve in the range given by the downward sloping part of the demand curve, the ECB would have to sell almost all the government bonds it holds. An operation that would create havoc in government bond markets.

The ECB has announced that it will gradually reduce its holdings of government bonds by not reinvesting in new bonds when old bonds come to maturity. This will lead to a gradual decline of the amount of government bonds on its balance sheet.

It will take many years, however, to reach the point where we are back in the reserve scarcity regime as illustrated in Figure 2. Thus, we will remain in a reserve abundance regime for many years to come. What happens to the interest rates during this period of transition?

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In order to answer this question, we analyse the second effect of the sales of government bonds by the central bank. These sales lead to a drop of bond prices and a surge in the yields. Since the central bank holds bonds with different maturities, the whole spectrum of interest rates is pushed up. Precisely what the central bank aims at would depend on its anti-inflationary stance.

The question that arises, however, is whether this can be achieved without remunerating bank reserves. Let us assume that during this process of bond sales, the central bank stops remunerating bank reserves. The problem that will then arise is that banks will have a strong incentive to buy all the bonds sold by the central bank so as to avoid having non-interest-bearing assets on their balance sheet. As a result, the supply of bonds by the central bank will be met by eager buyers.

The upshot is that there will be little downward pressure on bond prices so that bond yields will not, or only barely, increase. The central bank will fail to raise the interest rates and is forced to remunerate bank reserves during the whole process of return to a scarce reserve regime. Is there a way out of this conundrum? The answer is positive. The use of minimum reserve requirements will do the trick.

Central banks could decide today to raise minimum reserve requirements while paying no interest on bank reserves. The ECB has minimum reserve requirements in its toolkit, ie. the statutes of the ECB make it possible to use it as an instrument of monetary policy.

The ECB, however, has chosen not to use this instrument and has kept it constant most of the time. Today it stands at 1%. (The Federal Reserve has abolished minimum reserve requirements). Thus, the ECB could decide to raise minimum reserve requirements so that the excess reserves banks hold today become required reserves on which no interest is paid. What would be the effect on the interest rates?

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We show the effect on the interest rate in Figure 3. As a result of the increase in minimum reserve requirements, the demand for reserves shifts horizontally to the right. We are back in the reserve scarcity regime: the interest rate is determined by the intersection of the new demand curve with the unchanged supply curve.

Banks are not remunerated on their bank reserves and the central bank can manipulate the supply of reserves to guide the money market rate by relatively small open market operations. For example, if it wishes to raise the money market rate it can reduce the supply of reserves by relatively small sales of government bonds thereby shifting the supply of reserves to the left.

Note also that banks would now have a larger proportion of their balance sheet in the form of assets that have no return. In order to restore their overall interest spread (the difference between the interest earned on their assets and the interest paid on their liabilities) they would have to increase the interest rate they apply on their loan portfolio.

This would lead to a generalised increase in interest rates. This is exactly what central banks today pursue in their strategy to fight inflation.

At the end of 2022 total assets reported by euro area credit institutions stood at €39.2 trillion. Their reserves held in the form of deposits at the central banks of the Eurosystem amounted to €4.4 trillion. In the limit minimum reserve requirements could be raised to encompass the whole of these bank reserves.

This would imply that 11% of the balance sheet of these credit institutions would be tied up in non-interest-bearing assets. This is a percentage that is not unusual in countries that apply minimum reserve requirements as a policy tool (see the IMF Integrated Macroprudential Policy (iMaPP) Database).

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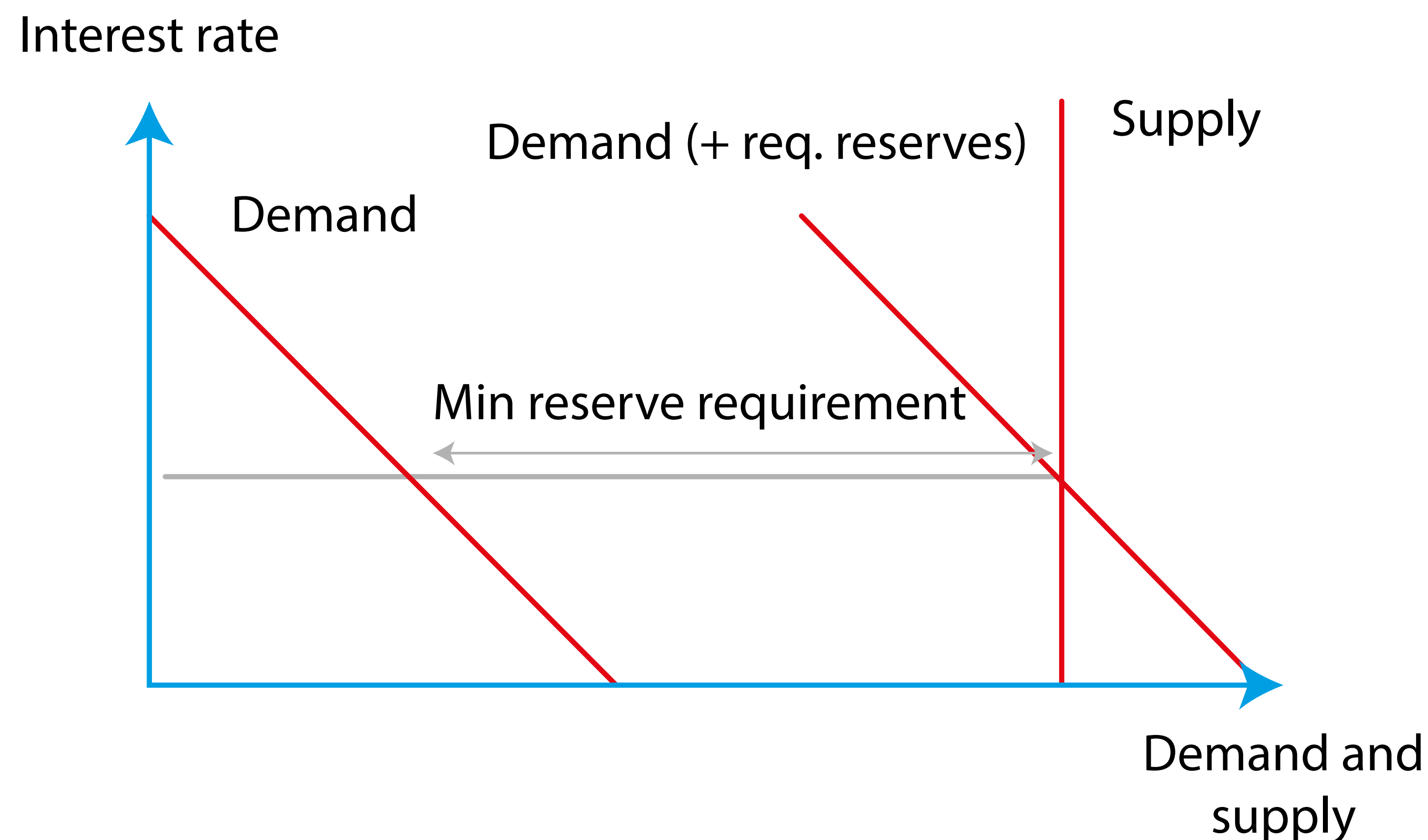
An often-formulated objection to the use of minimum reserve requirements is that these amount to an implicit tax on the banking sector. Thus, minimum reserve requirements introduce a distortion which should be avoided.

The answer is that all taxes introduce distortions. We have to evaluate whether the cost of these distortions is offset by gains. The gains here are double. First, the authorities can eliminate another distortion which is the subsidy that is granted to the banks today. Second, the use of reserve requirements is an additional policy tool of the central bank that can be used to stabilise the economy when reserves are abundant.

Figure 3. Demand and supply of reserves with reserve requirement: No remuneration



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A combination of sustained sales of government bonds and minimum reserve requirements would probably be the best policy option. Thus, the central bank would raise minimum reserve requirements to move into the scarce reserve regime as in Figure 3.

It would then start gradually reducing its bond holdings allowing the supply curve to shift to the left. This then also would make it possible for the minimum reserve requirements to be relaxed gradually.

In Figure 3 both the supply and the demand curves would then shift to the left, maintaining a regime of reserve scarcity and allowing the central bank to use its monetary policy tools without subsidising banks.

We conclude that it is perfectly possible for central banks today to raise the interest rates to reduce inflation without having to transfer large parts of their monopoly profits to commercial banks. These profits belong to society as a whole and should be transferred to governments. ■

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Footnotes

1. They also lead to valuation losses of the central banks. To the extent that these losses are realised on government bonds they do not matter as they are compensated by equal gains of the national treasuries that have issued these bonds (see Gali 2020, Muellbauer 2016).

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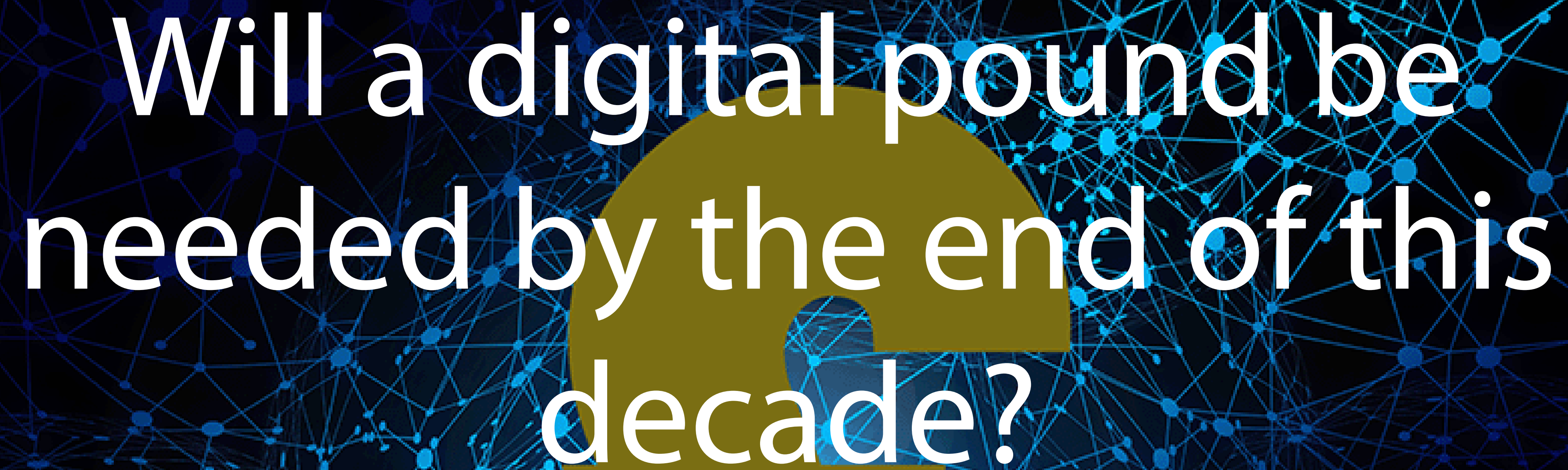

Will a digital pound be needed by the end of this decade?

Jon Cunliffe discusses why a digital pound is needed, what the model could look like and how the digital pound may sit within the digital payments landscape

As some of you may have seen, the Bank of England and the Treasury have published, as a *Consultation Paper*, the report of the Bank of England – HM Treasury Taskforce on the introduction in the UK of a central bank digital currency – a 'digital pound'. So I am grateful for the opportunity to set out some of the thinking behind the report and the next steps we propose.

First, however, I should set out the headline conclusions of the Taskforce.

Our assessment is that on current trends it is likely that a retail, general purpose digital central bank currency - a digital pound - will be needed in the UK. This would be a new, digital form of money, issued by the Bank of England for use by households and businesses for everyday payments.

A digital pound would be a very substantial financial infrastructure project that would take several years to complete. It would, as many in this audience know, have major implications for the way we transact with each other and, more broadly, for the financial sector and the economy in general. The Taskforce's conclusion is that we are not yet at a point where a firm decision can be made to implement a digital pound.

However, in view of the likely need and the lead time to introduction, the Bank and The Treasury, will now proceed to the next stage of detailed policy and technical development of the digital pound - including the development of a technical blueprint.

This stage will take around two to three years following which a decision will be made whether or not to proceed to the next stage and implement a digital pound in the UK. The work over the next two to three years will inform that decision and will reduce the lead time to launch should the decision at the end of this stage be to implement the digital pound in the UK, which could then be introduced in the second half of the decade.

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In this next stage of detailed policy and technical work, including the development of a technical blueprint for the chosen model of the digital pound, we will work closely with private sector partners on proofs of concept, experimentation as well as on the development of the blueprint itself.

We expect that this research and development work will have important benefits for both the Bank and the fintech industry even if the eventual decision is not to introduce a digital pound.

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The digital pound would be a safe, trusted form of money accepted for everyday transactions by households and firms, in the same way as Bank of England notes are today

In order to proceed to the next stage, we need clarity about the model of a digital pound to be developed. The report sets out for consultation the key features of the model we propose to take forward.

The report is accompanied by a *Technology Working Paper* that sets out an accompanying illustrative conceptual model and seeks feedback on potential approaches to key technology considerations.

Before I set this out in further detail, there is one important point I should make. Given all the attention that the cryptoasset world, with its attendant gyrations and failures, has received in recent years, it is perhaps understandable, that the digital pound can be confused in peoples' minds with cryptoassets such as bitcoin. I should take this opportunity to correct this misapprehension. Indeed, nothing could be further from the truth.

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The majority of cryptoassets are highly speculative assets, whose value is extremely volatile, because there is nothing behind them. They have no intrinsic value. For that reason, they are not suitable and not used for general payment purposes. One can think of them as more akin to a bet than to trusted money.

The digital pound would be a safe, trusted form of money accepted for everyday transactions by households and firms, in the same way as Bank of England notes are today.

It is of course possible that some of the technologies developed in the crypto world might be useful in the development of a digital pound, but as I will explain later, there is a large range of technologies that are now under consideration.

Why is a digital pound likely to be needed?

There are a number of considerations behind our assessment that a digital pound is likely to be needed. The

assessment is forward looking. It turns first on current trends in the way we use money to make payments and the potential of emerging digital technologies and second on the public policy response necessary to ensure innovation and competition can flourish without jeopardising the safety and uniformity of the money we use in the UK.

Money is at its root a social convention[1] based on trust that allows us to store, transfer and settle obligations we hold on each other in society. It's safe and efficient operation is, as history has demonstrated, fundamental to social and economic stability.

The forms that money takes and the ways it is used have changed throughout history driven by changes in technology and the changing demands of ever more sophisticated and complex economies. However, trust in money is the bedrock on which that innovation is built.

Two forms of money are currently available to the public[2] throughout the UK. The Bank of England and the Royal Mint issue a physical form of money to the public – bank notes and coins, otherwise known as 'cash'. Private commercial banks issue predominantly digital money in the form of electronic transfers between bank deposit accounts[3].

We have seen major changes in recent years in the form of use of money to make payments. In the mid-1960s, most workers were paid weekly in cash, and around 70% of the population did not have a bank account[4].

Very few had access to credit or debit cards. Consequently, for every £100 of funds that people held to make payments, over a third would be held as cash. Nowadays, less than 5% is held as cash. Even 15 years ago, 60%

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of transactions in the UK used physical cash; pretty much everyone in this room would have carried enough for everyday transactions.

In 2021 only 15% of transactions involved physical money. Technology and the increasing digitalisation of everyday life has transformed the way we use money. Private commercial bank money accounted for 85% of the payments made by the public.

Within that, debit and credit card transactions accounted for 69% of transactions. Contactless payment has made such transactions much easier for everyday life. And the growth of internet commerce has required the use of digital money.

It is always challenging to forecast how technological advances and social trends will play out. Few at the turn of this century would have predicted the development and growth of a massive and dominant market and social platforms. Or how the advances in the functionality of the smartphone, as most recently seen during the pandemic, would transform daily lives.

But while we cannot know with certainty how current trends in payments and technology will play out, it would be complacent to assume that developments in money and payments will end with the status quo.

There are already in existence new digital technologies that are being applied to the digital representation, transfer and storing of money like obligations. These offer the prospect of new possibilities in the way money and payments can be configured to interact with digital processes.

Programmable money, for example, could enable the development of smart contracts which carry out specific actions based on pre-defined actions and conditions[5].

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Moreover, money and payments are no longer the exclusive province of banks. New, non-bank players have already been successful in providing innovative payment services. Looking forward a wide range of non-bank payment firms, including bigtechs and some players from the crypto universe, are becoming increasingly interested in the possibilities of these new technologies in money and payments.

Our assessment that a digital pound is likely to be needed is grounded first in the view that further decline in cash use and further development in the digitalisation of money and payments is likely and second in the view that these developments raise important questions to which the Bank of England and the Government should respond.

As far as the decline of cash is concerned, the immediate response is to make sure cash will remain available to any and all that want to use it. The Bank has made clear that we will continue to produce it and the Government is taking powers under the Financial Services and Markets Bill to give the Bank of England and FCA new powers to ensure the future effectiveness, resilience, and sustainability of the cash ecosystem[6].

However, we cannot ignore the fact that the safest form of money, 'public' money, that it is to say money issued by the state for general use, will become increasingly less useful and useable and of shrinking relevance to a large part of the population. Nor can we ignore the likelihood that we will see the emergence of new forms of money, offering new possibilities and issued by new as well as established players.

This raises, particularly for the Bank of England, the question of how we can continue to ensure that all of the types of money used in the UK are denominated in Sterling, remain safe and that each is interchangeable on demand and to all of the other types of money without loss of value, including publicly issued, Bank of England money.

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We ensure trust in money at present by regulation of the commercial banks that issue money, by requiring banks to settle amongst themselves in Bank of England money (ie. Bank of England reserves) and, crucially, by requiring all private money to be exchangeable for Bank of England money, cash, on demand by the holder and without loss of value.

Alongside regulation, the provision of Bank of England money to the public and reserve money to commercial banks institutions anchors the confidence, uniformity and interchangeability of money in the UK. Our assessment is that future developments in payments and money will make it likely that, alongside regulation, we will in future need a digital pound, issued by the Bank of England to perform this anchor function.

The experience of digitalisation is that new products and services, enabled by new technology, can be adopted rapidly at scale. The Government has identified several characteristics of digital markets that may lead to concentration.

Such characteristics include network effects, economies of scale and scope and data advantages, which can act as barriers to entry. This suggests that the future development of private money issuance could tend towards a small number of firms taking a significant market share.

While concentration and market power are not inherently harmful and may reflect innovative products and services, they can damage consumer choice, competition and innovation. Dominant issuers of new forms of private digital money may create 'walled gardens' - payment systems that are not fully interoperable or restrict the development by smaller firms of payment services using the money they issue.

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A digital pound issued by the Bank of England would provide an alternative, public, digital money - an open platform, which would be available to all developers of new digital payment services.

Moreover, if designed appropriately, a digital pound could complement and support new forms of private digital money and payment services, for example by acting as the 'bridging asset' between different platforms enabling convertibility.

By establishing technical standards available to all, it could help ensure interoperability between different platforms. Our assessment is that a digital pound, an alternative, publicly issued form of digital money, available to all, would help ensure competition and innovation and drive efficiency in payments.

There are other important potential benefits. There is scope for innovation to generate further efficiencies in payments, allowing for faster and/or cheaper payments. That improvement might be facilitated by new technologies and new entrants to payments markets offering new functionalities. For example, small and medium-sized merchants pay far higher fees for accepting card payments than larger businesses[7].

Although these costs are not paid directly by customers, they may feed into higher prices in the economy overall. And crossborder transactions in particular are often very costly. The average cost of a payment sent to another country is about 6% of the value sent[8].

The digital pound could also complement existing financial inclusion initiatives, for example if it were able to provide for offline payments. It could, with international co-operation, present an opportunity to improve crossborder payments.

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And, by providing a highly resilient, alternative payment rail it could reinforce the overall resilience of the UK payments system. These motivations are explored more fully in the paper we have published.

The model for a digital pound

Our assessment, therefore, is that on current trends a digital pound would have benefits and is likely to be needed. However, the Taskforce concluded, that we are not at present at a point at which a firm decision could be taken to implement the digital pound.

Further work, especially detailed technical exploration and development is necessary to assess the feasibility and cost of what would be a very major public, financial infrastructure project.

We expect this intensive exploration and technical development phase to take around three years. It will produce a technical blueprint for the digital pound. The work will not delay but rather shorten the lead time to actual launch should a firm decision be taken in the future to implement the digital pound so that a digital pound could be introduced in the second half of the decade.

And during this next phase, we will be able to see more evidence of how the current trends and changes in payments and money are playing out which will help to inform a future decision.

In order to proceed to the next phase we need clarity about the model of the digital pound we wish to develop. We have today set out that model in detail for consultation. We are seeking industry and public views on the key design choices that determine the model.

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The *Consultation Paper* is accompanied by a *Technical Working Paper* which sets out our current thinking on the relevant technology and seeks feedback on the approaches we propose to consider.

There is not time today to go through the model in detail, but I will briefly set out some of the most important details of what we propose.

We envisage the digital pound as a partnership with the private sector. The Bank would provide the digital pound and the central infrastructure, including the 'core ledger'.

Private sector firms – which could be banks or approved non-bank firms – would provide the interface between the Bank's central infrastructure and users by offering wallets and payment services. These private companies would be able to integrate the digital pound, as the settlement asset, into the services they would offer to wallet holders.

The wallets would be operated on a 'pass-through' basis. That is to say, they would not constitute a claim on the wallet provider in the way that a bank account is a claim on a bank. Nor would they represent a custody arrangement.

Rather, the wallets would hold all of the customer related information and 'pass-through' the customers instructions to the Bank's infrastructure. All of the digital pounds would be held on the Bank of England's central ledger.

Privacy has been a major theme of the Taskforce's engagement with industry and the public. We intend that the digital pound would have the same (or stronger) privacy protections as bank accounts, debit cards or cheques which are now used for 85% of transactions in the economy.

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Individuals' personal details and transaction records would be known only to their private sector wallet provider in the same way they are for bank account providers today (and subject to the same privacy protections). But individuals' details and records would not be known by the Government or the Bank of England. In this way, the digital pound would provide privacy while also protecting against fraud and financial crime.

The digital pound would not be an anonymous bearer instrument like cash, but physical cash would remain available to those who wanted to use it.

Neither the Government nor the Bank would program a digital pound or restrict how it was spent. Instead, the Bank would provide the infrastructure and minimum functionality for the private sector to provide programmability features for users. Those features would require user consent.

As with banknotes and many current accounts, no interest would be paid on a digital pound. Its purpose would be as a means of transaction - to make and receive payments - rather than as a savings product. Nor do we see the digital pound as a monetary policy instrument and as such it would, like cash, have neither positive nor negative remuneration.

In our 2021 Discussion Paper on *New Forms of Digital Money*, we explored the financial stability risks and impact on the banking sector of the emergence of non-bank digital monies. Modelling of an illustrative scenario suggested that retail deposit outflows into digital money would affect banks' funding and could lead to higher bank lending rates, although the impact was expected to be modest.

This modelling was based on assumptions, set to be highly cautious[9], about the amount of non- bank digital money households and businesses might want to hold and hence the scale of possible outflows from retail bank deposits.

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We cannot, of course, know ex ante, how households and businesses would respond to a digital pound and how much they would want to hold. We therefore propose that to manage financial stability risks, initially at any rate, the digital pound would need to be designed in a way that enabled some restrictions to be placed on amount an individual or business could hold.

We propose a limit of between £10,000 and £20,000 per individual as the appropriate balance between managing risks and supporting wide usability of the digital pound. A limit of £10,000 would mean that three quarters of people could receive their pay in digital pounds, while a £20,000 limit would allow almost everyone to receive their pay in digital pounds[10], keeping outflows from the banking system broadly within the assumptions set out in the Bank's earlier modelling work.

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We are, as I have said, also seeking feedback on the technical approaches for such a model of the digital pound. The Technology Working Paper accompanying the Consultation Paper sets out an illustrative and complementary conceptual model consisting of a core ledger, API layer, analytics and alias service.

The core ledger operated by the Bank might be centralised, running as a traditional database, or it might use Distributed Ledger Technology (whether a blockchain or another form of the technology).

The paper includes key questions which will be further explored in the next phase of work, including for example which privacy-enhancing technologies might support our policy objectives and what features of an API for the digital pound would best enable innovative use cases.

The digital pound within a digital payments landscape

Finally, I want to cover briefly how a retail digital pound, designed for use by firms and households in everyday

transactions, might sit alongside a wholesale central bank digital currency, privately issued digital money, and also alongside central bank digital currencies issued by other jurisdictions.

On the question of a 'wholesale CBDC' the first point to emphasise is that for the Bank this is not a question of either one or the other of 'retail or wholesale'. We are working extensively on both areas, including through the renewal of the digital infrastructure we currently use to provide money to commercial banks in the form of Bank of England reserves.

Many of the technologies which I referred to above offer the potential for wholesale financial transactions to take place at lower cost, higher speed and with greater resilience. In many cases the same considerations around the potential benefits of new technological approaches, for example the deployment of smart contracts, atomic settlement or potential resilience benefits, apply to the wholesale world.

However, wholesale markets differ from retail in several respects and a digital pound designed for everyday use may not be best suited for wholesale financial markets. Our view is that for such markets there are other routes that might more quickly and effectively allow for new forms of digital representation, the 'tokenisation', of central bank money to be used in financial transactions.

There is now a great deal of experimentation in this area among central banks, including the Bank of England, and within the private sector. Some of the approaches proposed would involve a greater role for the private sector, particularly the large financial firms that already have access to a form of digital Bank of England money, in the tokenisation and transfer of central bank money including between currencies[11].

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Other experiments are testing the feasibility of networks of central bank digital currency systems for crossborder wholesale transactions[12].

The Bank is looking particularly at how we can exploit the capabilities of the new RTGS system we are building, with the new core RTGS settlement engine launching in 2024. We are examining features that could make it easier to connect to the RTGS service, including a broader range of APIs, improved availability, with near 24/7 operation and synchronisation of the RTGS system with other ledgers including those using distributed ledger technology and tokenisation of assets[13].

At the same time, the Bank of England is working with the FCA and HMT to establish a sandbox to explore innovative forms of digital settlement of wholesale financial market transactions. We are also actively engaged with the work of the BIS Innovation Hub, including through its London Centre, at experiments to look at the potential for improved settlement.

All of this work will proceed alongside the next phase of development of the retail digital pound. We envisage that much of the technical work in this phase will provide insights that will be of significant value to our work on the future digitalisation of wholesale financial markets.

The further development of the digital pound will also benefit the Bank's work on private sector stablecoins[14]. The Financial Services and Markets Bill (2023) provides powers for the Bank of England to regulate stablecoins used in systemic payment systems in the UK.

As with wholesale CBDC, this is not a question of whether we have a digital pound issued by the Bank of England or private sector stablecoins issued by private sector firms. In a future payments landscape, there could be

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opportunities for privately issued stablecoins, regulated to the same standards as we regulate other forms of privately issued money.

We envisage that these could operate alongside the digital pound and alongside commercial bank money and cash. The digital pound could act as a bridging asset between different types of privately issued digital money and establish standards for interoperability.

And, crucially, the requirement for privately issued digital money to be exchangeable on demand and at par for Bank of England digital pounds would help secure the interchangeability and uniformity of money in the UK.

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Finally, many central banks, across the globe are exploring the issuance of a central bank digital currency for both retail and wholesale purposes. A few have now been launched[15].

There is clearly a great opportunity and a great need for international cooperation in this area. Interoperability between national and regional central bank digital currencies could bring substantial benefits by reducing the cost and frictions in crossborder payments. At the same time, there are broader macro-economic and geopolitical issues that need to be considered.

The Bank of England is working actively on these issues with international counterparts through the Bank for International Settlements Committee on Payments and Market Infrastructures (CPMI), through the G7, the G20 and FSB and through close cooperation with a small group of advanced economy central banks[16].

Conclusion

To conclude, the *Consultation Paper* and accompanying *Technology Working Paper* marks the end of the first stage of

the work of the Bank of England – HM Treasury Taskforce. It sets out: our assessment that a digital pound issued by the Bank of England is likely to be needed; the next phase of work necessary to enable a firm decision to be taken in the future on whether to implement the digital pound; and consults on the model we now propose to develop.

The consultation will run for four months and end on the 7th June 2023. The Bank and the Treasury will then review the responses and consider whether changes to the proposed model are necessary. We will publish our response to the consultation.

We will then engage with private sector firms and other stakeholders on the next stage of work. This will include technological experimentation, particularly through collaboration with the private sector on proofs of concept[17].

This work will support the feasibility of the proposed model, the refinement of the associated technical requirements and the development of a technological blueprint for the digital pound. Such a blueprint will provide evidence that will allow us to evaluate the feasibility and costs of developing a digital pound. This will be the keystone of our assessment of whether or not to proceed to build.

We have made no decision yet on whether a digital pound would use DLT. Our technology working paper sets out high-level requirements for a ledger, and makes clear that in principle these could be fulfilled by conventional or DLT technology.

But it is clear that experimentation with DLT, whether private or public, will be important to ensure it is appropriately considered. We will be putting in place the capabilities and mechanisms to increase our technology expertise, and to enhance our ways of working with DLT technology providers and those seeking to deploy DLT in finance, both through the FMI Sandbox and the digital pound design phase.

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Throughout the next phase we hope to continue to benefit from a wide range of views and expert advice on the digital pound. This consultation is an important element in that regard, as is the continued work of the Engagement and Technology Forums which have supported the Taskforce through the first stage of its work and which will continue.

The money we use and the way we pay has changed throughout history, driven by technology and the changing needs of society. We have seen significant changes in recent years and current trends suggest that we are likely to see further major change as technology and the digitalisation of everyday life advance.

The proposals set out are designed to ensure that the UK is well placed to take advantage of the benefits that these changes can offer, while ensuring that we preserve the safety and uniformity of money in the UK. ■

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

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Endnotes

1. To function money relies on a shared understanding that the relevant instrument can be used to calibrate, exchange, store and settle claims. For further discussion on this point see recent speeches 'It's Time to Talk about Money' (2020) and 'Do We Need Public Money (2021)'.

2. The Bank of England also issues reserves to financial institutions. This is a form of wholesale money that allows regulated firms to hold claims on the Bank of England.

3. Only the Bank of England issues banknotes in England and Wales, but six banks in Scotland and Northern Ireland also issue banknotes, backed largely by assets at the Bank of England. See Scottish and Northern Ireland banknotes | Bank of England and the Scottish and Northern Irish Banknotes Regulations (2009) for further details.

4. he Payments of Wages Act 1960, as amended by the Truck Act.

5. Some examples of programmable functionality might include: instantaneous currency exchanges with reduced settlement risk; more efficient real estate purchases whereby all parties' transactions are executed simultaneously by a smart contract; or an automated payment made by a vehicle at a toll booth.

6. Financial Services and Markets Bill (2023). In December 2022, the Bank of England published a consultation, closing on 10 February, setting how it intends to use these new powers.

7. See for example Haldane, A: 'Seizing the Opportunities from Digital Finance' (2020).

8. World Bank (2022) – Remittances Prices Worldwide Quarterly.

9. The Illustrative Scenario assumed demand for the digital pound was around 20% of retail and business deposits, which was equivalent to nearly all transactional deposits in the banking system. This assumption is particularly cautious for higher interest rate environments when deposits would be expected to pay holders somewhat more interest than an (unremunerated) digital pound.

10. Specifically, a limit of £10,000 would allow 75% of UK income earners to hold their salary, pre-existing balances as well as an illustrative 10% bonus or overtime payment.

11. See for example the work the Bank of England has done with regard to omnibus accounts.

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12. See for example BIS Innovation Hub projects looking at this topic - such as mBridge, Icebreaker, Dunbar and Jura.
13. Last year the Bank set out its thinking and approach on many of these elements through a consultation on the roadmap for RTGS beyond 2024. See also 'The road to enhanced payments' - speech by Victoria Cleland | Bank of England. As noted, this effort is complemented by work ongoing at the BIS Innovation Hub London Centre to look at the potential benefits from synchronisation under Project Meridian.
14. See Bank of England: 'New Forms of Digital Money (2021)' - Stablecoins are cryptoassets that aim to reduce volatility by pegging their value to government-sponsored – or 'fiat' – currencies.
15. For an overview see Gaining momentum – Results of the 2021 BIS survey on central bank digital currencies.
16. See for example 'Central bank digital currencies: foundational principles and core features' (2020) and the series of reports on digital currency aspects (eg. financial stability, system design) published in 2021.
17. These are likely to involve testing individual components of the digital pound architecture (against standards built on the considerations set out in our Technology Working Paper). Project Rosalind, being run out of the London Centre of the BIS Innovation Hub is one example of the kind of work we envisage. That project is currently running a tech sprint and expressions of interest are open until 10 February.

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Bigtechs in finance: forging a new regulatory path

Agustín Carstens considers the reach of large technology in the finance sector and the implications for public policy

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Bigtechs and data

We at the BIS have been closely following large technology firms (bigtechs) and their advances into finance[1]. Bigtechs' reach extends across a wide range of industries, with existing core businesses grounded in e-commerce and social media, among others. From this base, they have expanded into finance.

To understand how bigtechs can easily make forays into finance, one must grasp the key role of data. Indeed, bigtechs have fully embraced the centrality of data in the digital economy. This is what distinguishes them from other firms. It also shapes their unique characteristics. Let me mention those that are particularly relevant for policymakers.

First, bigtechs can overcome limits to scale in financial services provision by using user data from their existing businesses. Their business model revolves around users' direct interactions and the data generated as a by-product of these interactions.

They use that data to offer a range of services that exploit the inherent network effects in digital services, a phenomenon where more users attract ever more users. In this way, bigtechs can establish a substantial presence in financial services very quickly through what we call the 'data-network-activities' (DNA) loop.

Second, bigtechs collect different types of data from the various business lines they straddle[2]. They are uniquely positioned to combine that data to uncover patterns and insights that can help them improve their services or offer new ones[3].

This combination of different types of data across sectors carries efficiency gains and is key to bigtechs' provision of digital services.

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Third, bigtechs are unrivalled experts in data management and analysis. They devote significant resources to developing or acquiring state-of-the-art technologies. After all, access to large troves of data generates value only if you also have the technological capabilities to analyse it and monetise it.

Bigtechs have been pioneers in leveraging artificial intelligence techniques for this purpose[4]. To be sure, these capabilities have high fixed costs, but once that is overcome the marginal cost of handling more data is negligible.

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Innovation never rests, as recent advancements in artificial intelligence and the emergence of quantum computing make clear. But I am confident that the international community will find ways to address current and coming challenges

Therefore, bigtechs benefit from significant economies of scale in their use of data. For other firms, reaping the benefits of such economies of scale is a tall order.

Data management is thus at the core of bigtech activities, and the financial sector is all about managing information. Coupled with bigtechs' relentless drive to expand, their growing and already substantial footprint in financial services should come as no surprise.

Moreover, the trend towards greater digitalisation, which the COVID-19 pandemic has accelerated, has allowed bigtechs to fortify their market positions even further.

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Public policy challenges

Given their size and customer reach, bigtechs' entry into finance could trigger rapid change in the industry, generating both opportunities and challenges. The potential benefits of bigtechs' entry into finance include improved customer outcomes, increased financial market efficiency and enhanced financial inclusion.

For example, BIS research has shown that access to innovative (QR code-based) payment methods provided by bigtechs helps micro firms build up credit history, and the use of bigtech credit can ease access to bank credit[5]. And there are many more examples.

But it's not all roses in the garden. The economic features that make bigtechs powerful in lowering costs and supporting financial inclusion also create new challenges for policymakers[6]. First, data governance. Bigtechs have large amounts of personal data, and their use comes with a trade-off between data efficiency and privacy. While detailed data may help align products on offer with consumer preferences and lower costs, there are risks to consumers, especially when sensitive data are shared.

Moreover, bigtechs can engage in price discrimination, making consumers worse off[7]. Restricting the use of data may help, but could have costs for allocative efficiency[8].

Second, competition is at threat in the presence of bigtechs. While bigtechs can initially bring greater competition, network effects allow them to quickly build positions of dominance in specific market segments, for example by increasing user switching costs or raising barriers to entry.

And the resulting concentration dynamics have a direct effect on market contestability and consumer welfare. Thus, new entry may not increase market contestability. Moreover, in the case of network industries market failures and externalities may arise.

Last, but certainly not least, there are important financial stability considerations which fall squarely within the mandates of central banks and financial regulators. Let me elaborate on specific concerns around the financial stability risks arising from bigtechs in finance.

One concern centres on bigtechs' potential systemic importance. Financial services currently represent a relatively small part of bigtechs' overall activities, but this can change rapidly through the DNA loop. They may quickly become 'too big to fail'.

This gives rise to concerns about the emergence of dominant firms with excessive concentration of market power and a possibly systemic footprint in the financial system.

A second concern is emerging around the risks from substantive interdependencies inherent in bigtech activities[9]. These arise between bigtech entities because they share data and provide relevant services to each other. They also share technological platforms and applications and use a common payment infrastructure[10].

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Meanwhile, interdependencies with outside parties arise from joint ventures with financial institutions in providing financial services. These partnerships can entail an opaque distribution of responsibilities that diffuses accountability and hinders adequate oversight. They also have the potential to intensify operational, reputational and consumer protection risks as well as moral hazard issues.

Then there is a third concern around the role of bigtechs as providers of critical services. Financial institutions have come to heavily depend on bigtech technology services, and this is exacerbated by bigtechs' tendency towards market concentration.

While these services bring many advantages, the widespread dependency on them is forming single points of failure, and hence creating new forms of systemic risk at the technology services level. This type of risk is particularly evident in the market for cloud computing, which is highly concentrated and now dominated by a handful of bigtechs[11].

As a consequence, disruptions in the operations of one bigtech could have a substantial impact on the financial system[12]. In other words, greater operational risks can translate into greater financial stability risks, especially when critical services are highly concentrated.

The concerns I have just discussed are aggravated by shortcomings in the current regulatory approach, which is not fully fit for purpose to deal with the unique set of challenges arising from bigtechs' entry into financial services.

The current regulatory approach and its shortcomings

Most financial activities in which bigtechs engage are governed by sectoral regulations. And the existing ones can at best partially address the risks I outlined earlier.

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These regulations are grounded on the main supervisory concerns in each sector, be they the protection of depositors, policyholders or investors. They were not designed with bigtechs in mind and therefore are not geared towards possible spillover effects across all the activities bigtechs perform, or their potential systemic relevance.

And yet they determine the applicable regulatory treatment for bigtechs' financial activities, the width of the regulatory perimeter and the reach of supervisory oversight.

Importantly, such regulations tend to follow an activity-based approach, where providers must hold licences for specific business lines[13]. Activity-based regulation constrains an activity on a standalone basis by imposing restrictions on how it can be performed. It does not vary according to the type of entity that performs the activity. It also does not consider possible spillover effects from other activities performed by the same entity[14].

In contrast, entity-based regulation constrains a combination of activities at the entity level by imposing restrictions on an entity's characteristics that affect the likelihood and repercussions of its failure. Such combinations of activities affect an entity's resilience.

The financial stability risks of such combinations cannot be addressed by constraining individual activities, without any controls on the critical interactions across bigtech entities and their activities. In short, a purely activity-based framework for regulation is ill suited to address the policy challenges bigtechs pose.

Forging a new regulatory path

Without a doubt, a regulatory re-think is warranted, and we need a new path to follow. One that considers the key role of data in bigtechs' DNA-based business model. One that strikes the right balance between benefits and risks.

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We at the BIS have argued for some time now that we have to go one step further and regulate bigtechs directly[15]. More concretely, we need to consider how best to complement existing activity-based rules under sectoral regulations with group-wide entity-based requirements that would allow authorities to address financial stability risks emerging from the interactions between the different financial and commercial activities that bigtechs perform[16].

It is high time to move from theory to practice and consider tangible options for regulatory actions. Now let me attempt to put forward a blueprint for thinking about what such options could look like.

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Recent BIS publications have identified three regulatory approaches that could serve as a basis for a new regulatory framework for bigtechs in finance[17].

First, the restriction approach would prohibit bigtechs from engaging in regulated financial activities. It follows the logic inherent in the traditional separation of commerce and banking that prevails in many jurisdictions.

This approach radically alleviates financial stability concerns as bigtechs would be left only with their non-financial business lines. Yet it would deprive them from using big data to solve asymmetric information problems, for example assigning credit scores to small and opaque firms that do not have collateral[18]. It would therefore remove the numerous benefits that bigtech services in finance have brought.

Second, the segregation approach would require a bigtech's financial services to be grouped together under the umbrella of a financial holding company. This financial subgroup would have to meet prudential and other requirements. And it would be ring-fenced to mitigate the potential for contagion effects from non-financial to financial activities.

This could be achieved by banning the use of common group-wide technological platforms and any form of data-sharing between the financial and non-financial parts of the bigtech group.

This approach is conceptually simple, increases the transparency of a bigtech's organisational structure and facilitates oversight. Yet it would prevent bigtechs from realising synergies and economies of scale, and from generating insights from data generated across sectors.

It would therefore come with some of the shortcomings of the restriction approach. In all likelihood, this would lead – at least some – bigtechs to exit financial services altogether.

Third, the inclusion approach would make bigtechs with significant financial activities subject to group-wide requirements on governance, conduct of business, operational resilience and, only when appropriate, financial soundness.

This is because most bigtech risks are not strictly related to their financial soundness but their data-driven business model. Requirements would be levied on the group as a whole, including the bigtech parent.

This approach is tailored to existing business models. It acknowledges the fundamental role of data within bigtech groups and their tendency to use them to achieve dominant market positions.

As such, it would not prevent bigtechs from making efficient use of data collected from different activities, like the previous two approaches, as long as they observe sound data governance principles and effective pro-competition rules on a group-wide basis.

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However, the inclusion approach is more complex than the segregation approach, as it requires effective monitoring of global groups that conduct a large variety of activities.

The segregation and inclusion approaches are to some extent mutually compatible, and in practice a combination of both may be desirable. Such a holistic approach could combine a prudential sub-consolidation of the financial part of a bigtech group (as under the segregation approach) with group-wide requirements on governance, conduct of business and operational resilience (as under the inclusion approach). Importantly, it would avoid efficiency losses in the use of data that (too) tight ring-fencing measures could cause.

Regardless of the approach chosen, the implementation of any comprehensive entity-based regulatory framework for bigtechs is beset with challenges and raises a host of practical questions.

One is how to ensure effective cooperation and information-sharing between financial, data and competition authorities at the local and crossborder level.

Another is whether any one authority has the expertise required to serve as lead supervisor for global groups that engage in a wide set of data-driven financial and non-financial activities.

Yet another is about enforcement and extraterritoriality, especially when bigtech services are performed by entities incorporated in foreign jurisdictions. This, together with unavoidable political considerations, may also explain why progress towards a new framework has been slow[19].

And, I'm afraid to say, as we are working on devising an adequate policy response to bigtechs, challenges will continue to emerge. Innovation never rests, as recent advancements in artificial intelligence and the emergence

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of quantum computing make clear. But I am confident that the international community will find ways to address current and coming challenges.

Conclusion

To support the search for answers, a thorough international policy debate is essential. After all, international standards are the only way to shape a consistent policy response. As the saying goes, policymaking is poetry, implementation prose. But before we can even think of implementation, we need to consider the right policies. ■

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Endnotes

1. The BIS and the Financial Stability Board (FSB) define bigtechs as large companies whose primary activity is digital services. See BIS, "Big tech in finance: opportunities and risks", Annual Economic Report 2019, June, Chapter III; and FSB, FinTech and market structure in financial services: Market developments and potential financial stability implications, February 2019.

2. For example, bigtechs with a dominant presence in e-commerce collect data from vendors, such as sales and profits, combining financial and consumer habit information. Bigtechs with a focus on social media collect data on individuals and their preferences, as well as their network of connections. Bigtechs with search engines do not observe connections directly, but typically have a broad base of users and can infer their preferences from their online searches.

3. Data from e-commerce platforms can be a valuable input into credit scoring models, especially for small and medium-sized enterprise and consumer loans. Bigtechs with a large user base in social media or internet search can use the information on users' preferences to market, distribute and price third-party financial services (like insurance).

4. For example, bigtechs leverage sophisticated artificial intelligence-based tools as part of their credit scoring systems. They have also invested in emerging technologies such as quantum computing. See JC Crisanto, J Ehrentraud, M Fabian and A Monteil, "Big tech interdependencies – a key policy blind spot", FSI Insights on policy implementation, no 44, 2022.

5. T Beck, L Gambacorta, Y Huang, Z Li and H Qiu, "Big techs, QR code payments and financial inclusion", BIS Working Papers, no 1011, 2022; and K Croxson, J Frost, L Gambacorta and T Valletti, "Platform-based business models and financial inclusion", BIS Working Papers, no 986, 2022.

6. A Carstens, "Regulating big tech in the public interest", speech at the BIS conference "Regulating big tech: between financial regulation, antitrust and data privacy", 6–7 October 2021; and F Boissay, T Ehlers, L Gambacorta and HS Shin, "Big techs in finance: on the nexus between data privacy and competition", BIS Working Papers, no 970, 2021.

7. See O Bar-Gill, "Algorithmic price discrimination: when demand is a function of both preferences and (mis)perceptions", University of Chicago Law Review, no 86, 2019.

8. See Boissay et al, op cit.

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9. See Crisanto et al, op cit.
10. Bigtechs' ecosystems rely on common technological infrastructures including physical (servers, computers, facilities, hard drives etc.) and non-physical (software, applications, cloud structures, data lakes etc.) elements that support the storage and transmission of data, and other operations of bigtechs.
11. The top four providers (Amazon Web Services, Microsoft Azure, Google Cloud and Alibaba Cloud) control around 70% of the global market across all sectors. See Synergy Research Group, "As quarterly cloud spending jumps to over $50B, Microsoft looms larger in Amazon's rear mirror", 2022.
12. Two significant outages of bigtech services in 2021 substantiate the argument that these operational vulnerabilities are not merely a theoretical consideration.
13. The exception is banking and insurance. See A Carstens, S Claessens, F Restoy and HS Shin, "Regulating big techs in finance", BIS Bulletin, no 45, 2021.
14. See F Restoy, "Regulating fintech: what is going on and where are the challenges?", speech at the ASBA-BID-FELABAN XVI Banking public-private sector regional policy dialogue "Challenges and opportunities in the new financial ecosystem", Washington DC, 2019; F Restoy, "Fintech regulation: how to achieve a level playing field", FSI Occasional Papers, no 17, 2021; and C Borio, S Claessens and N Tarashev, "Entity-based vs activity-based regulation: a framework and applications to traditional financial firms and big techs", FSI Occasional Papers, no 19, 2022.
15. See Carstens, op cit.
16. See Restoy, op cit.
17. See J Ehrentraud, J Evans, A Monteil and F Restoy, "Big tech regulation: in search of a new framework", FSI Occasional Papers, no 20, 2022.
18. See L Gambacorta, Y Huang, Z Li, H Qiu and S Chen, "Data vs collateral", BIS Working Papers, no 880, 2020.
19. A few jurisdictions have started to insert entity-based rules in their regulatory framework to cope with selected risks presented by bigtechs. See JC Crisanto, J Ehrentraud, A Lawson and F Restoy, "Big tech regulation: what is going on?", FSI Insights on policy implementation, no 36, 2021; and F Restoy, "The digital disruption: the role of regulation", speech at the

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virtual conference by the Asia School of Business and BIS "Digital disruption and inclusion: challenges and opportunities", 2022.

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Time to step up policy coordination in the euro area

The euro area economy has shown impressive resilience. Nevertheless, Reinhard Felke and Nicolas Philiponnet argue that policymakers should sustain vigilance and action

The euro area economy has weathered the shock emanating from Russia's invasion of Ukraine with impressive resilience. In spite of initial worst-case scenarios, it now looks like the euro area could avoid a recession altogether and recent readings suggest that inflation rates may have peaked already.

Irrespective of these positive macroeconomic developments, risks abound on the horizon, requiring policymakers' sustained vigilance and action. This column focuses on diverging inflation trends in the euro area, the interplay between monetary and fiscal policy, and supply-side issues.

In an effort to contain the shock originating from Russia's aggression in Ukraine, European governments have adopted a host of emergency measures to support households and companies. While this has mitigated energy poverty, inflation, and the drop in living standards, measures have often not been entirely coordinated and designed in optimal fashion (Arregui *et al* 2022).

Moreover, specific measures differed widely, not only in terms of design features but also in terms of size, depending on individual governments' fiscal space (European Commission 2022b).

High inflation and recession fears rightly called for demand-side policy responses to support vulnerable households and corporates (Bethuyne *et al* 2022), but beyond the very short term, these can only be successful when partnered with a much broader and longer-term policy agenda to limit energy demand, develop alternative sources of energy, and improve productivity.

Diverging inflation trend in the euro area

Inflation is high in all euro area member states, but it also shows striking heterogeneity across countries. Discrepancies in inflation rates across the euro area have gone less noticed in the policy debate so far.

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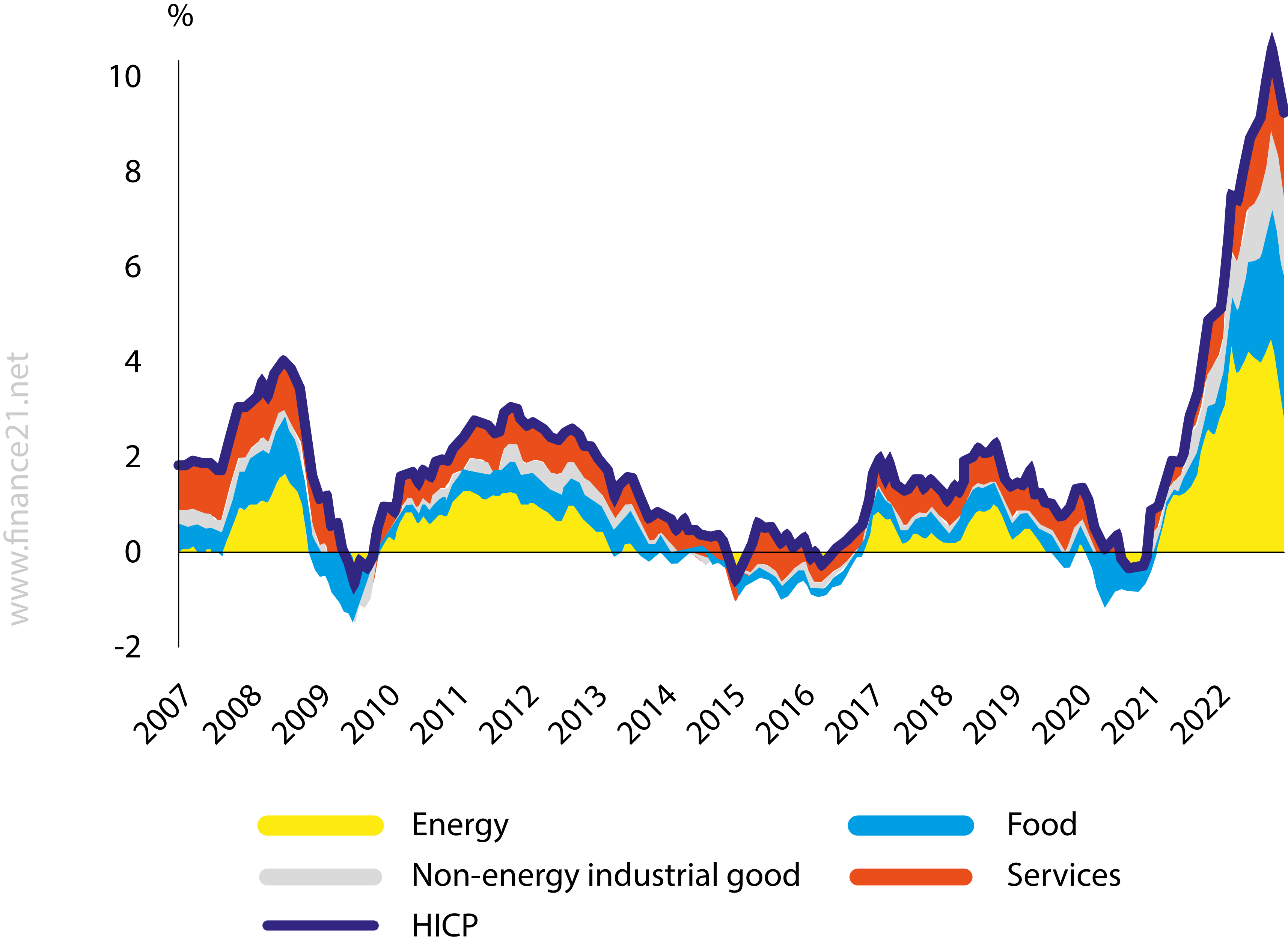
Figure 1. Components of HICP inflation in the euro area, 2007-2022



Note: Annual inflation; monthly data.

Although they are exposed to the same global factors impacting energy prices, the annual inflation rate was above 20% in Latvia and Lithuania in December and below 7% in Spain, France and Luxembourg (Figures 2).

Such large divergences are unprecedented since the creation of the euro area. They are to a large extent driven by economic structure and country-specific energy intensity, that is, the energy necessary to produce one unit of value added in the economy. Structural features drive in particular the extent to which increases in energy prices pass through to other sectors and goods in the economy.

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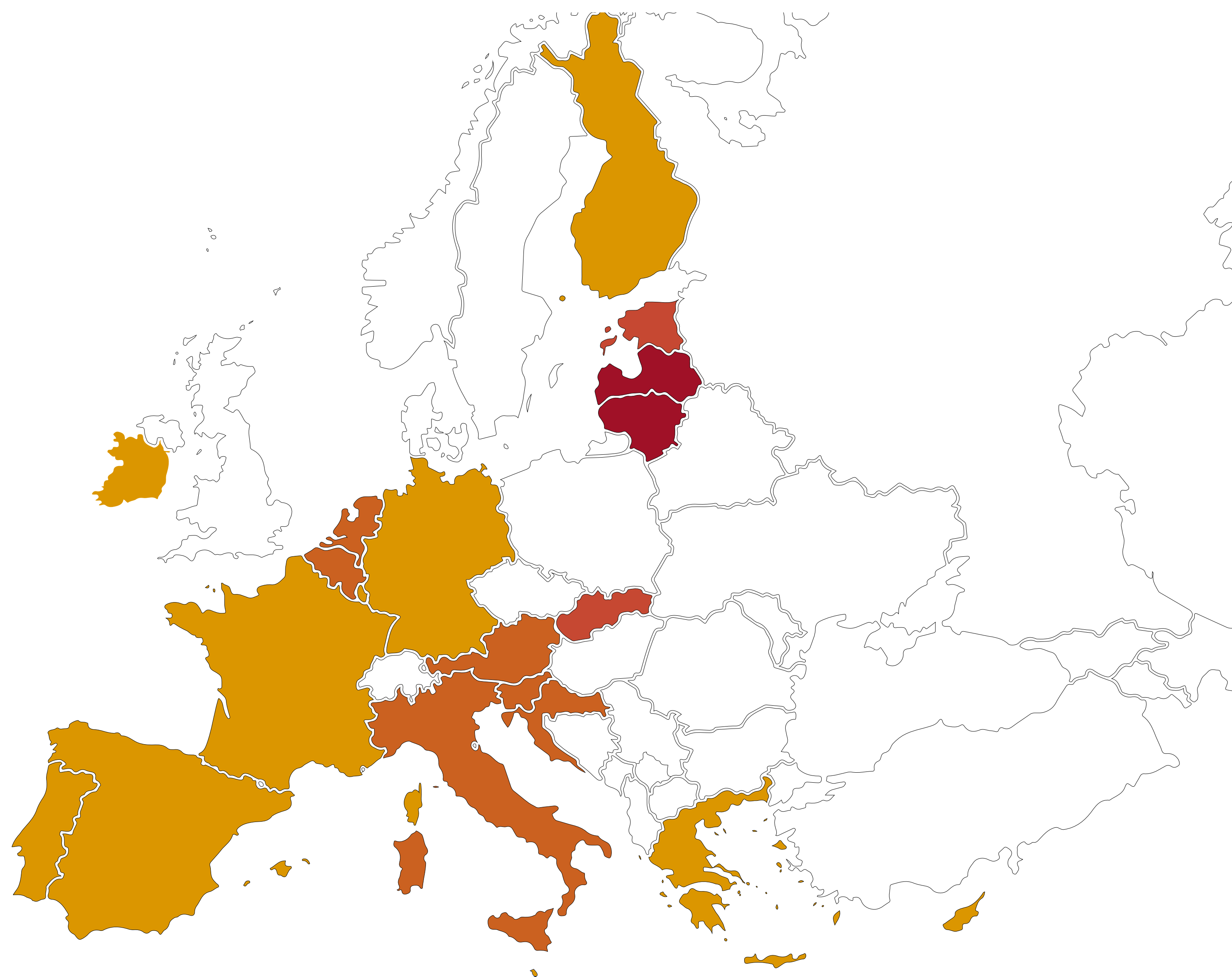
Addressing high inflation and the consequences of the energy shock remains a key challenge for policymakers in the euro area. A coordinated policy response is needed to avert long-term divergences and fragmentation

Figure 2. HICP inflation in the euro area, December 2022 (%)



HICP inflation (in %) | 5-10 | 10-15 | 15-20 | above 20 | NA

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Policy measures taken by individual countries to compensate workers and companies, in some cases by muting the energy price increases also contribute to price divergences.

Inflation pressures are expected to ease gradually going forward, but this will not necessarily take place at an even pace throughout the currency union. Persistent gaps in price and wage inflation across the euro area could impede the good functioning of the euro area and they call for particular attention.

First, divergences make it more challenging to ensure that the single monetary policy is effective throughout the euro area. Second, price differential may translate into competitiveness divergences driving persistent differences in economic and labour market performance.

It is worth recalling that it was ten years of build-up in external imbalances within the euro area's early days that laid the foundation for the euro crisis in 2010.

Vigilance and policy coordination in this respect is therefore warranted, reinforcing the relevance of tools such as the Macroeconomic Imbalance Procedure within the European Semester.

Managing the policy mix

Confronted with a clear deceleration in economic activity and still high inflation, fiscal policymakers are in a tight spot. Fiscal policy needs to respond to social needs and support vulnerable, yet viable, energy-intensive companies, but it should also not provide an inflationary push to the economy.

In a context where monetary conditions are tightening, there is a risk that fiscal and monetary policy end up pulling in opposite directions. This is a very different situation from the COVID-19 period, where the accommodative

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monetary policy and the supportive fiscal stance acted in sync. The budgetary plans of euro area countries currently foresee an overall neutral fiscal stance for 2023, which is appropriate.

However, this stance could become much more expansionary if the emergency energy measures, which are currently expected to be rolled back in 2023, end up being extended. Much will thus depend on developments in energy prices and on the policy reactions to these.

If supports continue to be required, further efforts will be needed to increase the quality and targeting of the related measures. So far, only 20% of energy measures are income measures targeted to vulnerable households or energy-intensive companies (European Commission 2022a).

Most measures are poorly targeted and, more often than not, they distort prices and reduce the incentives to lower energy consumption. There is a consensus on the need to enact temporary, targeted, and non-distortionary measures moving away from broad-based price measures (Eurogroup 2022).

Still, the political pressure to lower actual energy prices, together with the difficulties of designing and rolling out well-targeted income measures, will remain an obstacle. A common approach at the EU level to adopt two-tier energy price systems, according to which a lower price is applied for a basic share of the energy consumption, could be instrumental.

Fiscal policy's focus on addressing the immediate impact of the energy crisis should not crowd out the long-term response to structural challenges. The green and digital transition, but also security concerns, call for additional investment.

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Most of the investment needed for the green transition is expected to come from the private sector but public spending still has a role to play, for instance as part of large infrastructure projects or to support a green industrial policy (Terzi *et al* 2022).

At a time when public debt in some euro area member states is at a record-high level, the fiscal space available at the national level to support investment needs for the long-term is limited. The increase in interest rates, which will gradually feed in higher debt service, is set to weigh on member states' debt dynamics.

In this context, EU level instruments can provide support (European Commission 2023). The need to respond to long-term reform and investment needs while addressing short-term policy challenges is the key rationale for the Recovery and Resilience Facility, launched in early-2021, and of the REPowerEU initiative, on which the Council and the European Parliament reached an agreement in December 2022.

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Preventing entrenched competitiveness differentials

As energy prices increases diffuse throughout the economy, the competitiveness of euro area companies vis-à-vis international competitors is affected.

More energy-intensive production processes, and in particular upstream processes, are affected the most. However, inter-sectoral dependency means that even sectors with relatively limited energy content see a rise in input prices.

Within sectors, more vulnerable companies, and in particular SMEs, may find it difficult to improve energy efficiency in the short term. It is therefore important to facilitate adjustment and to do so in a coordinated manner across the EU.

Higher competition can contribute to lower inflation and provides further incentives for companies to increase energy efficiency. A more efficient insolvency framework can also support the reallocation of resources associated to the energy transition.

In the short term, however, temporary support schemes to help vulnerable firms weather the sudden increase in energy prices, in line with the state aid framework, are useful (European Commission 2023).

However, differences in the level of public support, together with heterogeneous energy price inflation across countries, impacts on relative competitiveness within the euro area.

Within the Single Market, support should be coordinated to avoid harmful distortion to fair competition and a possible 'subsidy race' that would weigh on public finances and delay the energy transition.

Eventually, as the costs for carbon-intensive energy will remain elevated, efforts to increase energy efficiency and the use of renewable energy are key to maintain euro area companies' competitiveness.

Developments in wages in the face of high inflation also remain a key point of attention for policymakers and social partners. Compensation per employee increased in 2022, but at a pace that was much below inflation (Figure 3).

On the upside, the contained wage developments have contributed to keeping inflation expectations well-anchored. This implies however that the purchasing power of wage has eroded – and is expected to continue doing so in 2023 (European Commission, 2022a) – holding back consumption in the short term.

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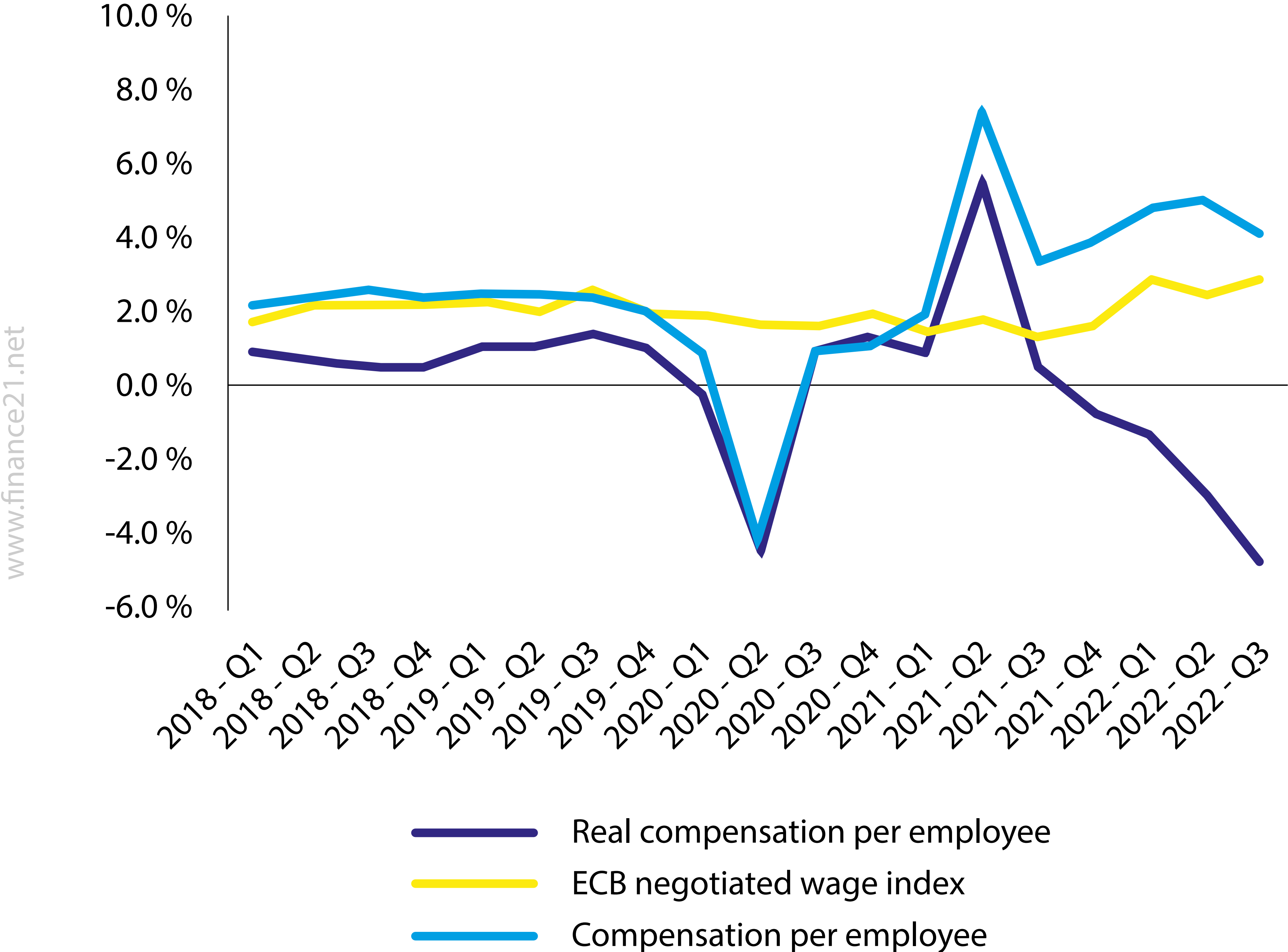
Figure 3. Nominal and real compensation per employee



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The impact of inflation is strongly regressive, hitting lower income levels disproportionally hard. This calls for an adequate update in the minimum wage, and targeted social benefits and tax measures that can alleviate the impact on low-wage workers. Mirroring the heterogeneity in inflation, developments in nominal wages are very different from country to country.

Going forward, wages are expected to accelerate in a staggered manner in order to gradually recapture lost purchasing power. There is a thus risk that, even if energy prices recede, divergences in unit labour costs persist over time.

It will be important that future wage growth remains in step with relative productivity developments to avoid that divergences in unit labour costs become entrenched and contribute to widening competitiveness gaps across the euro area.

Conclusion

Addressing high inflation and the consequences of the energy shock remains a key challenge for policymakers in the euro area. Given the heterogenous impact across the area, a coordinated policy response is needed to avert long-term divergences and fragmentation.

With its proposal for the euro area recommendation, which was approved by the Council on 17 January, the Commission has outlined a comprehensive policy agenda encompassing fiscal, labour market, social and structural policies (European Commission 2022c).

It echoes the Eurogroup's call for coordinated energy measures. There is an overall consensus on the way forward, and the next few months will put the resolve of member states and their ability to adopt a coordinated approach to

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the test. The recent agreement on REPowerEU and the effective implementation of the RRF are encouraging signals in that respect. ■

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Headwinds persist

Maarten Verwey and Oliver Dieckmann discuss the Commission's Winter 2023 Economic Forecast and describe how the EU economy is set to escape recession

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Almost one year after Russia started its war of aggression against Ukraine, the economic outlook for the EU is brightening a bit. Last year, the EU economy managed to shift away from Russian energy commodities. Decisive policy support and consumers' and businesses' response to the energy crisis boosted the resilience of the economy.

This column describes how, entering 2023 stronger than projected in autumn, the EU economy is now expected to escape the recession that was anticipated for the turn of the year. For the first time in a year, the 2023 projections for growth are revised higher while the inflation outlook is revised lower.

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From the Autumn 2022 Forecast to the Winter 2023 Forecast

In November, the EU economy was seen at a turning point. As the reopening momentum faded, the terms-of-trade shock unleashed by soaring gas prices was making its way through the economy (Gunnella and Schuler 2022), eroding households' real incomes and weighing on firms' profitability. This, combined with monetary policy tightening and weakening external support was expected to push the EU economy into recession (European Commission 2022).

According to the European Commission's Winter Interim Forecast, the EU economy is set to escape recession. In the history of the Commission's euro area forecasting, which began in May 1998 after the Council decision on the introduction of the euro, the withdrawal of a recession call is unique.

Against this, backdrop the Winter 2023 Forecast reassesses the global outlook, the pace of monetary tightening, the role of policy support to households, and several technical assumptions (European Commission 2023).

The Winter Interim Forecast includes mainly revisions to the growth and inflation outlook in 2023. For the first time since the start of Russia's war of aggression, the 2023 projections for growth are revised upwards while the inflation outlook is revised downward (Figures 1 and 2).

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While uncertainty surrounding the forecast remains high, risks to growth are seen as broadly balanced. Domestic demand could grow stronger if declines in wholesale gas prices pass through to consumer prices more strongly

Figure 1. Growth forecasts for 2022 and 2023, euro area

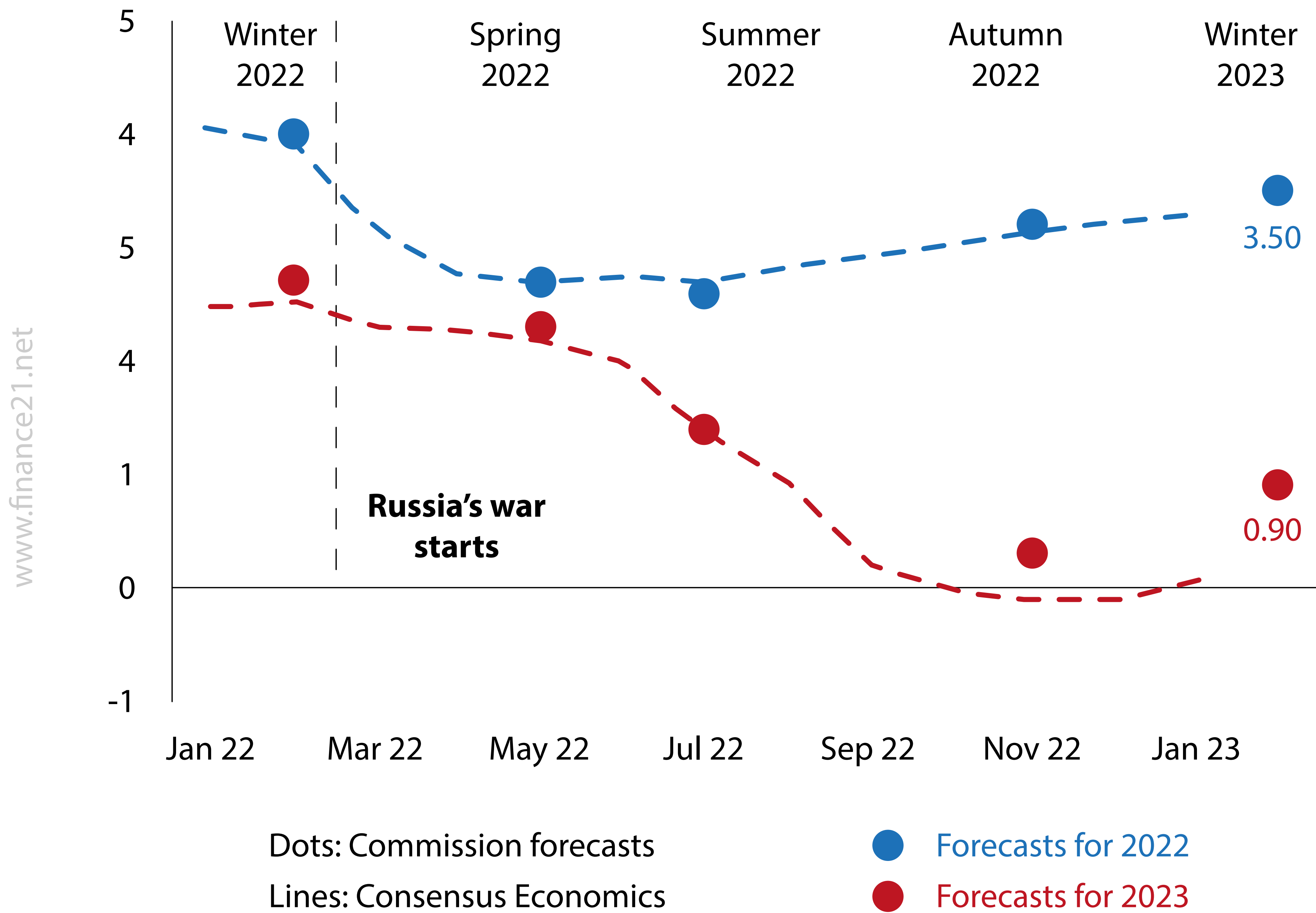

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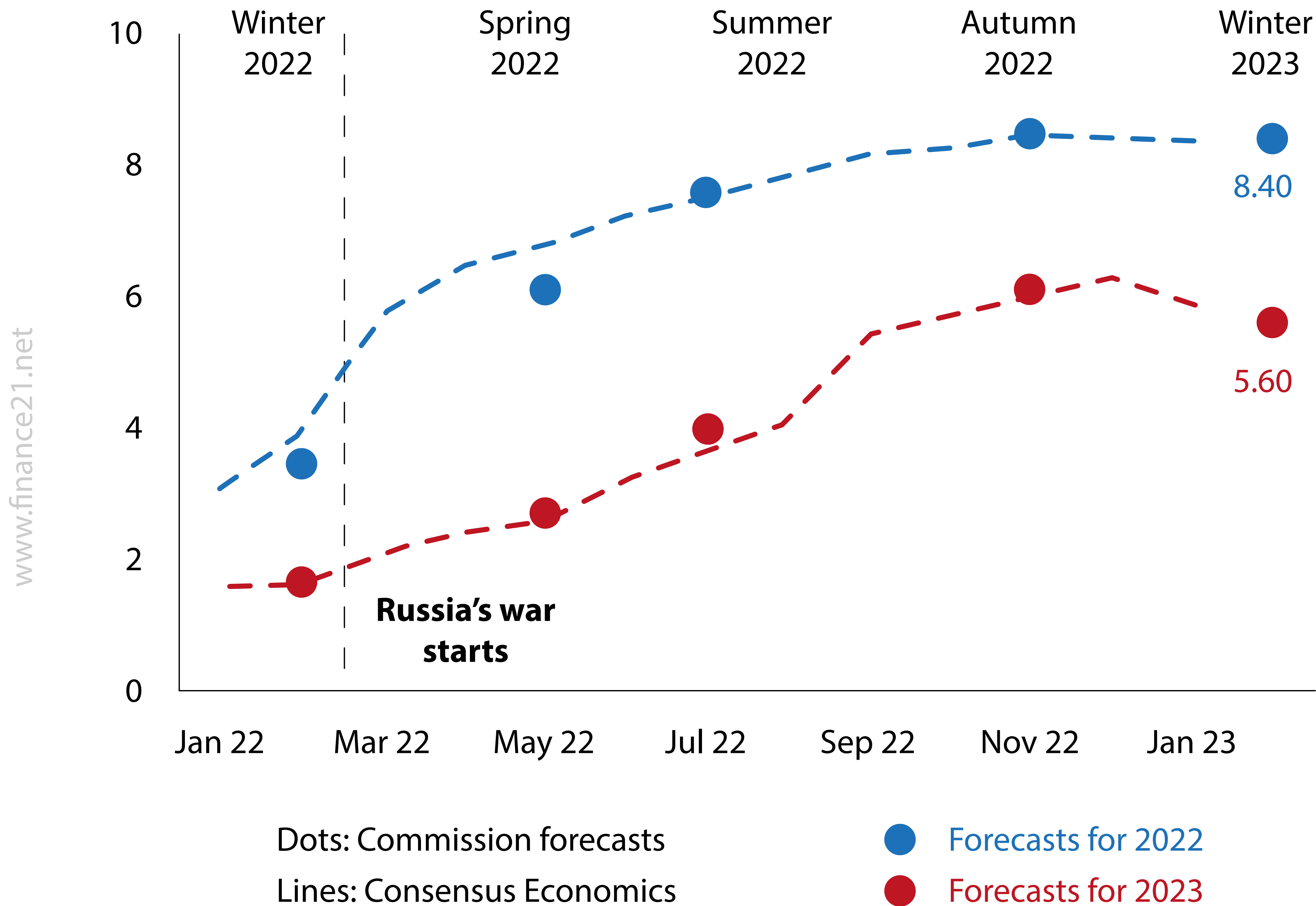
Figure 2. Inflation forecasts for 2022 and 2023, euro area



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Enhanced resilience helped the EU economy to finish 2022 stronger than expected

The EU has made impressive progress in weaning itself off Russian energy commodities and enhancing resilience against adverse shocks. Thanks to benign weather conditions, demand restraint and efficiency gains, gas consumption was about 25% below the average for the same months over the past five years.

Stepped up efforts to diversify supply sources have also borne fruit, as evident from a sharp fall in the share of pipeline gas from Russia in total EU imports of gas and the strong increase in imports of seaborne LNG.

These developments have left gas storage levels at around 75% of capacity, only marginally below their level at the beginning of the heating season, and above seasonal average. This implies lower refilling needs and easing concerns about gas rationing going forward.

Stronger-than-anticipated growth in the second half of 2022 improved the starting position for 2023. In the third quarter, the hit to GDP growth was milder than initially estimated. In the fourth quarter, according to Eurostat's preliminary flash estimate, economic activity stagnated in the EU instead of shrinking by 0.5% as forecast in autumn.

These outcomes raised the carry-over to growth in 2023 as compared to the autumn by 0.4 percentage points to 0.3% in the EU (by 0.5 percentage points to 0.4% in the euro area). Moreover, in recent months economic confidence among households and businesses began rebounding, though from low levels.

Recent developments support a slightly more positive growth outlook, but headwinds remain strong
Energy commodity prices fell below pre-war levels and should remain lower than assumed in autumn. Recent developments in demand and supply have shifted the outlook for energy prices in Europe.

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At the cut-off date of the forecast, natural gas prices in Europe (Dutch TTF futures) were about one half lower than at the time of the Autumn 2022 Forecast but also lower than at the time of the Spring 2022 Forecast, and markets expect them to remain broadly stable over the forecast horizon (Figure 3). Electricity prices have also come down significantly since autumn.

The EU labour market is expected to remain tight. In the third quarter of 2022, employment continued to increase, labour market slack was unchanged, and the job vacancy rate declined only marginally (Kiss *et al* 2022, Soldani *et al* 2022).

Until December, the unemployment rate stood at its all-time low of 6.1%. In January, the Employment Expectations Indicator increased to the highest reading since June and survey results pointed only to a marginal abatement in labour shortages.

The temporary slowdown of activity is set to weigh on employment, but difficulties in recruiting could motivate firms to hoard labour. Accordingly, the projected marginal rise in unemployment in early 2023 would be largely temporary.

Nominal wages are projected to increase stronger than before the pandemic. Continued tightness of labour markets, higher minimum wages in several member states, and increased efforts to compensate for inflation put upward pressure on wage negotiations, especially in light of fading recession risks.

Moreover, wages of many employees still reflect settlements agreed upon before inflation accelerated last year, which suggests a lagged and staggered impact of past inflation on wages.

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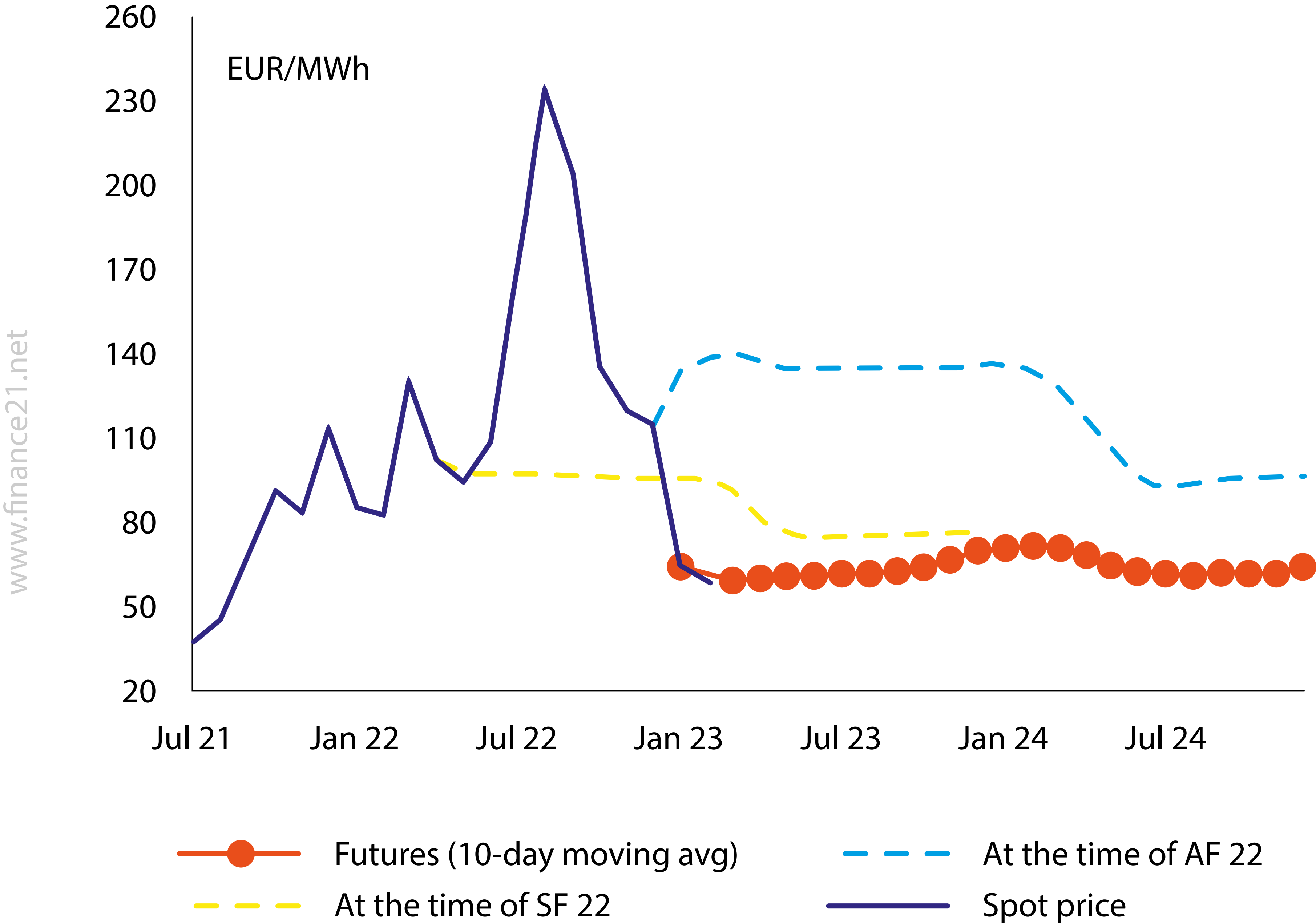
Figure 3. Natural gas future and historic prices



Source: ICE.

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Monetary policy tightening is expected to be stronger than previously assumed. Since the turning point in the monetary policy stance in December 2021, the ECB raised policy interest rates by 300 basis points.

This has lifted market expectations about short-term interest rates, whereas long-term sovereign yields remained at the previously assumed levels. The annual growth rate of bank lending to the private sector has remained positive but decelerated further in December.

In contrast with the tighter credit outlook, conditions for market financing have loosened somewhat, thanks to a pick-up in valuations, which could suggest that investors expect a rather short tightening period (Adrian *et al* 2023).

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The outlook for the EU's external environment remains weak. After largely stagnating in the first half of 2022, global economic activity picked up somewhat in the third quarter, but signs of renewed weakness emerged at the end of last year.

Survey indicators remained consistent with falling momentum heading into 2023, in particular in advanced economies. China's abandonment of its zero-COVID policy and the vigorous re-opening are likely to improve its growth prospects (IMF 2023), despite possible short-term disruptions.

The path of output expansion is lifted up and inflation revised downward

Opposing forces result in a marginal improvement of the growth outlook for this year. The positive growth impact of the faster unwinding of the terms-of-trade shock is set to be partially mitigated by the more forceful monetary tightening.

In particular sectors most sensitive to financing conditions (eg. construction) are set to feel the impact. Overall, GDP is projected to stagnate in the first quarter instead of contracting as forecast in autumn.

As of spring, growth-supportive factors (including disbursements under the Recovery and Resilience Facility) are expected to gain importance. GDP growth in 2023 is projected at 0.8% in the EU (and 0.9% in the euro area) and thus 0.5 (0.6) percentage points higher than in autumn, which is mainly due to the higher carry-over.

In 2024, growth is expected at 1.6% (1.5% in the euro area), largely unchanged compared to autumn.

The forecast puts the EU economy on a higher growth path than in autumn. After Russia's war pulled the economy to a lower growth path, the EU is now projected to move to a slightly higher path, with GDP exceeding in the fourth quarter of 2024 the level projected in autumn by about 1% (Figure 4).

HICP inflation is set to continue declining at a slightly swifter pace in 2023. According to Eurostat's flash estimate, in January, inflation in the euro area fell for a third consecutive month, whereas core inflation slightly increased, partly reflecting the impact of past energy inflation on core items (eg. Corsello and Tagliabracci 2023).

Looking forward, falling energy commodity prices and tighter financing conditions are set to lower inflationary pressures. By contrast to the expected sharp drop in energy inflation and the fall in food and goods inflation, services inflation is expected to remain elevated, reflecting the wage outlook. Taking into account strong negative base effects, HICP inflation is forecast to fall strongly (Figure 5).

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Figure 4. Real GDP growth path, EU

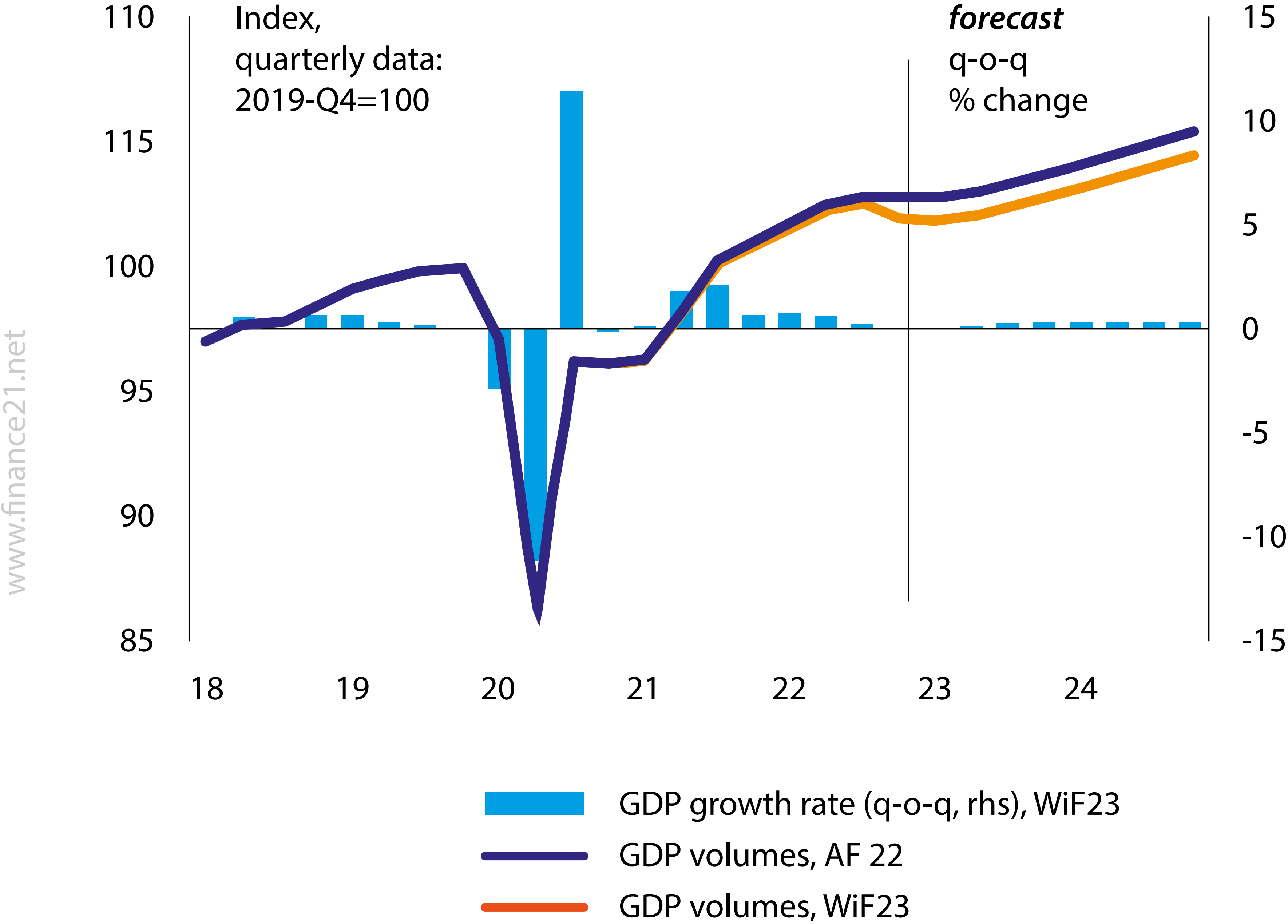

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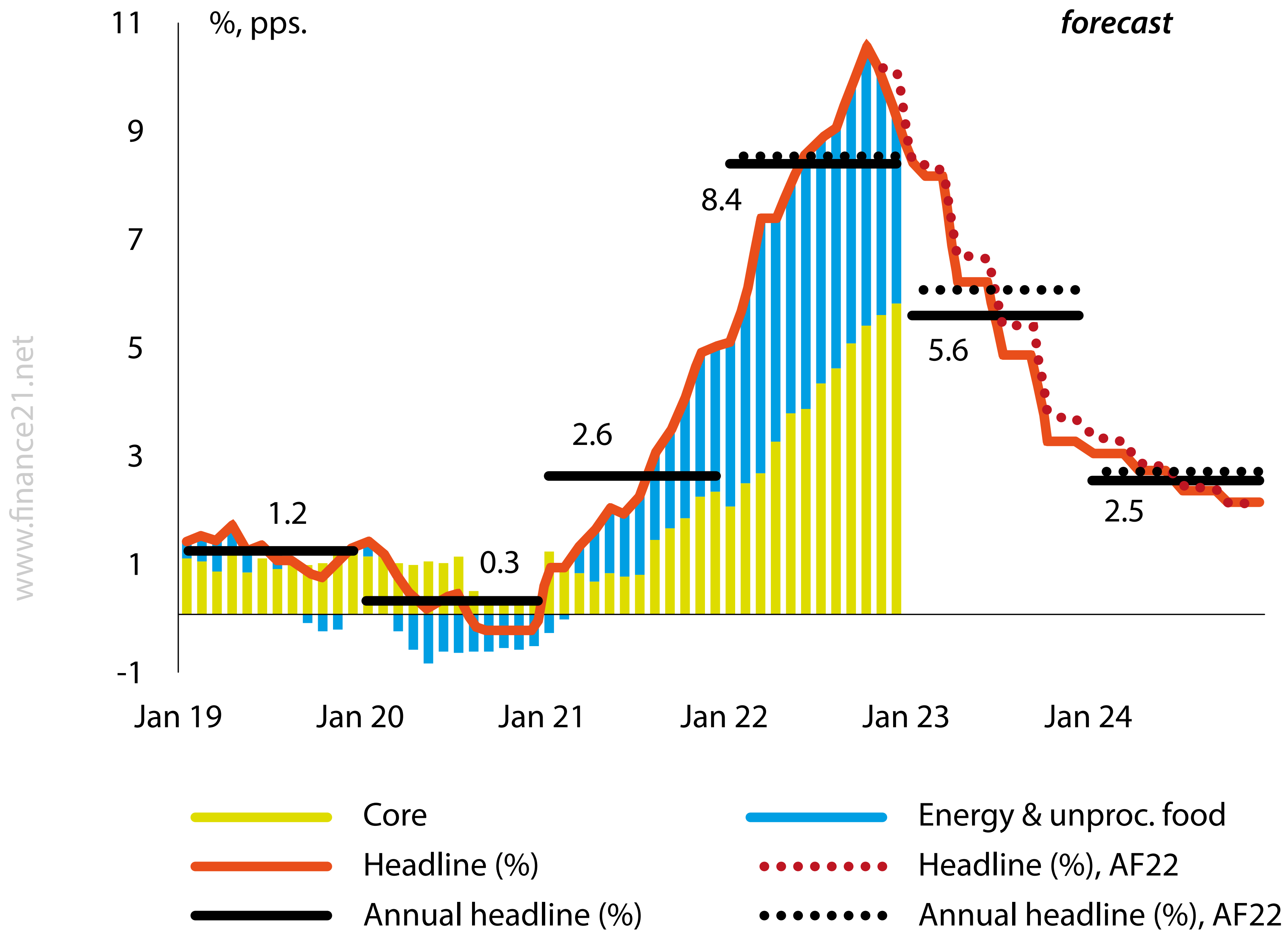
Figure 5. Inflation outlook euro area



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Risks to the outlook are more balanced

While uncertainty surrounding the forecast remains high, risks to growth are seen as broadly balanced. Domestic demand could grow stronger if declines in wholesale gas prices pass through to consumer prices more strongly.

Nonetheless, a potential reversal of that fall cannot be ruled out in the context of geopolitical tensions. External demand could get a stronger push from China's re-opening.

Risks to inflation remain largely linked to developments in energy markets, mirroring some of the risks to growth. Especially in 2024, upside risks to inflation prevail, as price pressures may turn out broader and more entrenched if wage growth were to settle at above-average rates. ■

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Achieving a full banking and capital markets union

Don't look only to Brussels to increase the supply of safe assets in the European Union, Francesco Papadia and Heliodoro Temprano Arroyo argue

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Executive summary

A sufficient supply of safe assets denominated in euros is critical if the European Union is to achieve full banking and capital markets union while fostering the euro's international role.

The European debate on developing the supply of safe assets has so far focused on the possible creation of a common safe asset. This has tended to underplay the potential contribution of sovereign assets.

Expanding the supply of national safe assets, notably through the gradual implementation of fiscal and growth-oriented structural policies in euro area countries, leading to upgrading of their sovereign ratings, provides a promising, and perhaps more feasible, option.

An upgrade to triple A of those euro area countries that are currently rated double A could produce substantially more safe assets than most common safe asset proposals, including those based on the development of 'synthetic' safe assets.

There has been a remarkable increase in the share of supranational assets in the stock of euro-based safe assets since 2008, reflecting downgrades in sovereign ratings and the EU's financial responses to the euro area crisis and the pandemic. However, safe assets in euro remain dominated by those issued by euro area governments.

Although common safe assets have certain advantages over national safe assets, reflecting their built-in risk diversification properties, there is currently not much political appetite for such proposals. Meanwhile, sovereign safe assets already offer many of the advantages of common safe assets.

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Sound fiscal policies and growth-stimulating reforms, which are in any case desirable, should be implemented to improve the credit ratings of euro area sovereigns. This might not be politically feasible in the short-term, given the difficult economic environment currently faced by the EU, but it should be a key component of the EU's medium-term safe asset strategy.

Should the political consensus be found to create a common safe asset, such an asset could be incorporated into the euro area's existing safe asset system, reinforcing its positive effects.

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Substantial progress could be made in addressing the doom loop if the supply of euro area sovereign safe assets was boosted

1 Introduction

Europe's Economic and Monetary Union (EMU) is still in development, meaning it is not perfect yet. One important issue on which further work is needed is ensuring an adequate supply of safe financial assets denominated in euros. This is critical for three important undertakings: completing the banking union, furthering the capital markets union, and strengthening the international role of the euro.

The European debate on developing the supply of safe assets, eg. of high credit-quality bonds (typically those enjoying a triple A or just below credit rating), has so far focused on the possible creation of a new common safe asset. This focus has tended to underplay the potential contribution of sovereign safe assets[1].

We argue that expanding the supply of national safe assets, notably through the gradual implementation of fiscal and growth-oriented structural policies leading to the upgrade of euro area sovereign ratings, provides a promising and perhaps more feasible avenue to increase the supply of European safe assets.

We show, in particular, how upgrading to triple A those EU countries that are currently rated double A could produce substantially more safe assets than most proposals aimed at creating a new a European common safe asset, including those based on the development of 'synthetic' safe assets.

In the current European and global economic context, with debt ratios at historically high levels, interest rates rising sharply and economies drifting towards recession or stagnation, this might sound like wishful thinking. But we argue that there is a realistic path for many countries currently rated double A to reach triple A status over the medium term, if appropriate strategies are put in place.

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We discuss first why an adequate supply of safe assets is critical for completing EMU. We then quantify the current supply of euro-denominated safe assets. This quantification distinguishes between safe assets issued by euro area countries and those issued by EU supranational institutions.

We then outline a possible strategy to increase the supply of safe assets in the EU, focusing on the relative contributions that national and supranational/common assets could make, while acknowledging that the two are not perfect substitutes, even when they share the same creditworthiness.

2 An unfinished monetary union: the case of safe assets

The EU's banking union process has resulted so far in the move of supervision and the partial consolidation of resolution from the national to the European level.

However, together with the limited advances made on achieving a common framework guaranteeing bank deposits, the so-called bank-sovereign 'doom loop' still stands in the way of a complete banking union.

Several regulatory proposals have been put forward to deal with the doom loop by reducing the excessive exposure of euro area banks to domestic government debt, but banks still remain heavily biased towards their home sovereigns, thus creating a risk for the whole euro area.

Some proposals are price-based while others are quantity-based (eg. based on exposure limits). Some aim at limiting concentration in a single sovereign; others at reducing credit risk[2]. But, as highlighted by Alogoskoufis and Langfield (2017), these reform proposals may not, in all cases, tackle both concentration and credit risks.

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Attempts to reduce concentration might actually increase overall risk, in effect replacing the domestic doom-loop problem by another type of financial instability risk, namely international contagion risk.

Addressing these problems has been one of the main motivations behind proposals to create a European common safe asset. Some of the most recent proposals, notably those of Brunnermeier *et al* (2011 and 2017) and ESRB (2018), which led to the European Commission's sovereign bond-backed securities (SBBS) proposal (European Commission, 2018)[3], have focused on the creation of a synthetic safe asset.

Other common safe-asset proposals have taken different approaches. However, there has been limited political appetite so far for these types of proposal and questions have been raised about their implementation (Claeys, 2018).

While the creation of a common safe asset might provide a first-best solution, substantial progress could already be made in addressing the doom loop if the supply of euro area sovereign safe assets was boosted. This could be achieved by pursuing sound policies conducive to the upgrade to triple A of euro area governments that are already close to that rating category.

If this were accompanied by a more general improvement of ratings among countries that are still far from triple A, the risk of international contagion and sudden stops could also be substantially mitigated.

A second dimension of EMU, where an increased supply of safe assets could play a catalytic role, is the capital markets union, a project underway since 2014. This initiative was partly a response to the euro area crisis, which led to a partial reversal of the crossborder integration that had been achieved in the previous decade.

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Some progress has been made since then, but the very fact that the European Commission felt the need to relaunch the process in September 2020 and again in February 2021 shows that a genuine capital markets union still has not been attained.

Indeed, the Commission recognised in its 2020 action plan that *"Europe has for decades struggled to make its capital markets work as one, and to a large degree still has 27 capital markets, some fairly large, and quite a number rather small"* (European Commission, 2020).

The European capital market lags significantly behind that of the United States, both as a share of the total financial system and in terms of indicators of depth, liquidity and efficiency. The United States has a developed securities market that also funds activities that are typically not well served by banks, including innovative enterprises and risky long-term investments.

Compared to the US capital market, another glaring missing element in the euro area has been the lack of an adequate supply of safe assets (Lanoo and Thomadakis, 2019). Treasuries remain, by contrast, the backbone of the US financial market, providing an extremely liquid security, the basis for pricing assets all along the yield curve and a reliable collateral.

A market as sophisticated, liquid and efficient as the one for US government securities remains a distant prospect in Europe. Still, increasing the supply of safe assets denominated in euro could promote financial integration and risk-sharing within the euro area, thus helping to further correct the reversal of integration triggered by the euro area sovereign debt crisis, and support the development of deeper and more liquid security markets in the euro area.

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The limited supply of safe assets from EU issuers has negative consequences also beyond EU borders, as it has aggravated the shortage of such assets at global level[4]. The euro accounts for a much lower share of the global supply of triple A assets (both public and private) than the dollar (Figure 1).

More significantly, most of the decline in the global stock of safe assets witnessed since the global financial crisis has been explained by the decline in euro-denominated assets, mainly reflecting the credit downgrades suffered by a number of euro area sovereigns (Temprano Arroyo, 2022, pp. 16-17).

Because the world suffers from such a shortage of safe assets, if the EU managed to supply part of the world's unsatisfied demand for such assets, it could both increase the international attractiveness of the euro and help alleviate the global safe-asset problem.

Since 2008, the attitude of EU authorities towards the international role of the euro has changed from a neutral policy, which was still influenced by the cautious attitude of the Bundesbank (Papadia and Efstathiou, 2018), to one that actively promotes this role.

Of course, the international use of a currency depends on a host of factors, but there is significant consensus that the lack of an adequate supply of euro-denominated safe assets is a key constraint on its international development.

Again, the comparison with the contribution of US safe government securities to the dollar's global role is telling. The increase in safe assets issued at EU level in response to the pandemic, in particular under the NextGenerationEU (NGEU) instrument, goes in the right direction but is not quantitatively sufficient (nor sufficiently durable in time)

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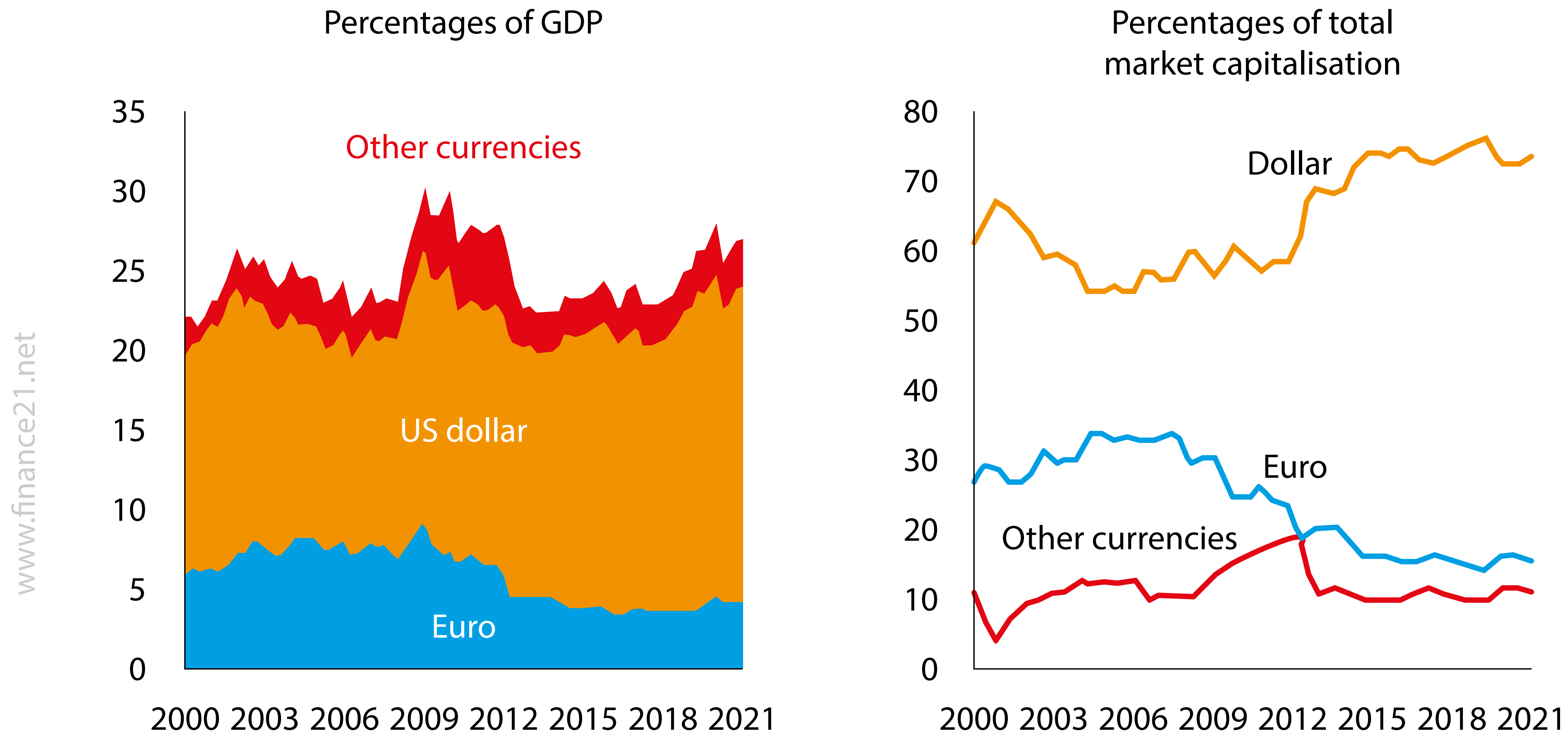
Figure 1. Market capitalisation of AAA assets



Note: The Bloomberg Global Aggregate – AAA Index includes a series of triple A fixed-income securities issued by treasuries, other government-relating institutions and corporations. Quarterly data.
Source: Bruegel based on Bloomberg, IMF.

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to mark a decisive step in the euro's international status (Claeys and Wolff, 2020; Temprano Arroyo, 2022). A more comprehensive strategy, including the deepening of EMU, is needed.

3 The sources of safe assets: a quantitative assessment

Euro-denominated public safe assets in the EU can be issued by euro area governments and by EU supranational institutions, including the European Commission, the European Investment Bank (EIB) and the European Stability Mechanism (ESM), which has now also integrated the European Financial Stability Facility (EFSF).

While the supply of euro-denominated safe assets remains dominated by those issued by euro area governments, there has been a remarkable trend towards an increase in the share of supranational assets in the outstanding stock of euro-based public triple A assets.

The share of supranational bonds in the stock of euro-denominated safe assets has gone up from only 3 percent in 2008 to 26 percent in August 2022, a phenomenal increase (Figure 2).

This reflects two separate developments. The main factor is that credit downgrades during the euro area crisis reduced the number of triple A-rated euro area treasuries from eight to only three: Germany, Luxembourg and the Netherlands (Table 1). Figure 3 illustrates the overwhelming effect this has had on the supply of sovereign safe securities in euro.

Second, the issuance of supranational bonds increased sharply in response to the euro area crisis, as the Commission and the ESM put in place emergency packages funded by the newly created financial stabilisation facilities, and as the EIB accelerated its international borrowing.

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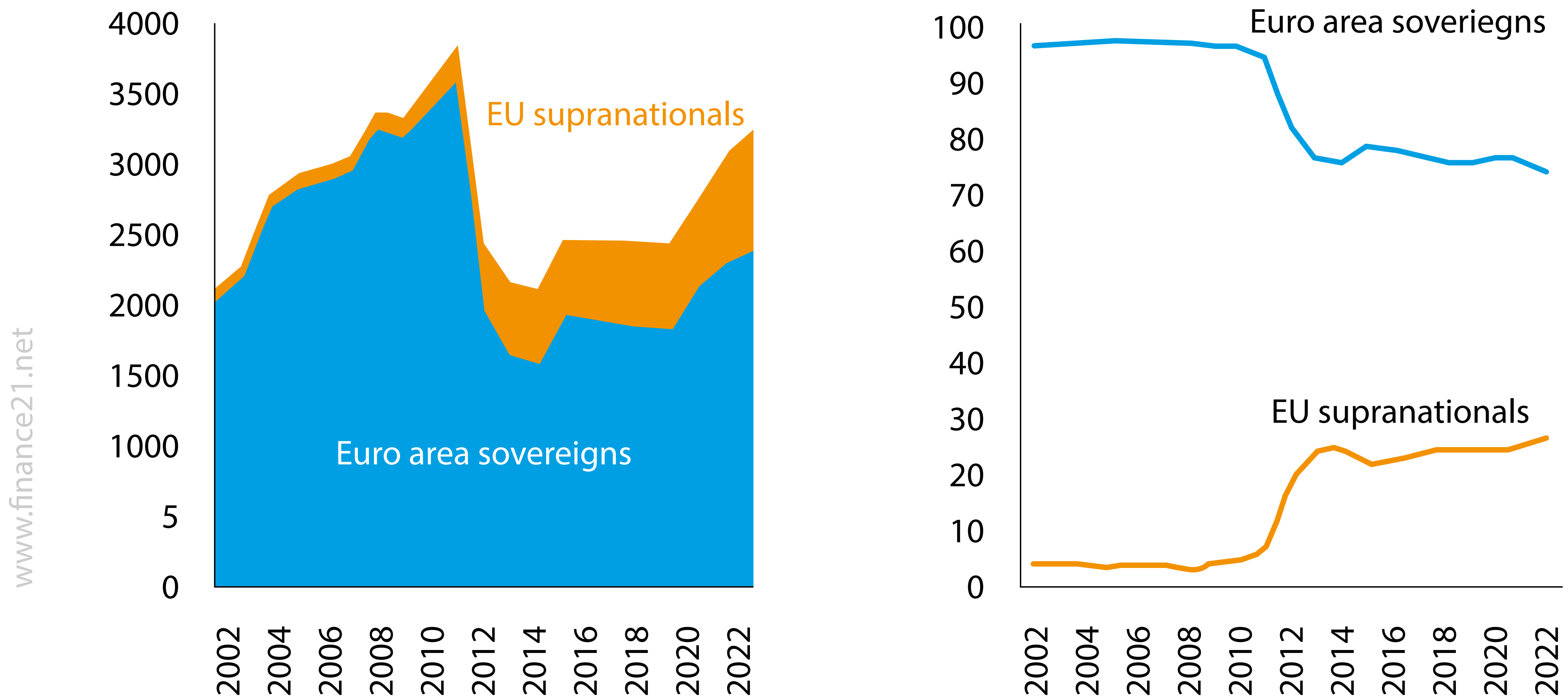
Figure 2. Sovereign versus supranational safe assets in euro, 2002-2022



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Note: For 2022, the chart shows: end of August data for supranational assets; and for sovereign assets, projections for end-2022 based on the European Commission medium-term debt projections (European Commission, 2022a).
Source: Bruegel based on European Commission, ESM, EIB.

There has also been, though at a much lower level, a significant increase in the issuance of bonds to fund Macro-Financial Assistance (MFA) operations outside the EU, in particular to support Ukraine after the Russian annexation of Crimea in 2014, and Jordan and Tunisia, following the Arab Spring.

Since 2020, supranational issuance has been boosted again by the EU's response to the COVID-19 pandemic, notably through the issuance of SURE (Support to Mitigate Unemployment Risks in an Emergency)[5] and NGEU bonds. These issuances have amounted to nearly €290 billion between October 2020 and August 2022, and could reach up to €906.9 billion by 2026.

There has also been historically high MFA lending in response to the pandemic and the war in Ukraine. These developments have more than compensated for the fact that, since 2015, there have been no new bail-out programmes under the EU's internal stabilisation facilities, reflecting the successful resolution of the euro area crisis.

Figure 4 shows the trend in the stock of supranational EU securities, most of which enjoy a triple A rating from the main international rating agencies and can therefore be considered safe assets. It shows a big jump in 2011-2013, coinciding with the euro area crisis, and again in 2020-2022, coinciding with the pandemic.

While the trends just described illustrate the potential importance of supranational institutions as a source of euro-denominated safe assets, they are also a reminder of the dominant influence of national issuance and, therefore, underline the huge scope for increasing the availability of high-quality assets in euro through the upgrade of sovereign ratings.

4 Policy options

The supply of euro-denominated safe assets can be increased in three main ways[6]:

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Table 1. Euro area sovereign credit ratings

	2005			2014			September 2022		
	S&P	Moody's	Fitch	S&P	Moody's	Fitch	S&P	Moody's	Fitch
Germany	AAA	Aaa	AAA	AAA	Aaa	AAA	AAA	Aaa	AAA
Luxembourg	AAA	Aaa	AAA	AAA	Aaa	AAA	AAA	Aaa	AAA
Netherlands	AAA	Aaa	AAA	AA+	Aaa	AAA	AAA	Aaa	AAA
Austria	AAA	Aaa	AAA	AA+	Aaa	AAA	AA+	Aa1	AA+
Finland	AAA	Aaa	AAA	AA+	Aaa	AAA	AA+	Aa1	AA+
France	AAA	Aaa	AAA	AA	Aa1	AA+	AA	Aa2	AA
Ireland	AAA	Aaa	AAA	A	Baa1	BBB+	AA-	A1	AA-
Spain	AAA	Aaa	AAA	BBB	Baa2	BBB+	A	Baa1	A-
Belgium	AA+	Aa1	AA	AA	Aa3	AA	AA	Aa3	AA-
Slovenia	AA-	Aa3	AA-	A-	Ba1	BBB+	AA-	A3	A
Italy	AA-	Aa2	AA	BBB-	Baa2	BBB+	BBB	Baa3	BBB
Portugal	AA-	Aa2	AA	BB	Ba1	BB+	BBB+	Baa2	BBB
Estonia	A	A1	A	AA-	A1	A+	AA-	A1	A
Slovakia	A	A2	A	A	A2	A+	A+	A2	A
Malta	A	A3	A	BBB+	A3	A	A-	A2	A+
Lithuania	A	A3	A	A-	Baa1	A-	A+	A2	A
Latvia	A-	A2	A-	A-	Baa1	A-	A+	A3	A-
Cyprus	A	A2	A+	B+	B3	B-	BBB	Ba1	BBB-
Greece	A	A1	A	B	Caa1	B	BB+	Ba3	BB

Source: Bruegel based on Standard & Poor's, Moody's, Fitch and Trading Economics.

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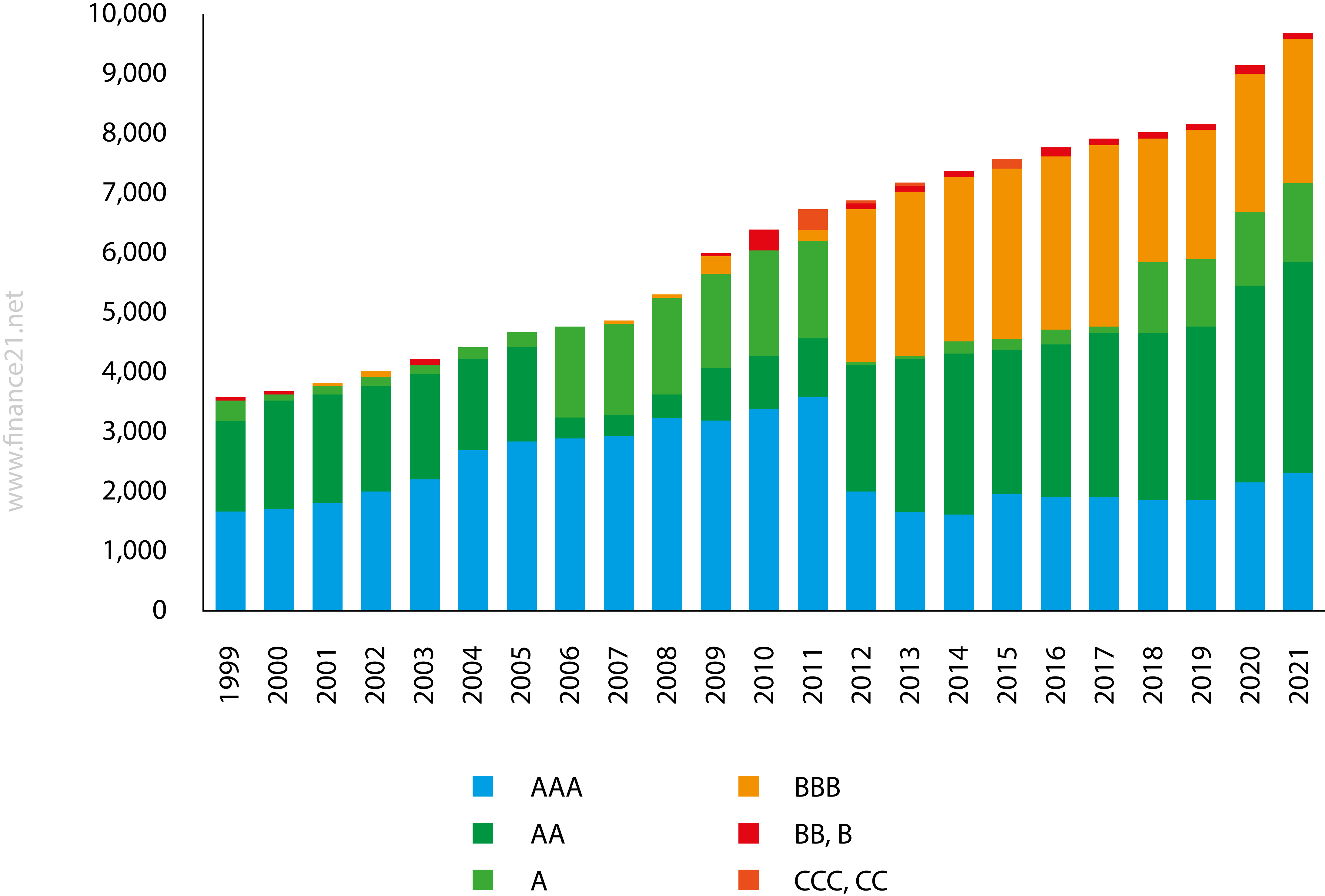
Figure 3. Stock of euro area sovereign debt securities (€ billions)



Note: Includes securities issued by the current 19 euro area sovereigns.
Sources: Bruegel based on Eurostat, S&P and Trading Economics.

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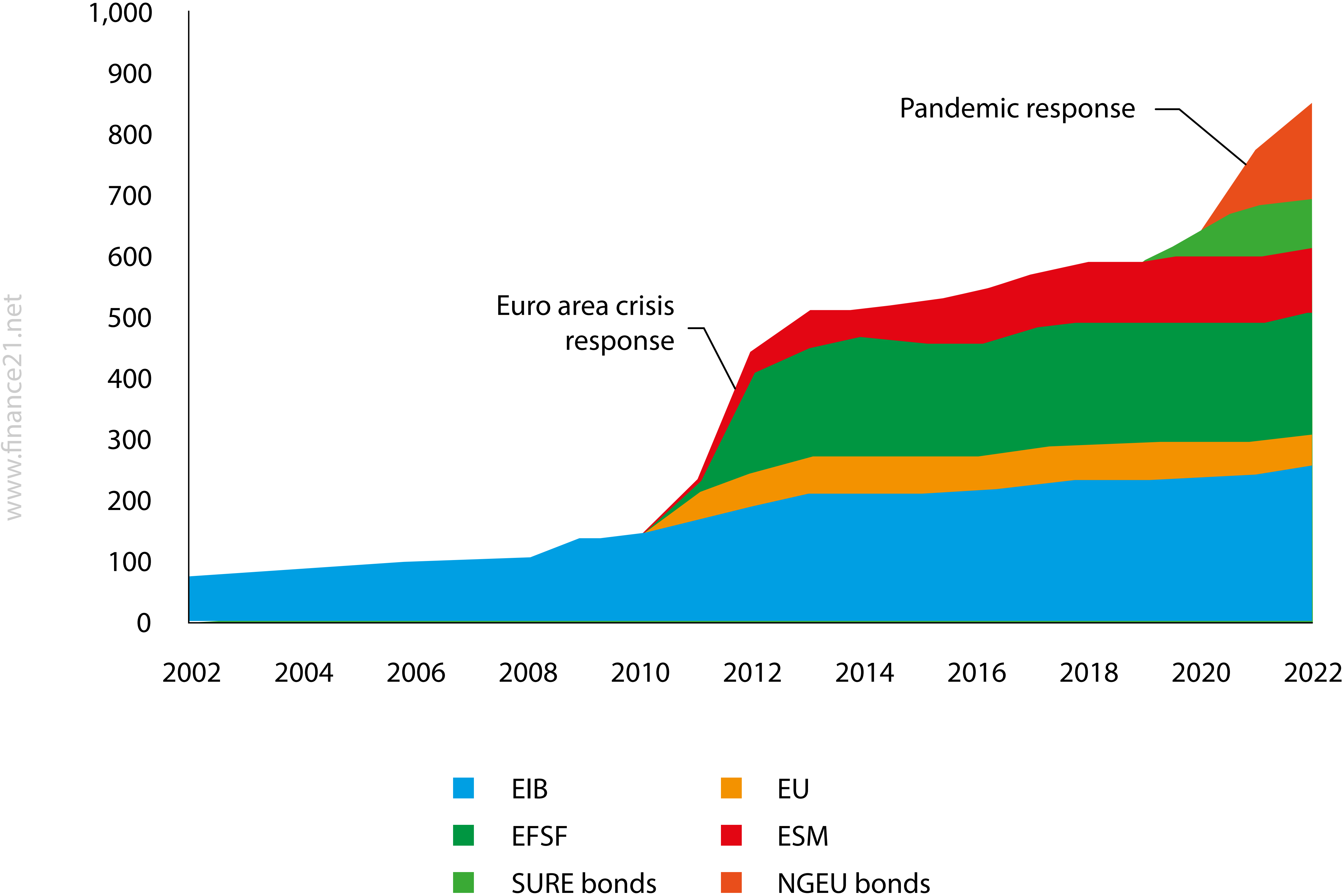
Figure 4. EU supranational debt denominated in euro (€ billions, end-of-year stocks)



Source: Bruegel based on European Commission, ESM, EIB.

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- More issuance at EU level, including through the possible creation of a common safe asset;
- More issuance at national level from countries with the highest credit ratings;
- Credit upgrades for countries with sub-triple A ratings.

This section examines the potential contribution of each of these sources of safe assets.

4.1 More issuance at EU level

There are two different approaches to expanding the issuance of safe assets at EU or euro area level. The first and most obvious one is to boost bond issuance by existing EU supranational institutions and facilities, or to create new supranational facilities funded through international borrowing.

The second option brings us back to the academic and policy debate of the past decade on the creation of a European common safe asset. We look at each of these two approaches in turn.

Increased issuance by EU supranational institutions and facilities

The EU increased supranational issuance when it created the EFSF and ESM in response to the euro area crisis, and the SURE and NGEU instruments in reaction to the pandemic.

As noted in section 3, EU supranational borrowing has increased rapidly over the last 10 years and its share in the stock of total euro-denominated assets has risen markedly. The SURE and NGEU facilities, if fully used, could put into the market a volume of new safe assets comparable to those that could be created under some of the best-known common safe asset proposals (Temprano-Arroyo, 2022, pp. 27-29).

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But with the euro area sovereign debt crisis over, there is not in the foreseeable future a clear need for new programmes funded under the EU's macroeconomic stabilisation facilities. And with the COVID-19 crisis seemingly under control in Europe, there is currently not much political inclination to make the SURE or the NGEU instruments permanent.

More fundamentally, the expansion of supranational borrowing must be backed by prudent national fiscal policies. All supranational facilities are, in one way or another, ultimately guaranteed by EU countries, requiring tight common control over national fiscal policies.

Without such control, a rapid expansion of supranational borrowing could result in the downgrade of the supranational entities managing those facilities. It is thus of paramount importance to ensure the creditworthiness and high-quality ratings of the sovereign guarantors behind these facilities.

A possible source of increased supranational issuance of safe bonds by the EU stems from the need to provide financial support to Ukraine, which faces huge macroeconomic stabilisation and reconstruction needs. The World Bank, the government of Ukraine and the European Commission (2022), in their needs assessment study published on 9 September 2022, estimated that the cost of the war in terms of reconstruction and recovery needs amounted, as of 1 June 2022, to $349 billion, or more than 1.6 times the GDP of Ukraine.

This estimate is probably on the low side as it does not take into account the impact of Russia's more recent strategy to redouble attacks on energy and other critical civilian infrastructure. But it helps illustrate the orders of magnitude involved.

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In response, the Commission has proposed two unprecedented packages of MFA loans – of up to €9 billion and up to €18 billion – to help cover Ukraine's short-term funding needs in 2022 and 2023, respectively, the first of which has already been partly disbursed (European Commission, 2022a and 2022b).

The Commission has also proposed the creation of a new facility, to be called RebuildUkraine, to address Ukraine's longer-term reconstruction needs (European Commission, 2022a). While the details of this new facility remain to be spelled out, it could potentially lead to the issuance of a new type of supranational bonds in euro.

If one adds to this the expected continued issuance of MFA bonds in support of Ukraine and other neighbouring countries affected by the war, and increased bond issuance in euro by the EIB and the EBRD to fund the reconstruction of Ukraine, it is hard to escape the conclusion that addressing the consequences of the war is likely to lead, sooner or later, to a significant increase in EU supranational bond issuance.

However, such an increase in supranational issuance to support Ukraine is unlikely to remedy, on its own, the scarcity of euro-denominated safe assets. Although Ukraine's financing needs are very large in terms of its GDP, their potential implications for the issuance of EU supranational bonds should not be exaggerated.

Even if the EU covered as much as half of Ukraine's currently estimated reconstruction needs (or about €175 billion), this would only amount to a fraction of the maximum net issuance allowed under the NGEU and SURE programmes.

Only a larger EU financial initiative, perhaps aimed at dealing with the economic fallout of the energy crisis, or at ramping up EU defence expenditure, might require the issuance of bonds at an order of magnitude comparable to the NGEU facility, but such initiatives for now are not being discussed[7].

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Creation of a 'European common safe asset'

Another approach to increasing the supply of safe assets at EU level would be the creation of a European common safe asset. The academic and policy debate around this intensified after the global crisis and, in particular, the euro area crisis, and was largely motivated, as noted, by the desire to break the doom loop between sovereigns and domestic banks, which had exacerbated the euro area sovereign debt crisis.

The debate, which resulted in a proliferation of plans, has moved over time from proposals involving some degree of debt mutualisation to proposals not requiring the provision of explicit debt guarantees[8].

In recent years, it has focused on the possible creation of a synthetic safe asset by either a European public debt agency or by the private sector under an appropriate regulatory framework.

These proposals, exemplified by the European Safe Bond (ESBies) proposal of Brunnermeier *et al* (2011 and 2017), and the related European Commission SBBS proposal, are based on the pooling by a public entity or by private financial intermediaries of a standardised diversified portfolio of European sovereign bonds and their subsequent tranching into securities of different seniority, with the most senior tranche (the 'ESBies') acting as a safe asset.

These and others, including Bénassy-Quéré *et al* (2018) and Algoskoufis and Langfield (2018), have advocated combining the introduction of a euro area wide safe asset with regulatory reform aimed at stimulating the diversification of bank's sovereign exposures.

But although the Commission's SBBS proposal was endorsed (although in a somewhat modified manner) by the European Parliament (European Parliament, 2019), the EU Council has never discussed it.

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And although other safe asset proposals, including the so-called E-bond proposal (see, in particular, Giudice *et al* 2019) are arguably less sensitive to the criticisms that made SBBS unpopular (Claeys, 2018), there is for the time being, as noted, not much political interest in reactivating this debate.

Common safe asset proposals are, therefore, unlikely to provide for some time a realistic means of boosting the supply of euro-denominated safe assets.

4.2 Increased issuance by triple A euro area sovereigns

Triple A euro area countries could in theory provide a significant source of additional euro-denominated safe assets if their borrowing needs were to increase. Indeed, this is exactly what happened because of the national fiscal responses to the COVID-19 crisis.

Temprano Arroyo (2022), using the European Commission's medium-term debt projections, showed that triple-A rated countries will account for more than one third of the cumulative increase in the nominal value of euro area public debt by 2032, compared to pre-pandemic projections.

This is explained by the large size of the German economy, which accounts for about 80 percent of the euro area's triple A sovereign debt and 20 percent of all euro area sovereign debt, and also by the fact that Germany and, to a lesser extent, the Netherlands were among the euro area countries that made stronger counter-cyclical use of fiscal policy during the pandemic, which contributed to a more pronounced deterioration in their fiscal balances and debt dynamics.

By 2026, the last year in which net debt can be issued under the NGEU instrument, the supply of debt assets by the three triple-A euro area governments is expected to be about €1.1 trillion larger than previously projected.

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This is somewhat larger than the NGEU and SURE instruments combined, which illustrates the important potential contribution of triple-A countries to efforts to boost the supply of euro area safe assets.

That said, it would obviously be a misguided policy prescription to recommend that triple-A countries increase their deficits and debt issuance simply to boost the supply of euro area safe assets. Their fiscal soundness is a key factor behind their triple-A status and, more generally, behind investor confidence in the stability of the euro area and the strength of the EMU architecture.

Fiscal expansion in top-rated countries could also threaten the triple-A ratings of EU supranational institutions because of the explicit and implicit guarantees these countries provide.

Moreover, excessive reliance on the safe assets of a few euro area countries would create an undesirable concentration of bank exposure on a limited number of sovereigns.

The right way to expand the supply of sovereign safe assets in the euro area is not a shift to fiscal profligacy by the so far fiscally prudent countries but, rather, fiscal consolidation and growth-oriented supply policies by sub-triple A governments. To this third and key potential source of safe assets we now turn.

4.3 Credit upgrades of sub-triple A euro area sovereigns

The most promising approach for expanding the supply of euro-denominated safe assets, particularly for as long as the pre-conditions to develop a common safe asset are not satisfied, is to implement a strategy leading to the upgrade to triple A of countries that are currently immediately below that rating category.

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These rating upgrades would require ambitious fiscal-consolidation policies over the medium term, plus structural reform strategies supporting faster GDP growth. Faster growth would contribute to better debt dynamics, both by helping to generate fiscal revenues and by bringing down debt-to-GDP ratios through the denominator effect.

The potential effect of credit upgrades on the supply of safe assets is huge. Figure 5 displays several credit-rating scenarios to illustrate this point, using Commission medium-term debt projections for euro area countries (European Commission, 2022c)[9]. The bottom of the chart shows the baseline scenario, in which only Germany, Luxembourg and the Netherlands continue to enjoy the triple-A credit standing.

Scenario 2 shows what would happen if Austria and Finland, the two countries that currently have AA+ (or Aa1) ratings, ie. the credit rating that is only one notch below triple A, regained triple-A status. For these two countries, an upgrade to triple A seems within reach.

Scenario 3 further adds Belgium and France, currently rated AA by at least one of the three main rating agencies, to the group of triple-A countries.

Finally, scenario 4 assumes that Estonia, Ireland and Slovenia, currently rated AA- by at least on agency manage to get upgraded to triple A. Given the challenging economic and debt situation currently experienced by euro area countries, none of these upgrades seems easy. But they all look feasible over the foreseeable future, provided the appropriate policies are put in place.

In that respect, it should be recalled that four of these seven countries (Austria, Finland, France and Ireland) already enjoyed triple-A status before the global financial crisis.

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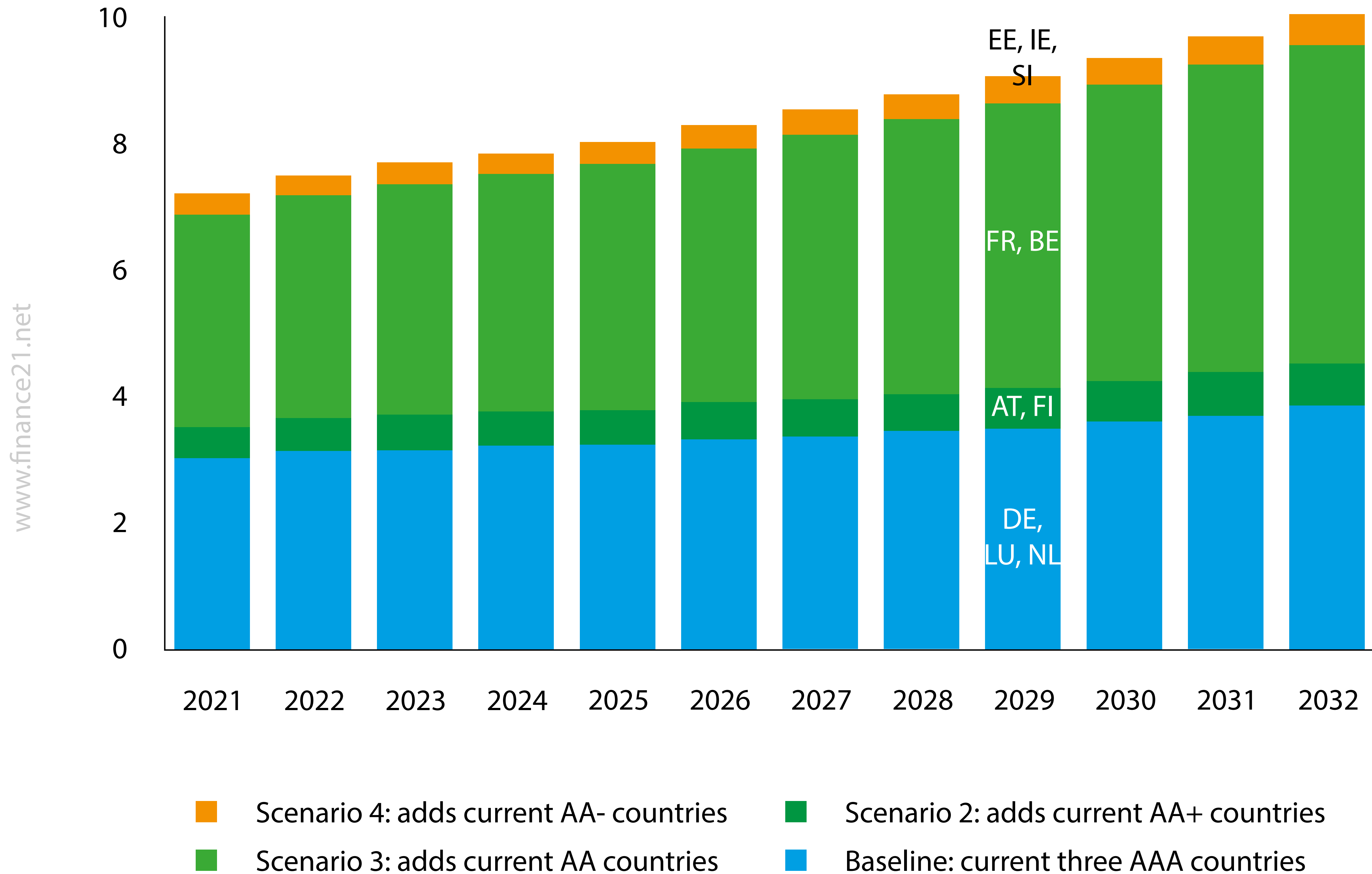
Figure 5. Supply of euro area sovereign safe assets under different rating scenarios (€ trillions; end-of-year)



Sources: Bruegel based on European Commission medium-term debt projections (European Commission, 2022c), Standard & Poor's.

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Under the most plausible of the scenarios, entailing upgrades of Austria and Finland from AA+ to AAA, safe assets would be €0.6 trillion higher than the baseline by 2026, the last year of net issuance under NGEU, and €0.7 trillion higher than the baseline by 2032.

An amount of €0.6 trillion would equal two thirds of the maximum net issuance allowed under NGEU. The addition of Belgium and France, two AA countries with very large debt stocks, to the triple-A category (scenario 3) would increase safe assets by an extra €4.1 trillion by 2026, and by an extra €5.1 trillion by 2032.

If all other double-A rated euro area countries were also upgraded to the triple-A group, safe assets would be €5 trillion higher by 2026 and €6.2 trillion higher by 2032, compared with the baseline. This is five and seven times larger, respectively, than the maximum issuance of bonds under the NGEU and SURE facilities combined.

If the five countries that are currently rated A+, A or A- by at least two of the main rating agencies, and have not been rated above that level by any of them, were to reach one day the triple-A level, it would inject an additional €2.3 trillion of euro-denominated safe assets by 2032, implying an overall increase of €8.5 trillion in the stock of safe assets compared to the baseline. However, this is a scenario that for now seems distant and improbable, and is not shown in Figure 5.

These potential increases in safe assets also fare well in comparison with those estimated by some of the best-known proposals for a new European common safe asset, which are summarised in Table 2.

These proposals entail an issuance volume of common safe assets, scaled up using the euro area's 2021 GDP, ranging between €0.7 trillion, for certain variants of the SBBS proposal, and €7.3 trillion, for the Blue Bonds proposal

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Table 2. Estimated impact on the supply of safe assets of selected common safe asset proposals

		Volume of safe assets issued		
Proposal	Authors	% of GDP	€ trillions (based on 2021 GDP)	% of euro area public debt (2021)
Blue Bonds	Delpla and von Weizsäcker (2010)	60%	7.3	60%
Redemption Fund	German Council of Economic Experts (2011)	40%	4.9	40%
E-bonds	Giudice *et al* (2019)	15%-30%	1.8-3.7	15%-30%
E-bonds	Leandro and Zettelmeyer (2019)	19%-21%	2.3-2.5	19%-21%
SBBS	European Commission (2018)	13%	1.6	13%
SBBS	Leandro and Zettelmeyer (2019)	6%-21%	0.7-2.6	6%-21%

Note: Shares over GDP and over public debt coincide in 2021 because the euro area's debt-to-GDP ratio was exactly 100% in that year. In the European Commission's SBBS proposal, actual issuance depends on the instrument's attractiveness for the market. The table shows the estimate based on steady-state scenario considered in the documentation accompanying the proposal.
Source: Bruegel.

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(Delpla and von Weizsäcker 2010), with most proposals yielding a volume of common safe assets within the €1.5 trillion to €3.7 trillion range.

Even the most cautious of the upgrade scenarios mentioned above would be close to the lower bound of this range, while other scenarios would expand the supply of euro-based safe assets well above the upper bound of that range.

The positive effects of an upgrade of some euro area countries to the triple-A level would be enhanced if it was accompanied by an improvement in the ratings of those that are still below the double A credit category (including Italy, Portugal and Spain), even if it is not realistic to assume that they can reach the triple-A notch in the foreseeable future.

Improved ratings among those countries would help reduce the risk that a regulatory reform aimed at decreasing the home bias in banks' portfolios has the unintended consequence of increasing overall credit risk and instability. It would also limit the risk of disruptions within the euro area government bond markets caused by sudden capital flights from vulnerable to safe countries.

Beyond this, the upgrade of sovereign ratings would also have positive spillovers on the quality and attractiveness for investors of the safe assets issued by supranational institutions, through the system of explicit or implicit guarantees from EU countries[10].

Although the potential impact of sovereign credit upgrades on the availability of safe assets is huge, the key question is whether they are realistic in current circumstances.

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Fiscal consolidation and growth-promoting structural reforms are key tenets of the EU's economic policy strategy over the medium term, as imbedded in the European Semester process, with the Stability and Growth Pact at its core.

And the institutional framework to achieve those goals is expected to be strengthened by the ongoing review of the EU's economic governance framework[11].

But, it might not be realistic or even advisable to try to redouble fiscal consolidation to produce credit upgrades when euro area economies have been buffeted by the pandemic and the Ukraine war.

The combined impact of these two shocks on growth, inflation and interest rates has derailed previous debt-reduction trajectories, raising concerns about debt sustainability in several countries.

Trying to achieve short-term progress in improving credit ratings in this context would seem unrealistic. In fact, significant efforts might be required just to avoid a deterioration of ratings in some countries.

The analysis above highlights that sovereign credit upgrades have substantial potential to boost the supply of euro-denominated assets. How fast euro area countries can achieve those improvements in ratings is a different matter, and will undoubtedly have to take into account the circumstances they face.

Over the medium term, however, boosting the supply of national safe assets through policies supporting the upgrade of sovereign ratings should be a key part of a strategy to expand the supply of safe assets, and it could actually prove easier to do politically than other options for increasing safe assets examined here.

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4.4 National and supranational/common safe assets are not perfect substitutes

It might be argued that reinvigorating the supply of sovereign safe assets is not the best solution because supranational or common safe assets are superior, reflecting their built-in risk diversification properties.

Indeed, supranational or common safe assets offer banks and international investors additional diversification advantages, stemming from the amalgamation of the risks of different euro area economies.

The economic literature has emphasized, as noted, the advantages of common safe assets over national safe assets for addressing the doom-loop problem, especially when combined with appropriate changes in the regulatory treatment of sovereign exposures.

Reducing the excessive home bias in banks' portfolios by simply replacing national government securities with other euro area sovereign securities would address the doom loop but maybe not, as underlined by Alogoskoufis and Langfield (2018), other types of instability, in particular international contagion risk.

A common safe asset would also help mitigate the risk of sudden capital flights within the euro area (Brunnermeier *et al* 2011 and 2017). There might also be transitional advantages: a shift in euro area banks' portfolios towards a supranational or common asset is likely to cause less disruption in national bond markets than a shift towards a few national safe bond markets.

Moreover, an approach in which euro area banks are encouraged to hold massive amounts of the bonds of just a few highly-rated euro area treasuries might not be politically acceptable, as the latter could be seen to benefit disproportionately from efforts to reduce the home bias in banks' portfolios.

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Similarly, for international investors, supranational assets in euros might be particularly attractive because they provide them with an exposure to the euro area rather than to individual member countries.

This allows them to diversify risk in a simple manner, reducing the information and transaction costs associated with building a diversified portfolio of euro area national government bonds. This should enhance the positive impact of an increased supply of safe assets on the euro's international role, compared with the effect of an equivalent amount of national safe assets.

That said, an expansion of sovereign safe assets would already bring, as noted, many of the advantages of safe assets. It would facilitate the diversification of banks' portfolios across national jurisdictions, thus lessening the risk of a vicious circle between banks and sovereigns.

And, if accompanied by general improvements in the ratings of sub-triple A euro area countries, any increase in contagion and credit risk that could result from such diversification would be mitigated.

Moreover, as argued by Véron (2017), the diversification of bank holdings of government securities across countries would also facilitate the introduction of a common deposit insurance scheme, another key aspect of the banking union project.

Indeed, for as long as the home-bias problem persists, there will always be the suspicion that deposits protected by a European deposit insurance scheme could be used by banks, under moral suasion by their home-country government, to increase excessively their exposure to domestic public debt.

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Increased cross-country investment by financial institutions in sovereign safe assets would also stimulate financial integration, risk-sharing and the development of deeper safe asset markets, thus helping achieve the capital markets union.

In sum, even though national safe assets might be a second-best solution, they would help strengthen the EU's banking and capital markets unions.

Broader and more liquid markets for national safe assets would also help prop up the global role of the euro, especially given that many foreign investors, including central banks, continue to show a preference for national safe assets, some of which are perceived as even safer than supranational ones, which makes them appealing despite their lower yields.

Supranational assets, by contrast, are seen as combining the creditworthiness of all the members of the EU or the euro area and, as such, as a somewhat riskier investment. This is illustrated by their persistent yield spreads over German bunds and by the slight downgrade of credit ratings some EU institutions suffered during the euro area crisis.

Common synthetic assets might also be regarded as less safe than the best-rated euro area sovereign bonds for as long as they do not entail risk sharing among euro area countries (De Grauwe and Ji, 2018).

In sum, while supranational or common safe assets have certain advantages over sovereign assets, the latter can bring many of the benefits of the former and have also certain appeal of their own. Although they are not perfect substitutes, they can be complementary.

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There is therefore a case for bolstering the supply of both sovereign and supranational or common safe assets. Should the political consensus be eventually found to create a common safe asset, such an asset could be incorporated into the euro area's existing safe-asset system, reinforcing its positive effects.

5 Conclusions

The expansion of the supply of euro area safe assets remains critical for completing EMU, in particular for achieving full banking and capital markets unions and fostering the euro's global role. The policy options to increase the supply of safe assets examined in section 4 present different quantitative potential and different implementation difficulties.

More issuance at national level from triple-A countries meets an obvious limit in the tension between increasing issuance, which would go hand-in-hand with more expansionary fiscal policies and higher public debt, and the need of issuing countries to maintain their highest credit rating. And of course subjugating fiscal policy to the supply of safe assets would be clearly suboptimal.

More issuance by EU supranational institutions provides an appealing alternative and has in fact become the main source of creation of safe assets in the EU since the euro area crisis. But its prospective size is also limited by insufficient progress towards common control of fiscal policies and towards fiscal consolidation at national level. Large supranational issuance while fiscal positions are weak in several euro area countries risks generating moral-hazard problems and could end up harming the credit ratings of supranational institutions.

The creation of a new common euro area asset could avoid, depending on the proposal chosen, some of the drawbacks of the other options, but there does not seem to be at present political support for this approach, while doubts remain about its implementation.

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Finally, rating upgrades of sub-triple A countries are not easy to implement politically because they may require unpopular fiscal measures to cut budget deficits, and structural reforms to enhance sustainable growth.

However, these policies would bring benefits well beyond the rating upgrades that they would produce. Moreover, this third option could well yield the largest increases in the supply of euro-denominated safe assets.

The most promising strategy would be a two-handed approach, consistent with the complementary nature of national and supranational safe assets. First and foremost, sound fiscal policies and ambitious growth-stimulating reforms – which are in any case desirable – should be implemented by euro area sovereigns to improve their credit ratings.

This might not be politically feasible in the short-term, given the difficult economic environment currently faced by the EU, but it should certainly be a key component of a medium-term strategy to foster the supply of safe assets denominated in euros.

Second, the resulting increase in the supply of national safe assets should be complemented with an adequate supply of supranational assets through the existing facilities or through new ones to be created, possibly in the context of the financial response to the Ukraine war and its ramifications for the EU.

While experts and European policy makers have tended to focus in recent years on the second option, and previously on the possible creation of a new common safe asset, the first option has so far received too little attention, notwithstanding its huge potential.

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We believe it is time to redirect the debate towards the large contribution that sovereign rating upgrades could make to the supply of euro-denominated safe assets, not least given the additional benefits that the required policies would bring. ■

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Endnotes

1. Claeys (2018) is an exception, arguing that "making all euro area sovereign bonds safe again – and for good – remains the most desirable way to increase the supply of safe assets and avoid intra-euro area flights to safety during bad times."

2. ESRB (2015) and Basel Committee on Banking Supervision (2017) discussed different policy options for regulatory reform aimed at addressing sovereign exposures. Véron (2017) proposed the introduction of sovereign concentration charges (a price-based approach) to encourage the diversification of banks' government bond portfolios across national jurisdictions.

3. SBBS would be backed by a portfolio of euro area government bonds; see https://finance.ec.europa.eu/banking-and-banking-union/banking-union/sovereign-bond-backed-securities-sbbs_en.

4. For the debate on the global shortage of safe assets, see, for example, Caballero et al (2017).

5. SURE and NGEU are both temporary financial facilities created by the EU in 2020 in response to the COVID-19 pandemic. Under SURE, the European Commission can borrow up to €100 billion during 2020-2022 to help EU countries finance short-term work schemes in order to limit the impact of the COVID-19 crisis on jobs and workers' income. Under the NGEU instrument, the Commission can borrow up to €806.9 billion up to 2026 to help EU countries recover from the

pandemic, notably by supporting reforms and investments related to the green and digital transitions. For an assessment of the experience with NGEU borrowing, see Christie et al (2021).
6. Our discussion below does not consider the issuance of euro-denominated securities by triple-A corporations or non-euro area governments, nor the possible contribution of the European Central Bank. But issuance in euro by companies is partly dependent on the depth and liquidity of the euro area's capital markets and on the status of the euro as international currency, both of which would be impacted favourably by an increased availability of public sector-issued safe assets. For the implications of the ECB's asset purchase programmes for the supply of euro area safe assets, see Eichengreen and Gros (2020).
7. On whether the war in Ukraine and its ramifications for energy security, defence expenditure and macroeconomic stabilisation within the EU call for a new NGEU instrument or the partial reallocation of its funds, see Sapir (2022).
8. Good surveys of the literature on creating a common European safe asset are provided by ECB (2020; pp. 103-121) and Leandro and Zettelmeyer (2019), who conducted a comprehensive evaluation of several of the proposals. For the early proposals, see Claessens et al (2012).
9. The use of the Commission's public debt projections overstates somewhat the actual level of tradeable safe assets as it includes not only debt securities but also other types of debt. But the former account on average for about 80 percent of total debt; trends in total public debt are therefore a good approximation to trends in debt securities.
10. This would be welcome given the yield spread between safe assets issued by EU supranational institutions and those issued by Germany (Bonfanti and Garicano, 2022).
11. In November 2022, the Commission proposed an overhaul of the EU's economic governance framework to strengthen debt sustainability while enhancing sustainable and inclusive growth through investment and structural reforms. The new framework, which will emphasise 'net primary expenditure' as the key fiscal indicator, will provide EU countries with greater flexibility in setting their fiscal adjustment paths. The objective is 'to reduce high public debt ratios in a realistic, gradual and sustained manner'. At the same time, the new framework will strengthen the enforcement mechanisms. See European Commission (2022d).

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A response to criticisms of proposals to overhaul the EU fiscal framework

The European Commission has proposed an important and ambitious overhaul of EU fiscal rules. Marco Buti, Jakob Friis and Roberta Torre respond to the criticism

The European Commission has proposed an important and ambitious overhaul of EU fiscal rules, which has attracted comments and critiques by economists and policymakers pertaining to the institutional, technical, and economic aspects of the Commission proposals. This column presents the responses to from three of the Commission's leading economists.

The European Commission communication for a reform of the EU economic governance framework aims to provide the basis for convergence across member states on the way forward (European Commission 2022, Buti *et al* 2022). It has drawn lots of attention. Most recognise that the Commission has put forward a far-reaching proposal aiming at finding a balance between different views in the complex debate on how the rules should be changed.

In particular, several elements have been considered as important improvements compared to the current rules, most notably (i) taking a medium-term perspective; (ii) increasing the differentiation across member states based on their debt sustainability; (iii) streamlining the fiscal indicators by focusing on observable net expenditure ceilings; and (iv) integrating better the need for fiscal adjustment with that of supporting investment and reforms (Bordignon 2022, Blanchard *et al* 2022).

Certain other features have been met with some criticism. In broad terms, the critical remarks pertain to the institutional aspects, the economic implications and the technical features of the Commission's approach. Given the attention that stakeholders are paying to the Commission orientations, it appears important to address those misgivings along the three areas just sketched out.

Institutional criticisms

A major criticism that has been emerging concerns the role played by the Commission in the design and assessment of the national fiscal-structural plans (Blanchard *et al* 2022, Lorenzoni *et al* 2023, Wyplosz 2022), which is

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considered to lead to a bilateral approach that would undermine transparency and equal treatment. These authors suggest boosting the role of the independent national fiscal councils as a way to ensure national ownership.

There are two main elements to prevent 'bilateralism'. First, the Commission will operate within a common EU framework consisting in common requirements that the fiscal adjustment path of a member state should respect. It is important to stress that, while being common, these requirements would be differentiated on the basis of the member states' debt sustainability challenges, which is a major improvement compared to the current system where the requirements and efforts delivered did not sufficiently reflect the actual fiscal consolidation needs.

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It has been encouraging to observe how the Commission orientations have triggered a renewed debate about reforming Europe's economic governance

Moreover, there would be common criteria to assess reforms and investment commitments. Second, the role of the Commission ends with its assessment, while the decision on whether to endorse the plans or not lies with the Council, which is a more direct role than the opinion and recommendations by the Council for Stability and Convergence Programmes in the current setting.

What the Commission proposes is therefore likely to stimulate the engagement of other member states and improve the peer review of member states' policy plans, including the underlying fiscal and structural policy issues that determine overall public debt sustainability challenges.

Gradual and sustained debt reduction is needed, and this will require more fiscal prudence going forward, but as experience shows fiscal consolidation efforts are in themselves not sufficient to ensure a low debt sustainability risk position (see Figure 1).

Still based on the previous criticism, the Commission could also be perceived as too intrusive when it comes to assessing whether reforms and investment are good enough to justify a more gradual adjustment path. This objection is misplaced because it is up to the member states to identify a set of reforms and investment that could underpin a more gradual adjustment.

In fact, the suggested approach takes inspiration from the existing structural reform and investment clauses, whereby it is for the member state to commit and provide solid evidence of their beneficial impact, but would make the criteria clearer: the set of reforms and investments should support growth and debt sustainability (in line with the country-specific recommendations as part of the EU Semester); should respond to common EU priorities; and should be sufficiently detailed, frontloaded, time-bound and verifiable.

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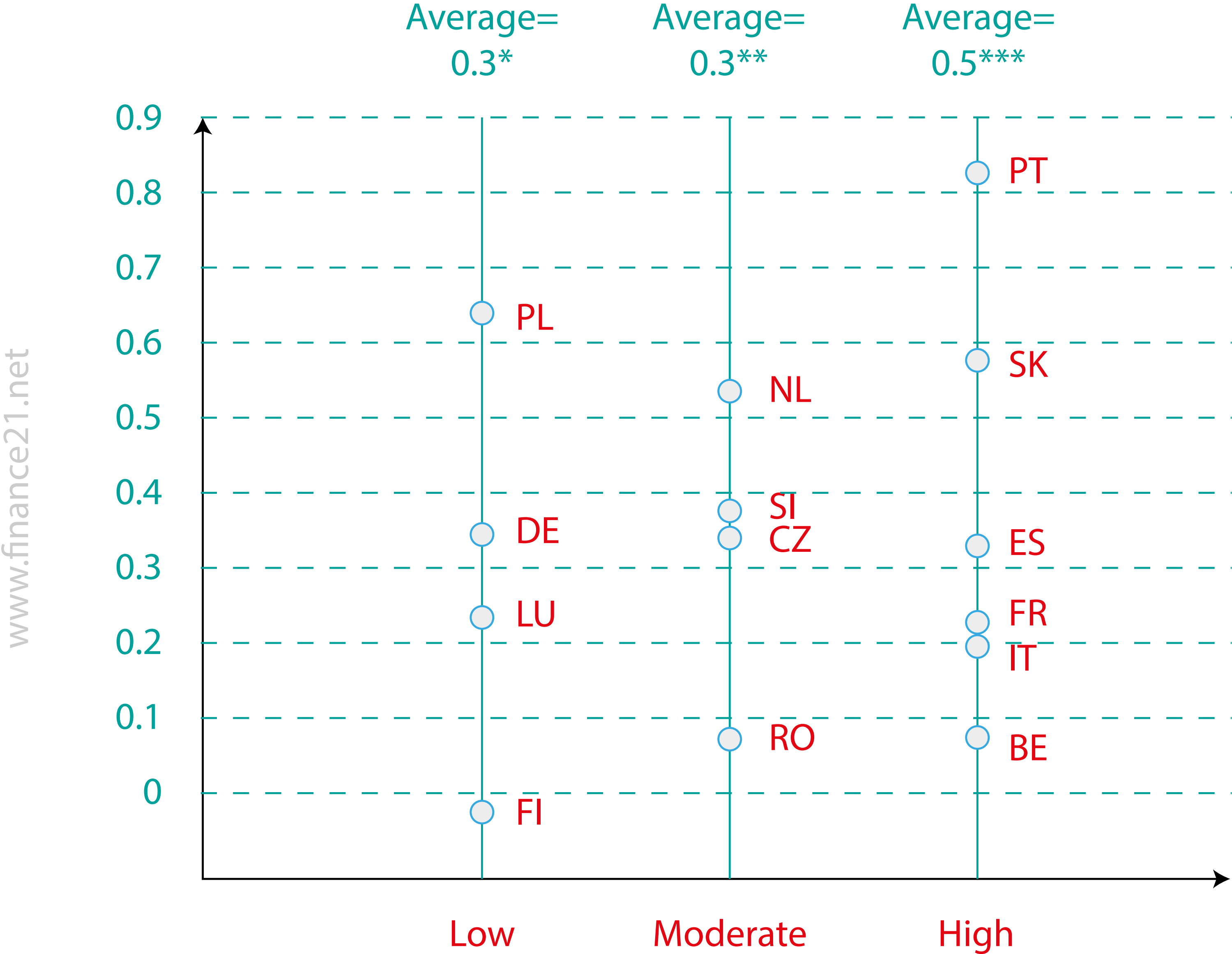
Figure 1. Debt sustainability challenge and average past fiscal effort (2011-19), selected countries, simple average



*average of 'low challenges' MS (DK, DE, EE, IE, LV, LT, LU, AT, PL, FI, SE)

**average of 'moderate challenges' MS (BG, CZ, HR, CY, HU, MT, NL, RO, SI)

***average of 'high challenges' MS (BE, EL, ES, FR, IT, PT, SK)

Source: European Commission.

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An objection pertains to the role of the reference paths to be put forward by the Commission at the outset of the process, which could be seen as undermining political ownership by member states of their fiscal adjustment strategies. The reference paths should not be seen as quantitative minimum requirements computed and imposed by the Commission. Nor they should be seen as providing a maximum fiscal effort.

They are, instead, a practical translation of the common requirements that is meant to provide concrete guidance to member states before they prepare and submit their own plans. To strengthen the common EU framework and the accountability of the Commission when assessing the plans, the methodology for determining these reference paths would be fully transparent and would be made public.

Finally, the Commission intends to strengthen the role of the independent national fiscal councils which were created via a directive on national fiscal frameworks. These institutions will play a greater role in assessing the assumptions underlying the plans, providing an assessment on the adequacy of the plans with respect to the debt sustainability and the country-specific medium-term goals, and monitoring compliance with the plans.

Technical criticisms

One recurrent objection refers to the complexity and lack of transparency that the use of debt sustainability analysis (DSA) would bring to the framework (Wyplosz 2022). The DSA is a well-known and well-documented methodology that is already widely used by international and national institutions to determine the risks associated to the debt trajectory (European Commission 2022, International Monetary Fund 2021).

Hence, it allows to focus not only on the debt levels but also on the dynamics and risks. In the Commission proposals, this toolkit is set to play a role only at the very beginning of the process, ie. in the identification of the

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sustainability challenges and the design and assessment of the adjustment path that member states would put forward as part of their plan.

Once the plan is endorsed by the Council, the focus shifts to monitoring compliance with the endorsed path and assessing any deviations from it, over the four years when the plan is binding.

Another objection concerns the fiscal indicator used to set the fiscal path and monitor compliance, ie. primary expenditure net of discretionary revenue measures and cyclical unemployment spending. Some claim that the structural balance is simpler, well known, and, contrary to net expenditure ceilings, it does not impose any limits to the size of the government sector in the economy.

Such criticisms are misplaced. An indicator based on net primary expenditure is under the direct control of the government, while allowing revenues to fluctuate in line with cyclical conditions. Hence, it is not only more observable than the structural balance, but it is also more counter-cyclical.

Moreover, this indicator would be net of new discretionary revenue measures, so it is neutral vis à vis the public sector share in the economy: a government can decide to increase public spending as long as appropriate financing is found.

Economic criticisms

The economic criticisms mainly pertain to the fiscal rigidity implied by the reformed rules, the implications of not having changed the Treaty's reference values, the limited incentives to improve the quality of public finances, and the absence of a central fiscal capacity.

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The Commission orientations envisage that member states' plans should be binding for at least four years, which could be considered too rigid by some. Not only can legislations terminate before their natural lifespan but economic conditions may change significantly, warranting an update of the plan.

The Commission proposal is justified by the need to avoid setting opportunistic behaviour by governments leading to backloading the adjustment effort. Frequent revisions would undermine the credibility of the plans as an anchor for prudent policies.

This is balanced by the possibility to reopen the plan in the event of objective circumstances that make compliance with the plan impossible. While any change of government will not be a reason per se to change the plan, new elections could be one such circumstance leading to a new medium-term plan to be proposed. It would have to undergo the same validation process.

The General Escape Clause (allowing suspension of the rules under severe shocks, as was done at the outset of the pandemic) would also continue to exist to cater for severe economic downturns, together with a country-specific clause for exceptional circumstances at country level.

Some have remarked that not having changed the 3% and 60% reference values for deficit and debt would impose a persistent deflationary bias on the economy. The Commission decided not to call into question the reference values enshrined in a Protocol annexed to the Treaty, which would have required cumbersome and politically controversial ratification procedures.

Moreover, the 3% reference value for the budget deficit has acquired a useful public visibility and 'magnetic power' (Buti and Gaspar 2021). In addition, the net expenditure path would be designed to allow public debt to

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continue to decrease beyond the time frame of the fiscal-structural plans (four to seven years) without further fiscal restrictions.

Finally, some observers have criticised the absence of a central fiscal capacity in the Commission proposals, despite such reform having been put forward by international organisations and many economists during the public consultation on the economic governance review.

More specifically, while the revised framework takes inspiration from NextGenerationEU in allowing member states to put forward their own commitments, it does not provide for new common resources, which limits the incentives for member states to abide to their commitments (Bordignon 2022).

In the view of the authors, these observations are well taken: a well-designed central fiscal capacity could help rebalance the policy mix and, if focusing on supply-side oriented European public goods, could help tame the current inflation burst (Buti and Messori 2022).

However, one has to acknowledge that establishing a central fiscal capacity remains politically controversial, so putting it forward as part of the governance reform could have overcharged the boat and made it more difficult to find agreement.

Conclusion

It has been encouraging to observe how the Commission orientations have triggered a renewed debate about reforming Europe's economic governance. Recognising that institutional, technical, and economic issues are all part of striking a balance for the future governance framework, it is only fair that economists and policymakers raise critical questions. We hope to have answered to several of the criticisms put forward.

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At the same time, it is now time to move from debate to decisions. We welcome that the ongoing discussions with member states generally recognise that the Commission orientations are a reasonable and coherent basis for making progress towards a common landing zone.

Swift agreement on revising the EU fiscal rules and other elements of the economic governance framework is a pressing priority. Considering the mounting challenges that the EU is facing, there is a need for strong policy coordination and effective surveillance. We should therefore reach a consensus on reform of the economic governance framework ahead of member states' budgetary processes for 2024.

This has also been recognised by the member states of the euro area in their call for swift progress on the review as a priority for enhancing economic policy coordination (Eurogroup 2022).

A thorough reform of the EU economic governance framework would require legislative change. Amending the underlying legislation would allow for clarification and simplification of the framework. It would provide a high degree of legal certainty for how a reformed framework would operate, with the involvement of the Council and the European Parliament. Based on the ongoing discussion, the Commission will consider tabling legislative proposals. ■

Marco Buti is the Head of Cabinet, Jakob Friis is Deputy Head of Cabinet, Roberta Torre is Member of Cabinet of Paolo Gentiloni, Commissioner for Economy European Commission

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New EU fiscal rules and governance challenges

Guido Lorenzoni, Francesco Giavazzi, Veronica Guerrieri and Leonardo D'Amico argue for a new system of fiscal rules that goes in the direction of a political and fiscal union

In November 2022 the European Commission presented an ambitious plan to overhaul the existing economic governance framework for the EU which includes radical innovations both in the way in which national fiscal plans are formulated and in the governance structure that supports them (for other comments on the proposal, see for example Buti *et al* 2022 and Wyplosz 2022).

This column argues that while the Commission is right to look at NextGenerationEU as a positive model for economic cooperation, a new system of fiscal rules that goes in this direction requires us to think boldly about further steps in the direction of a political and fiscal union.

The existing system of numerical rules is essentially scrapped. It is replaced by a system in which countries make medium-term plans that are assessed using debt sustainability analysis, and in which the single operational objective to achieve debt stability is the path of net primary expenditure (ie. expenditure excluding interest and unemployment benefits).

From the point of view of macroeconomic stabilisation, this is a welcome innovation. An approach based on medium-term plans and on an expenditure rule tends to deliver adjustment paths that are less sensitive to whether the economy is in a boom or a recession.

The adjustment paths are also potentially more responsive to the quality of spending, as the proposal includes the possibility for member states to obtain longer adjustment periods if they make reform and investment plans conducive to long-term growth.

In other words, the approach in the proposal leaves more room to tailor fiscal adjustment to the circumstances of a country, not only the in terms of its cyclical conditions, but also in terms of policy choices that affect future growth[1].

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The Commission is clearly influenced in its thinking by the recent experience of the NextGenerationEU recovery plans, as a model of successful economic cooperation in the EU. This influence is visible in the design of the process that produces the four-year plans at the core of the new system. And it's visible in the strong emphasis on investment and reforms.

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We believe the Commission is right in looking at NGEU as a positive model for economic cooperation. At the same time, a new system of fiscal rules that goes in this direction requires us to think boldly about further steps in the direction of a political and fiscal union

It is useful to contrast the Stability and Growth Pact (SGP) with NextGenerationEU (NGEU) as different models of joint economic governance. The SGP essentially leaves all strategic economic choices to member states and only imposes on them a uniform set of rules, to ensure that these choices are consistent with a common objective of monetary/financial stability.

NGEU, on the other hand, is strongly driven by the joint definition of common goals (green transition, digitalisation, reducing inequality), combined with considerable discretion in the formulation of national plans and in adapting them to the institutional reality of each member state. The models are also very different in terms of enforcement.

The corrective arm of the SGP has mostly worked through moral suasion. Fines are in principle part of the enforcement mechanism but have never been applied. NGEU, on the other hand, has the advantage that non-compliance with the commitments made in the national plans can be simply punished by suspending financing.

So far in the NGEU experience, this has worked as a credible threat. For example, Italy – the largest beneficiary of NGEU funds – has more than once made changes to proposed legislation to comply with the Commission's requests.

Consider two examples from the Italian experience. Italian teachers are traditionally opposed to individual performance evaluations, and career advancement in the Italian school system only depends on seniority. The Commission, as part of the reform package attached to NGEU – which includes large spending programmes destined to schools – asked that the careers of Italian teachers be based more on evaluations. This has been a point of tension between Italy and the Commission, and it was only solved when Italy accepted to introduce teachers' evaluations.

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Another example is in the area of public procurement. Italian municipalities have often created in-house service companies in order to avoid pro-competition EU regulations that require outside services to be tendered. This practice has been severely limited to comply with NGEU requests.

The open question is how to import the successful features of NGEU into a renewed fiscal framework. Overall, we agree that NGEU shows that the Commission and member states can cooperate in the joint design of economic policies, even when that involves a considerable level of detail.

Such cooperation so far has appeared to be more productive than negotiations on the formal compliance with numerical SGP rules we have seen in the past. However, there are important design differences between NGEU and fiscal rules, which in our view raise two critical challenges.

First, NextGenerationEU has the big advantage of starting from well-defined EU-level strategic goals. The negotiated national plans are then designed to pursue those common goals.

In the realm of fiscal rules, this combination of EU goals and national plans is not there. In particular, the definition of the strategic goals of national fiscal policy naturally remains with national governments.

However, once we make the paths for primary spending potentially a function of multi-year commitments on investment and reforms, this effectively gives the Commission more power in important national decisions.

We don't see this additional power necessarily as a bad thing, but it opens the risk of making the Commission the scapegoat of national political parties who might want to deviate from pre-existing plans, either negotiated by them or, more likely, by a previous government.

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Such parties may use the excuse, already used in the past, that the old plans come from negotiations with the Commission, a technocratic non-elected body. Since this argument was used prominently even under numerical rules, enshrined in treaties ratified by national parliaments, it is even more likely that it will be used under this new model.

This would put the Commission in a difficult position, making it the target of political animosity and possibly dampening demands for further European integration.

It is possible that the process of approval of the multi-year plans could be designed to reduce these risks. In particular, as in a recent IMF proposal (Arnold *et al* 2022), more space could be given to National Fiscal Councils, thus keeping within member states the technical evaluation of the effect of reforms and investment plans[2].

It is also possible that giving more space to the European Parliament in the process of approval could give it stronger democratic legitimacy.

The second challenge has to do with enforcement. As just pointed out, it is easier to support a system of rewards in which funds coming from the EU centre are used to finance a member state's project, and this financing can be suspended.

On a pure economic level, what counts is the net value of the transfers implicit in the combination of contributions from member states to the EU and of financing from the EU budget back to member states. However, from both a legal and political perspective, the imposition of fines is different from the suspension of financing, and the latter seems a more credible threat to support multi-year commitments by member states.

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The new system of rules could be integrated in programmes like NGEU, and payments can be made conditional on member states being in good standing with the new rules. The Commission's proposal explicitly mentions this possibility[3].

However, given that NGEU is a temporary programme, this conditionality cannot be a structural feature on which to rely in the long run. Creating a more permanent central fiscal capacity for the EU would have the added benefit of strengthening the enforcement of fiscal rules[4].

Summing up, we believe the Commission is right in looking at NGEU as a positive model for economic cooperation. At the same time, a new system of fiscal rules that goes in this direction requires us to think boldly about further steps in the direction of a political and fiscal union. ■

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Endnotes

1. These benefits are the reason why multi-year plans and an expenditure rule have been featured and discussed in many proposals, including those of the European Fiscal Board (2018, 2019, 2020) and D'Amico et al (2022).

2. Strengthening the role of national fiscal councils is also in Blanchard et al (2022).

3. The idea of using conditional financial support to facilitate commitment on reforms is not new and goes back to a proposal in European Commission (2012).

4. As centralised fiscal capacity expands in new areas, it is possible that some more essential forms of spending (eg. income protection programmes like SURE) may be less appropriate for this type of conditionality, relative to others (eg. spending for investment programs).

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The safe asset potential of EU-issued bonds

Tilman Bletzinger, William Greif and Bernd Schwaab evaluate the prospects of EU-issued bonds for becoming a supranational euro-denominated safe asset

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Safe assets are a crucial component of modern financial systems. They typically have low default risk, stable value, and high liquidity. This column evaluates the prospects of EU-issued bonds for becoming a supranational euro-denominated safe asset.

Net bond issuance by the EU has increased significantly since 2020, mainly as a response to the COVID-19 pandemic. These EU bonds generally have high quality, but relatively low liquidity relative to German Bunds.

The prospects for becoming a safe asset additionally depend on the long-term issuance of EU bonds as well as their favourable regulatory treatment.

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Modern financial systems rely on safe assets. A 'safe asset' is defined by three characteristics (Brunnermeier *et al* 2016, 2017, Brunnermeier and Huang 2018, Gorton and Ordonez 2022). First, it has a low default risk, or high asset 'quality'. Second, like a good friend, a safe asset retains its value during bad times ('robustness'). Third, it can be sold at or near current (robust) market prices in most market conditions ('liquidity').

Safe assets facilitate financial transactions, which often entail a contractual requirement to pledge such assets as collateral (eg. Brunnermeier *et al* 2017). In addition, they allow market participants to transfer risks, including liquidity and market risks, without in turn creating new ones, such as counterparty and credit risks. To comply with liquidity regulations, banks need to hold safe assets to meet their funding needs in a stress scenario.

Finally, central banks rely on safe assets in order to implement monetary policy – they exchange central bank liquidity against non-cash safe assets (eg. Brunnermeier and Sannikov 2016).

In Bletzinger *et al* (2022), we study the quickly growing market for bonds issued by the EU and assess their prospects for ultimately becoming a genuine supranational euro-denominated safe asset.

The need for euro-denominated safe assets

Policymakers generally agree that the euro area suffers from a relative lack of euro-denominated safe assets, particularly when compared with the US (eg. Juncker *et al* 2015, Brunnermeier *et al* 2016, 2017, Gossé and Mourjane 2021).

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EU bonds' prospects for becoming a genuine euro-denominated safe asset could potentially be hampered by the fact that both the SURE and the NGEU programmes are foreseen to be one-off, time-limited pandemic emergency responses

For example, Gossé and Mourjane (2021) estimate that in 2019 the supply of sovereign bonds with a credit rating of AA or higher amounted to just 37% of GDP in EU member states, compared with 89% of GDP in the US. In addition, the EU sovereign bond market is fragmented, with different sub-markets, and market participants' perceptions about the relative risks of these sub-markets can change over time.

The lack of euro-denominated safe assets and the fragmentation of the market are problematic. Both factors can raise the risk of bank-sovereign 'doom loops' (where problems in the banking sector spill over to the public sector, and vice versa), high public sector borrowing costs in bad times, and flights to safety (where investors sell off riskier assets and buy safer assets) that increase financial fragmentation (Brunnermeier *et al* 2017).

In the absence of a supranational euro-denominated safe asset, a flight to safety would entail capital flowing out of vulnerable countries and into safe havens. In addition, doom loops can be a consequence of weak banks holding a disproportionate share of flighty assets (eg. Leonello 2018).

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A big new player on Europe's bond markets

Almost all of the EU's net bond issuance in 2020 and 2021 was closely connected to two policy initiatives – the 'temporary Support to mitigate Unemployment Risks in an Emergency' (SURE) and the NextGenerationEU (NGEU) programmes.

Both initiatives were proposed in the context of the EU's response to the recession in the wake of the coronavirus (COVID-19) pandemic. Financial assistance of up to €100 billion can be provided under SURE in the form of loans from the EU to affected member states, mainly to address sudden increases in public expenditure to preserve employment.

In July 2020 the European Commission was authorised to borrow up to €750 billion (in 2018 prices – adjusted for inflation this is now over €800 billion), to fund COVID-19 repair and recovery work through its NGEU instrument.

The implementation of SURE and the NGEU programmes marked a watershed in the EU's common fiscal policy, in terms of both the sizeable volumes and the independent funding structures.

Historically, European Commission borrowing has occurred since the early 1980s. These funding activities are organised on a back-to-back basis, meaning that funds raised on the market are lent on by the Commission to beneficiary countries under the same terms and conditions (coupon, maturity, nominal amount) as those received by the Commission.

The much larger SURE and NGEU-related volumes have required more active liquidity management of the EU's balance sheet. In April 2021 the practice of back-to-back lending was therefore not made a requirement for the NGEU initiative, allowing instead for a more flexible management of EU funds.

As of December 2021, the amount of outstanding EU bonds had grown to €215 billion in total. The first SURE bonds were issued in October 2020, while the first NGEU bonds were issued in June 2021. By December 2021 SURE and NGEU-related bonds accounted for three-quarters of all outstanding EU bonds. By 2028 NGEU volumes are foreseen to reach €800 billion, more than 12 times the level in December 2021.

Including the approved funding for other smaller programmes, the total available amount of EU bonds is set to exceed €1 trillion by 2028. This amount corresponds to approximately 43% of Germany's public debt in 2020 and approximately 65% of Spain's.

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Creditworthy and robust, but are EU bonds liquid enough?

In bond markets, investors demand additional compensation relative to the safest assets for a range of risks, with default risk (ie. the risk that the issuer might not repay its obligations) often being the most important. Several institutional layers of debt-service protection mean that EU-issued bonds, including SURE and NGEU-related bonds, have a low default risk.

Credit rating agencies, however, are not in complete agreement on the extent to which EU bonds are free of default risk. Moody's rating agency keeps its best long-term issuer rating (Aaa) for the EU, while Standard and Poor's provides a long-term issuer rating from its second-best rating bracket (AA).

Figure 1 plots the minimum rating from four rating agencies on its horizontal axis, suggesting that they collectively consider EU bonds' credit quality to be close but not (yet) equal to that of, for example, German Bunds.

At the same time, EU bonds have traded at tight yield spreads relative to German Bunds, and below the GDP-weighted average of euro area sovereign yields (not shown in the chart), suggesting that the high credit quality of EU bonds is well understood by market participants.

EU bonds' yield spreads over the German Bund also reflect the robustness of EU-issued bonds. These spreads rose only slightly during the onset of the pandemic-related recession in early 2020, and by considerably less than Italian and Spanish spreads (see Bletzinger *et al* 2022 for details).

This stability of EU yield spreads does not mean that EU bonds will automatically become a supranational euro-denominated safe asset. But, like a good friend, EU bonds have been shown to retain their value during these demanding times.

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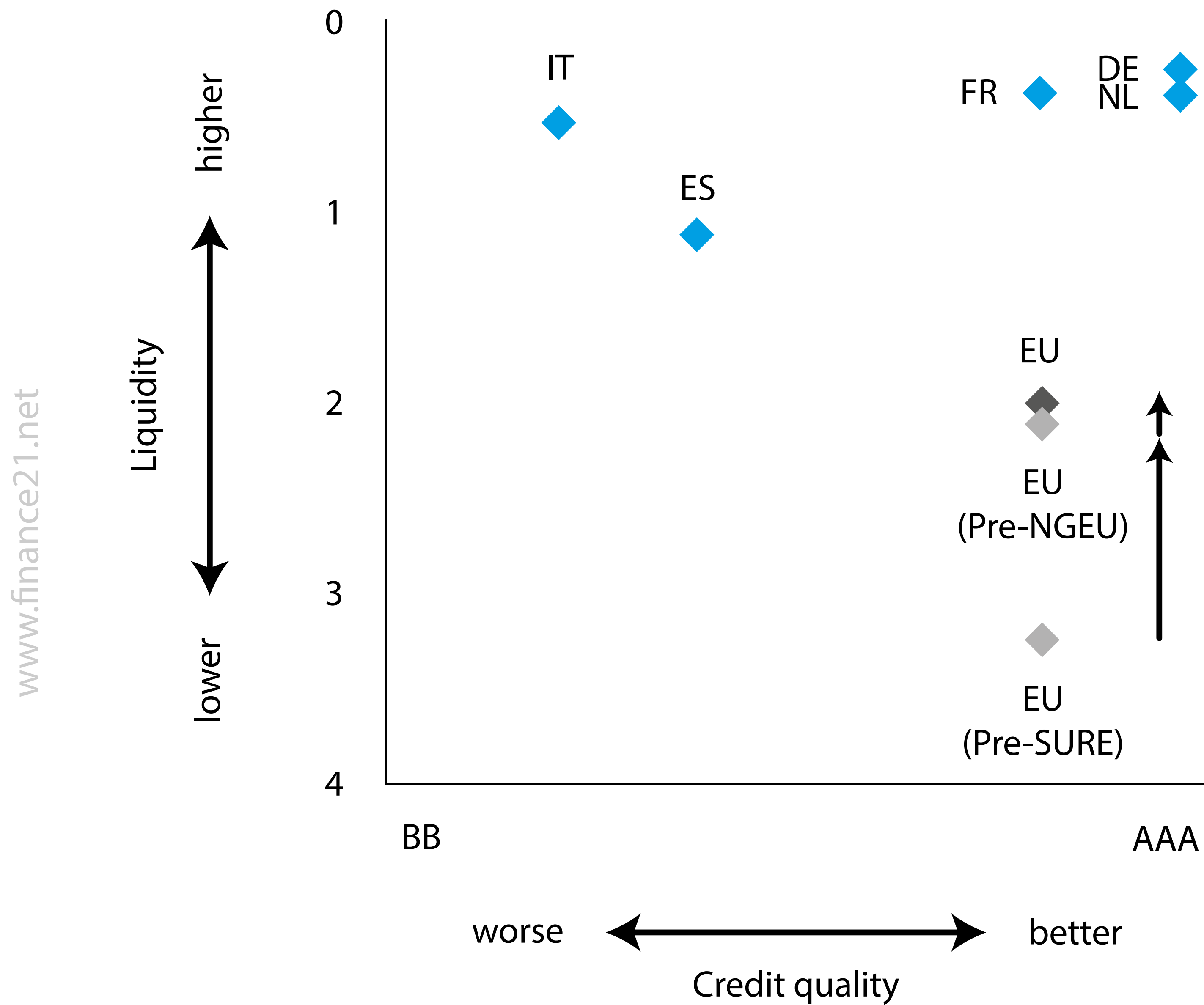
Figure 1. Credit risk and liquidity indicators for EU bonds



Notes: The chart shows a scatterplot of market liquidity (average bid-ask spreads in basis points) versus credit quality (minimum credit rating). The arrow origin points refer to September 2020 ('Pre-SURE') and May 2021 ('Pre-NGEU'). The arrow end-points, and all other diamonds, refer to October 2021 (following the NGEU's first auction). Higher liquidity corresponds to tighter bid-ask spreads. The rating score on the horizontal axis is calculated from the minimum issuer ratings from Standard & Poor's, Moody's, Fitch, and DBRS Morningstar.

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A safe asset is traded in liquid markets. Market liquidity ensures that investors can sell their asset at any time without causing a major change in the market price. Liquidity risk is the second key risk (after default risk) for which investors demand compensation.

The spread between bid and ask quotes is, arguably, the most straightforward indicator of market liquidity, providing information on how costly a bond transaction can be expected to be on any given day. Before the first issuance of SURE bonds in October 2020, EU bonds were subject to considerably lower market liquidity (ie. a wider bid-ask spread) than the sovereign bonds of large euro area countries.

Figure 1 shows that the EU bonds' bid-ask spreads decreased substantially over time following the launch of SURE and the NGEU programmes, approaching the level of Spanish sovereign bonds' bid-ask spreads.

A clear improvement in EU bonds' market liquidity can also be observed in their decreasing yield spreads over other reference bonds. Figure 2 compares the ten-year EU bond-Bund spread with the ten-year KfW bond-Bund spread over time. The two-time series evolve almost identically, up to the first issuance of EU SURE bonds on 20 October 2020.

EU bonds' total market volumes, and therefore also their expected trading volumes, increased considerably following each SURE and NGEU issuance date. The divergence between the two yield spreads, particularly following the first SURE bond issuance, suggests that investors understood and incorporated the improved liquidity conditions into the yields of EU bonds.

In Bletzinger *et al* (2022) we also argue that a safe asset's market liquidity should be sufficiently high to accommodate central banks' monetary policy operations. Specifically, central bank purchases (flows) and holdings (stocks) of these assets should not inappropriately dry up a burgeoning market.

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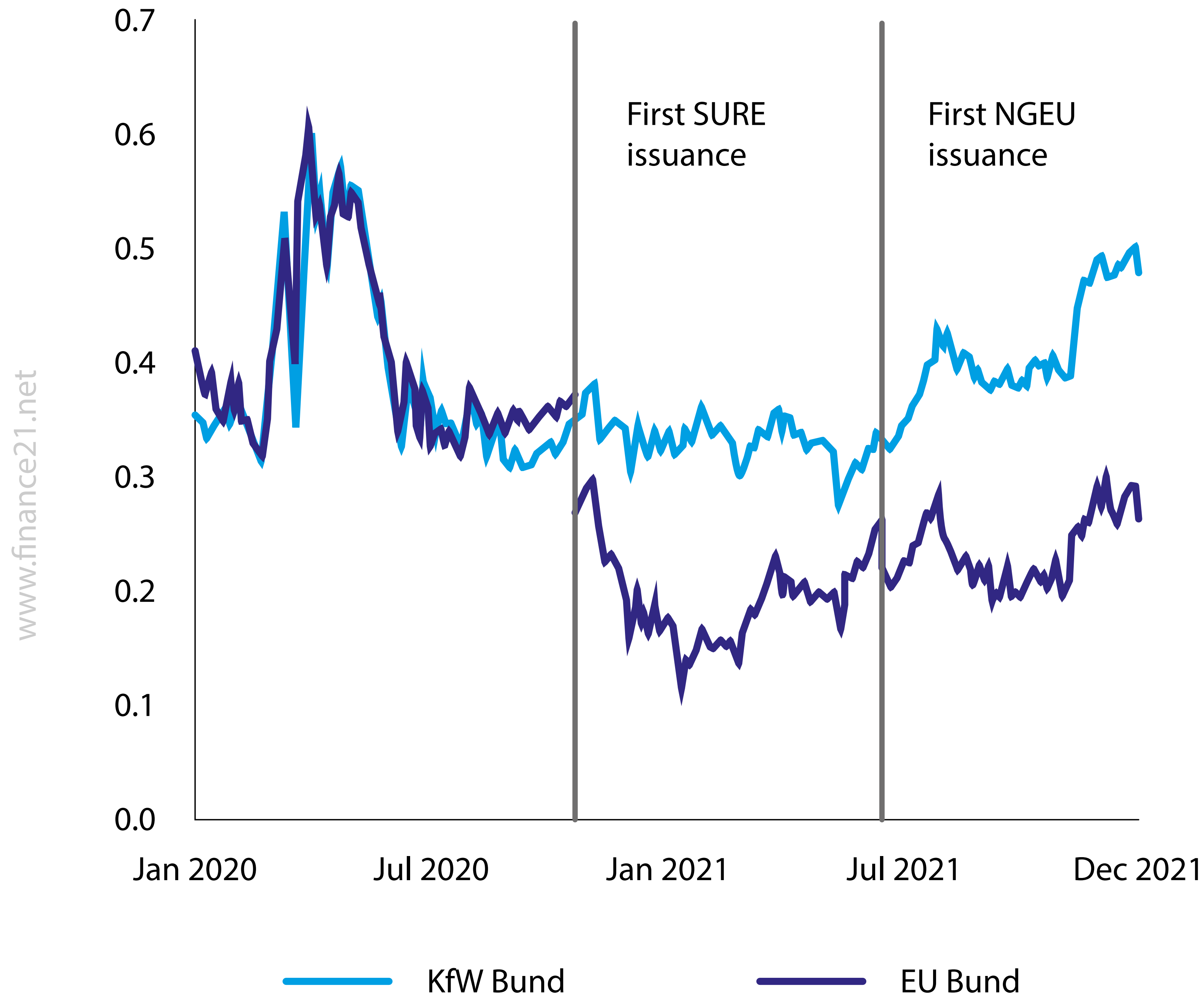
Figure 2. EU bond-Bund spread vs. KfW bond-Bund spread



Notes: The chart shows the KfW bond-Bund yield spread and the EU bond-Bund yield spread (in percentage points). The sample period is from January 2020 to December 2021. The vertical lines refer to the first issuances of SURE and NGEU bonds.

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Our analysis of the reaction of EU bonds' bid-ask spreads to Eurosystem bond purchases, accounting for holdings, suggests that central bank purchase flows and asset stocks do not appear to have significantly hindered the trading of EU bonds.

Policy implications

EU bonds score relatively highly on the quality scale (because of their low perceived default risk), but, while their market liquidity has improved, it is still low relative to, for example, German Bunds. Market liquidity will probably improve to some extent over time as the market grows.

EU bonds' prospects for becoming a genuine euro-denominated safe asset could potentially be hampered by the fact that both the SURE and the NGEU programmes are foreseen to be one-off, time-limited pandemic emergency responses.

For example, Schwarzer *et al* (2022) argue that permanent EU debt issuances would strengthen the euro as global currency. After all, traditional safe assets, like US Treasuries or German Bunds, tend to trade in markets without a definite endpoint which makes the cost of setting up a dedicated trading infrastructure worthwhile.

By contrast, the final SURE and NGEU-related EU bonds are currently foreseen to mature in 2052 and 2058 respectively. This finite maturity may deter investors from establishing a long-term investment strategy in which EU bonds would be considered a permanent part of their portfolios.

That obstacle might be mitigated by the establishment of an additional bond-financed EU budget to cushion some of the detrimental impact from Russia's war of aggression against Ukraine, as was being discussed within the EU at the time of writing.

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Finally, the perception of EU bonds as safe assets also hinges on the continuation of their favourable regulatory treatment. While the lifetime and regulatory treatment of SURE and NGEU-related bonds are to some extent within the ambit of the EU member states, other determinants of secondary market liquidity depend primarily on private sector actors.

For instance, EU bonds are currently not included in sovereign bond indices. This exclusion restricts demand for them from certain safe-asset funds.

In addition, there is currently no direct derivative hedge instrument for EU bonds. For such an instrument to be viable, a deep and liquid repo market would need to evolve first. Even though it is too early to judge whether private sector market participants will include EU bonds in sovereign bond indices or introduce futures contracts, both the recent improvement in market liquidity and the overall increasing attention paid to EU bonds offer some support for such steps. ■

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If it doesn’t trade, is it really marketable debt?

Rebecca Christie says Europe’s bond markets are essential infrastructure, just like the power grid

When it comes to encouraging fiscal discipline, euro area policymakers want the market to be part of the solution. This will not succeed until they make peace with the idea that, while it is their job to set conditions and incentives, it is not their job to dictate prices and spreads.

Within the environment that policy creates, market discipline is something the market does to itself, not something a government imposes when it disapproves of national choices. Governments need to get used to market-set prices as a source of strength and information, not just a source of risk.

Since the start of the euro crisis in 2010, the European Union has taken tentative steps toward accepting this reality. But every step forward has come with trepidation and scepticism. The EU deserves a lot of credit for adapting its institutions and creating new ones so that all of its members can preserve market access.

It is changing its fiscal rules so that member states will take more ownership of managing their financial health. Now it needs to accept the daily operations of the market itself.

Historically, market trading has been viewed as synonymous with risky speculation. This is like viewing electricity solely as a fire hazard. Yes, sparks can start fire, and fluctuating prices can get dangerous. But day to day, having a power grid – or an active capital market – is necessary infrastructure for modern life.

Embracing a market where prices rise and fall is not the same thing as endorsing a free-for-all. It will require policymakers to reframe their ideas of pragmatism and risk.

While the euro area has progressed extensively in its willingness to join forces in a crisis, markets know the EU is not really a joint issuer despite the size of its NextGenerationEU recovery plan. Ratings agencies consider it a

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supranational, not a sovereign, and assess it based on the creditworthiness of its top members rather than as a whole.

Yields continue to be higher than fundamentals might suggest. For example, Germany regularly fields challenges to the EU's ability to borrow jointly at all. These challenges fail, but not before reminding investors and voters that the euro area keeps its finances in national compartments when push comes to shove.

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The EU needs to have confidence, so the markets can have confidence too

Widening spreads and tumultuous market conditions all year have made policymakers newly attentive to the reality that sovereign debt from different euro area countries trades at different rates. The problem is many ideas for trying to solve it risk exacerbating fragmentation rather than bringing the bloc together.

Recent proposals include creating a European debt buying agency; duplicating and de-stigmatizing a never-used precautionary credit line system; and generally trying to revive the magic of Mario Draghi's 'whatever it takes' moment.

Establishing fixed-income capital markets

There's a missing element at the heart of Europe's financial system: trust in the market. What if every euro area country could sell debt at varying price points with an expectation that it would trade regularly, in all weather? Buy and hold should not be the only option.

The goal of a debt auction should not be just for the European Central Bank or a pension fund to buy a bond and wait until it matures. It should be to form a benchmark yield curve and anchor an entire ecosystem of fixed-income capital markets.

If a 'liquidity crisis' is defined by a lack of cash, or by loss-averse securities holders facing off against rapacious fire-sale speculators, then a liquid market should be defined by a healthy mix of buyers and sellers in all conditions.

The euro system knows this, on some level. In 2015, the ECB set up a securities lending programme like the longstanding offerings of the US Federal Reserve. These programmes are essential bond market infrastructure and keep the market going in the face of all kinds of technical challenges.

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The long-standing debate over a European safe asset also acknowledges the truth that the euro won't be a serious international currency until it has one, at scale. The historic joint borrowing enabled by the NextGenerationEU pandemic recovery programme brought that vision so much closer. But as long as it is limited and temporary, Europe will not be able to close the deal.

The disinterest in market borrowing starts at the top. Even at the height of the euro crisis, a financial flashpoint dominated by lack of market access, European policymakers continued to rail about the perils of speculation. Germany is famous for not taking meticulous care of its primary market, instead giving itself ample leeway to just reduce supply if the bids failed to show up.

The market has historically indulged them, as in 2011, when Germany failed to place its full offering in two long-term debt sales in a row. If any other major developed country couldn't sell all the debt it planned, the ratings agencies might start looking into default. But as with trade surpluses and fiscal guidelines, Germany has got off with a shrug and a promise.

The bonds make their way into the secondary market later, the world keeps spinning. The secondary market still gets the bonds as German bond trading is dependable enough that the market can absorb these bonds either at auction or at its leisure later, and pricing adjusts in routine and non-destabilising ways.

Without trading, there is no liquidity. Without liquidity, there is no market. ECB researchers in 2017 found that more participation in primary market sales leads to smoother secondary market trading – notably a process that works better when market volatility is otherwise higher.

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When public debt sales are regular, predictable and designed with follow-on trading in mind, the market-makers make markets, and everyone benefits.

Balancing public and private funding

A strong and steady secondary market is the key to a strong public borrowing scheme, as documented in Bruegel's 2021 assessment of the NextGenerationEU programme.

The European Commission has admirably sought a balance between encouraging long-term investors, who provide primary market demand and a price anchor and making sure there is enough secondary market liquidity for smooth trading.

Its investor base as of October 2022 is 34% fund managers, 25% bank treasuries and 21% central banks and other official institutions; a mix of pension funds, insurance companies, banks and hedge funds make up the rest.

Likewise, the EU has done an effective job of building a primary dealer network, selling its debt at auction and through syndications, and monitoring follow-on trading. It will not, however, reap the true benefits of a mature public borrowing programme unless its efforts continue at scale.

On the private-sector side, policymakers are at least willing to talk about how broader market operations would help the general economy grow. Capital markets union may not be progressing much, but there is at least a top-level consensus that more and better trading is part of the path forward. Illiquid markets have more price volatility, which can be disruptive.

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For the public sector, overall, the philosophical shift is taking longer to happen, despite the desire of euro area politicians to catch up with the dollar and its deep and liquid US Treasury market. Even relatively pro-debt economists and policymakers seem to be struggling with the shift from buy-and-hold to actively encouraging trading.

Consider this year's call from Italian and French leaders Mario Draghi and Emmanuel Macron to adjust the euro area's debt rules to allow for more public investment spending. They gave a nod to a December 2021 proposal by Francesco Giavazzi, Veronica Guerrieri, Guido Lorenzoni and Charles-Henri Weymuller as part of their case for more borrowing.

The heart of the plan aims to take the burden of buying sovereign debt off the ECB – but not by trusting the market. It suggests creating a European Debt Agency to take on sovereign bonds instead. Rather than printing money to do it, as the ECB has done through its monetary policy operations, this new agency would instead go to the markets directly. It would create an intermediary between investors and individual countries and provide a new euro-denominated safe asset.

As a bonus, it could offer a new mission for the European Stability Mechanism, currently reduced to a warehousing role for the debt it issued during the euro crisis and seeking a new mandate. What this plan lacked was a sense of what would happen to the secondary market after sovereign debt was sucked up and out of circulation, as well as what effect its own borrowing would have on market access.

The EU's current joint borrowing programme, the NextGenerationEU recovery programme, aims to explicitly 'crowd in' investment and borrowing at the national level. There seem to be few safeguards to keep the various proposed new debt agencies from crowding out other sovereign issuers.

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Furthermore, by limiting the amount of sovereign debt in the markets, one can imagine they could depress liquidity and therefore hurt the balance sheets of the countries ostensibly being helped.

This is the big shift that Europe has yet to make: that more debt can be safer debt, at least when it comes to the world's major currencies. A permanent national debt is a gift, as the US has found since the days of Alexander Hamilton.

US debt managers strive to protect the secondary market, not eliminate it – in fact, during the height of the Alan Greenspan era, fears were not that the US would issue too much debt but that it might run too much of a surplus.

A country is not a business, and it does not need to balance its books. On the contrary, its entire job is to marshal credibility so people believe in its banks and its borders. For small, poor countries, credibility is in short supply. For the world's largest consumer market, it ought to be abundant.

The EU does not need yet another issuer of high-quality quasi-sovereign debt. Instead, it needs to encourage the issuers it has, so they can trade freely and at the scale needed to provide stability in global financial markets. It needs to have confidence, so the markets can have confidence too. ■

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The end of ESG

Alex Edmans argues that ESG shouldn't be put on a pedestal compared to other intangible assets that affect both financial and social value

ESG is both extremely important and nothing special. It's extremely important because it's critical to long-term value, and so any academic or practitioner should take it seriously, not just those with 'ESG' in their research interests or job title.

Thus, ESG doesn't need a specialized term, as that implies it's niche – considering long-term factors isn't ESG investing; it's investing. It's nothing special since it's no better or worse than other intangible assets that create long-term financial and social returns, such as management quality, corporate culture, and innovative capability.

Companies shouldn't be praised more for improving their ESG performance than these other intangibles; investor engagement on ESG factors shouldn't be put on a pedestal compared to engagement on other value drivers. We want great companies, not just companies that are great at ESG.

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1. Introduction

Now is the peak of ESG. It's front and centre in the minds of executives, investors, regulators, business students, and even the public. Major corporations are appointing Chief Sustainability Officers to the C-suite, justifying strategic decisions based on their ESG impact, and tying executive pay to ESG metrics.

4,375 investors managing $121 trillion had signed the Principles for Responsible Investment (PRI) by the end of 2021, dwarfing the 63 investors overseeing $6.5 trillion who helped found the PRI in 2006.

Regulators are establishing taxonomies of which corporate activities may be labelled 'sustainable', and tiering funds by their ESG incorporation. Business schools are rushing to introduce ESG courses, establish ESG centers, and reinvent faculty as ESG experts. Newspapers are publishing dedicated ESG newsletters, and customers are increasingly basing their purchasing decisions on a company's ESG impact.

With this context, it seems crazy to title an article *The end of ESG*. But this title intends not to signal ESG's death, but ESG's evolution from a niche subfield into a mainstream practice. The biggest driver of this ascent is the recognition that ESG factors are critical to a company's long-term (financial) value.

But then all executives and investors should take them seriously, not just those with 'sustainability' in their job title. Considering long-term factors when valuing a company isn't ESG investing; it's investing.

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To be closed to the possibility of valid concerns is contrary to a culture of learning, and to assume that counterarguments are politically motivated is itself cynical

Indeed, there's not really such a thing as ESG investing, only ESG analysis. The value relevance of ESG was how I got into the topic in the first place, back in my PhD days when ESG was still niche. My job market paper was a theory of how blockholders (large shareholders) enhance a company's long-term value (Edmans, 2009).

The model showed that blockholders don't just assess a company by its quarterly earnings; instead, they do a deep dive into its intangible assets, such as its corporate culture, customer loyalty, and innovative capability. Doing so is costly and time-consuming, but their large stakes make it worthwhile. In turn, if a company knows that its key shareholders will assess it on long-term value not short-term earnings, this frees it to focus on the former and not fret so much about the latter.

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Importantly, the shareholders were just that – shareholders. They weren't ESG investors; they weren't analyzing a company's long-term value because they were forced to by regulation or pressured to by clients. They just wanted to beat the market, and you can only do so with information that's not already in the price. Quarterly earnings are publicly available, but it's long-term factors that are hidden treasure.

When seminar audiences asked me for examples of such investors, I'd reply Warren Buffett, Bill Miller, and Peter Lynch. None of these are ESG investors; they're simply long- term-oriented investors.

But there was one question I didn't yet have a good answer to. Why are blockholders needed at all – why companies can't just disclose the value of their intangible assets? I replied that intangibles were difficult to report credibly; there are few verifiable measures of items such as corporate culture. And even if there were, small shareholders might not understand their value relevance, or know how to change cell C23 in their model upon learning that a firm actively encourages dissenting viewpoints.

Yet I only had common sense to buttress my responses; back then, there was no evidence either way. So in the final months of my PhD, I started a new paper. I took the *100 Best Companies to Work For in America* and found that they delivered higher shareholder returns than their peers over a 28-year period. The Best Companies list is highly visible.

If markets were efficient, the Best Companies' stocks would jump as soon as the list came out, preventing future outperformance. The superior returns imply that the market failed to fully incorporate employee satisfaction.

I initially published the paper in a finance journal (Edmans, 2011); a management journal then invited me to write a management-oriented version (Edmans, 2012). Neither article mentioned ESG even once. I didn't study employee satisfaction because it's an ESG factor, but because it's a value-relevant factor.

I wanted to show that the market overlooks important value drivers, and titled the finance paper *Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices*. Serendipitously, Lloyd Kurtz, who chaired the Moskowitz Prize for Socially Responsible Investing (SRI), invited me to submit my paper to the competition.

I'd never thought of my research as being about SRI, but did some digging after Lloyd's email and found that many SRI investors indeed scrutinize worker welfare. I added some SRI implications into the paper, but doing so opened a mini Pandora's box.

If the paper was about SRI, why study employee satisfaction and not other SRI screens such as Catholic values and animal rights? I stressed that human capital theories provide strong reasons for why employee satisfaction might be value-relevant, but there weren't as clear justifications for those other factors, so any correlation might result from data mining.

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If ESG is a set of value-relevant factors, then it's both extremely important and nothing special. ESG is extremely important because any academic or practitioner should care about the drivers of long-term value, particularly (for investors) ones that are mispriced by the market.

Indeed, the title of this article is inspired by Thaler's (1999) *The End of Behavioral Finance*, which predicted that behavioural finance would become mainstream – to understand asset prices, it would become widely accepted that you need to study not only cash flows and discount rates, but also investor behaviour. The same is true for ESG.

Critics of capitalism argue that finance textbooks focus on short-term profit and need to be overhauled to incorporate ESG. As the new co-author adding ESG into a long-standing textbook (Brealey *et al* 2022), I'd love to claim I'm radically reforming business education. But *Finance 101* has always stressed how a company's worth is the present value of all its cash flows, including those in the very distant future.

A company's relationships with its employees, customers, communities, suppliers, and the environment are highly value-relevant; there's nothing particularly cultish, liberal, or – dare I say it – 'woke' in considering them.

But this article aims to go beyond just applying Thaler's analogy to ESG. And that's where the second point comes in – that ESG is 'nothing special'. This isn't meant to be disparaging, but to highlight how ESG is no better or worse than other factors that drive long-term value.

This matters for several reasons. First, ESG shouldn't be put on a pedestal compared to other value drivers. Companies and investors are falling over themselves to demonstrate their commitment to ESG, with company performance on ESG metrics given a special halo, and investors praised even more for engaging on ESG issues than productivity, capital allocation, and strategy.

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In some cases, such as Danone and the very many ESG funds that underperform, this may lead to ESG being prioritized at the expense of long-term value.

Second, practitioners shouldn't rush to do something special for ESG factors that they wouldn't for other intangibles, such as demand that every company tie executive pay to them, or reduce them to simple quantitative metrics.

Third, many of the controversies surrounding ESG become moot when we view it as a set of long-term value factors. It's no surprise that ESG ratings aren't perfectly correlated, because it's legitimate to have different views on the quality of a company's intangibles. We don't need to get into angry fights between ESG believers and deniers, because reasonable people can disagree on how relevant a characteristic is for a company's long-term success.

On the flipside, if ESG is nothing special, then some practices we implement for ESG could be rolled out to other areas of finance. Regulators are cracking down on ESG funds that are greenwashing – and they should similarly scrutinize other investors who aren't doing what they say, such as actively-managed funds that are closet indexers.

This article discusses how our perspectives on topical ESG issues change when we view them through a long-term value lens – as drivers of long-term value, no more, no less – rather than an ESG lens – as a magic set of factors that companies, investors, and even professors need to demonstrate their commitment to over and above other value drivers.

2. ESG metrics

Investors, regulators, and other stakeholders are increasingly demanding that companies report their performance

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along various ESG metrics. Many are calling for a common set that all firms be compelled to disclose, as well as standards to ensure they're all measured in the same way.

Under the ESG lens, this is a no-brainer. Companies need to report their ESG performance to prove they're walking the walk, rather than just talking the talk. And just like financial statements, they should be comparable so that shareholders can see how firms stack up to their peers. In turn, investors can demonstrate to their clients how truly green they are, if their portfolio ticks more ESG boxes than their competitors'.

It might seem that ESG metrics are also a no-brainer under the long-term value lens – if ESG drives long-term value, then investors need ESG metrics to be able to estimate long-term value. Indeed, this was the solution that my job market audiences proposed. If companies disclosed measures of long-term value, then the market will focus on them rather than short-term earnings.

But if ESG drives long-term value, then it's no more special than any other intangible assets that do so. And it's particularly non-special since we've known for at least 30 years that the value of a company depends on more than just financial factors.

Kaplan and Norton (1992) introduced the 'balanced scorecard' which *"complements the financial measures with operational measures on customer satisfaction, internal processes, and the organization's innovation and improvement activities – operational measures that are the drivers of future financial performance."*

Kaplan and Norton stressed the importance of reporting measures not because they're part of a framework or a box to be ticked, but because they *"are the drivers of future financial performance"* – their article is entitled *The Balanced Scorecard – Measures That Drive Performance*.

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ESG has helped advance the balanced scorecard from Kaplan and Norton's time. It highlights how the value of a company depends not only on its financial and operational performance, but also its stakeholder relationships. But viewing metrics through a long-term value lens rather than an ESG lens shifts our thinking in two ways.

First, it widens our perspective, because many value drivers don't fall under the narrow umbrella of ESG. Companies should tune out the noise created by reporting frameworks and stakeholder demands and instead ask – what are the attributes that we ourselves want to monitor, because they're 'measures that drive performance'?

In other words, what are the Key Performance Indicators (KPIs), or leading indicators, that help us assess whether our company is on track? These KPIs will certainly include ESG metrics, such as carbon emissions for an energy company, but they'll also include other dimensions such as customer net promoter scores or new patent generation. This perspective moves ESG from a compliance exercise – a set of boxes to be ticked – to a value creation tool.

The most important broadening is that most ESG metrics capture 'do no harm' – the amount of damage a company inflicts upon society, such as water usage, particulate production and worker injuries. That's certainly important, but long-term value is much more about whether a company 'actively does good'; in Edmans (2020) I refer to the latter as growing the pie, and the former as splitting the pie fairly.

The measures that track value creation will be specific to a company's strategy. Unilever gauges the number of citizens it reaches through its hygiene campaigns, Olam measures the number of smallholder farmers who participate in its sustainable farming programs, and MYBank reports the number of start-ups that it lends to who'd never obtained a bank loan before.

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A common set of ESG metrics doesn't stop companies from going further and reporting additional bespoke factors. But common measures will likely get most focus, since everyone reports them – that's why some investors fixate on quarterly earnings, even though companies have been disclosing non-financial dimensions for decades.

In turn, if investors prioritize these common measures, this will encourage executives to do so too because they'll be evaluated on them, at the expense of the dimensions that actually create value (Edmans, Heinle, and Huang, 2016).

Common measures are also easy to compare as they don't require expertise. Even if I have no knowledge of basketball, I can still see which NBA players score the most points, even though they're only one dimension of quality. Similarly, an investor who knows little about a company's business model can still notice that eight tons of emissions are higher than five.

Indeed, some of the biggest calls for common metrics are from people late to the ESG bandwagon, because reducing an art to a number comparison exercise allows everyone to join the party.

Second, replacing the ESG lens with the long-term value lens focuses our perspective, as it suggests that companies should report ESG factors only if they 'drive performance' – a leading indicator is one that leads to future outcomes[1]. The first shift in thinking stressed that driving performance is a sufficient condition to report a KPI; it doesn't matter if it's an 'ESG' metric or not. This second shift highlights that it's also a necessary condition.

This focus is important, because there are literally hundreds of ESG metrics that companies could report. Not only would this divert a company's attention from actually creating value to reporting on value, it would ironically reduce transparency to investors and stakeholders as they won't know where to look.

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2.1 ESG-linked pay

Many companies are going beyond simply reporting ESG metrics to linking pay to them. A PwC (2022) study found that 92% of large US companies and 72% of large UK firms are using ESG metrics in their incentive plans. Some investors, on both sides of the Atlantic, argue that all firms should tie executive pay, at least in part, to ESG. Regulators are contemplating requiring such a link.

Such ties make sense under the ESG lens. Companies obtain a public relations boost from linking pay to ESG, as it suggests they care so much about ESG that they pay for it. Investors who loudly call for every company to incorporate ESG metrics in bonuses are seen as ESG pioneers.

But under the long-term value lens, it's far from clear cut. The balanced scorecard stressed the important of paying close attention to non-financial metrics, but Kaplan and Norton (1992) never advocated putting them into compensation contracts. Doing so is unnecessary – if ESG metrics are indeed relevant for long-term value, then tying pay to long-term value is sufficient to encourage executives to bolster them, as found by Flammer and Bansal (2017).

Even worse, they could backfire by prompting CEOs to focus only on the ESG dimensions in the contract, and not the myriad of other value drivers, as predicted by the multi-tasking model of Holmstrom and Milgrom (1991).

For example, paying an executive based on demographic diversity may discourage her from hiring white males who bring socioeconomic or cognitive diversity, or lead her to focus on diversity and not inclusion. Since only quantitative metrics can be put into a contract, ESG-linked pay may cause CEOs to focus on them at the extent of the qualitative. They'd hit the target, but miss the point.

For most drivers of long-term value, such as patents, net promoter score, and customer attrition, companies will report them – and scrutinize them very carefully, not just looking at whether they've gone up or down but understanding why. However, they'll stop short of linking pay to them. This should generally be the approach for ESG metrics[2].

2.2 The other motive for ESG

But there's an elephant in the room. I've explained that the main reason for the rise in ESG is its relevance to long-term value. Yet that's far from the only reason – we care about ESG because of the externalities it imposes on society.

A 2013 Trucost report estimated the environmental costs created by business at $4.7 trillion per year, and this figure has likely soared since then. Beyond the environment, business workplace practices can lead to burnout, physical injuries, and even deaths; whom companies hire and promote affects social inequality and inclusion.

By definition, externalities don't affect a company's profits, even in the long run. Thus, ESG advocates argue that we should require companies to disclose externalities, so they can be held accountable for reducing them; tying CEO pay to externalities will further incentivize such a reduction.

But intangible assets also have substantial externalities: Haskel and Westlake's (2017) book on intangibles highlights 'spillovers' and 'synergies' as two of their defining features.

An innovative new product creates consumer surplus above and beyond what customers pay for it, suppliers earn producer surplus from selling inputs for more than their cost, and competitors build on the innovation to launch their own versions.

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Training employees increases their human capital, and many of the benefits won't be captured by the firm providing the training: they may leave for a competitor, relocate for family reasons, or be more likely to find another job if their current employer shuts down – attenuating the large social costs suffered when a major local employer closes (eg. Goldstein, 2017).

Turning to a negative externality, a sluggish executive team can impose huge costs on society – Kodak went bankrupt after missing the digital revolution; it had been worth $31 billion to its shareholders at its peak and employed 150,000 people at one point.

Just as for drivers of financial returns, ESG shouldn't be treated differently from other drivers of social returns. One could justifiably argue that the externalities arising from some ESG issues, such as climate change, are particularly important, but this changes the magnitude of the response, not the type.

All externalities are a market failure, and thus are best dealt with through government intervention to correct this failure. Governments can provide public goods themselves, or subsidize, tax, or regulate externality-producing activities, such as taxing carbon emissions, imposing minimum wages, and introducing diversity quotas.

It's the government that's best placed to address these ten externalities, since it's democratically elected by a country's citizens, whereas investors disproportionately represent the elites and thus may underweight, for example, the impact of decarbonization on blue-collar oil and gas jobs.

But real-life governments don't address all externalities. First, even if they're well-functioning, governments can't regulate qualitative factors such as corporate culture or management initiative, because they're hard to measure.

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Investors thus have a particular role to play in monitoring these issues, but can only do so effectively if they don't reduce them to simple numbers. The government should regulate all quantitative ESG issues, and so the only ones for investors to address are qualitative, highlighting the inconsistency of a metrics-driven approach.

Second, the government may not be well-functioning – it may fail to regulate externalities that the electorate cares about due to lobbying or sluggishness. As a result, companies could legitimately argue that they should pursue ESG, even it doesn't improve long-term value, due to its externalities.

This is the one case in which this article's thesis no longer applies – ESG investing is different from investing, and ESG is different from other value drivers, because it's pursued to achieve societal goals even at the expense of shareholder returns.

Then, the implications are quite different. Companies should be up-front that they're pursuing sacrificing shareholder returns pursue ESG, and thus need a clear mandate from shareholders to do so. Investors may be happy to give such a mandate – pension funds might rationally sacrifice a few basis points of financial return to reduce a company's carbon emissions, because pensioners care not only about their income in retirement but the state of the planet.

There is a trade-off, but shareholders believe that the trade-off is more than worth it. In turn, funds that intend to sacrifice financial returns to pursue societal goals should be transparent about this to their clients[3].

We've discussed how the defining feature of ESG is not its link to long-term returns, nor its positive externalities, both of which are shared with intangible assets. If, instead, the defining feature of ESG is the fact that it's sometimes at the expense of long-term value, then it might not be put on such a pedestal.

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3. ESG funds

Money is pouring into ESG funds. In 2020, $17.1 trillion ($1 in every $3 under professional management) was invested in ESG strategies in the US – that's 42% higher than in 2018, and 25 times as high as in 1995 – with similar growth around the world. Hartzmark and Sussman (2019) find causal evidence that investors flood into ESG funds with higher Morningstar globe ratings.

One reason for their popularity is the belief that ESG investing systematically outperforms. The UK's largest retail broker emailed all its clients claiming that *"study after study that shown that businesses with positive ESG characteristics have outperformed their lower ranking peers."*

The evidence is far more ambiguous than claimed (see the survey of Matos (2020)), but even if it were clear-cut, academic research has documented a huge number of other investment strategies that outperform (see, eg. McLean and Pontiff (2016)). If savers are interested in alpha, then they shouldn't prioritize ESG over other characteristics that create alpha.

Of course, long-term financial returns aren't the only motive to invest in ESG funds. Another is to change company behaviour – improve its ESG performance, thus creating more positive externalities. Impact can be achieved through two channels: exit and voice (see the surveys of Edmans (2014) and Edmans and Holderness (2017)).

Exit involves divesting from an ESG laggard, driving down its stock price. Ex post, this increases its cost of capital and hinders its expansion; ex ante, the company might boost its ESG performance to avoid being sold (Edmans, Levit, and Schneemeier, 2022).

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However, this channel works for all measures of performance, not just ESG ones. Investing in twelve innovative companies with great management teams and strong cultures helps them create more positive externalities, as well as encouraging firms to improve these dimensions in the first place.

Voice involves engaging with a company through voting, private meetings and – if necessary – public activism, to cut its carbon footprint or improve its employee diversity. Such actions can indeed create value for both shareholders and society (Dimson, Karakaş, and Li (2015); Hoepner *et al* (2022)), but so can engagement on other topics (Brav, Jiang, and Kim (2015); Brav, Jiang, Ma, and Tian (2018)).

Cutting unnecessary costs improves investor returns, reduces resource usage, and increases a company's resilience, but shareholders obtain far less credit for it than ESG engagement.

Regulators, the media, and investors are cracking down on ESG funds for not being ESG enough – for holding stocks in brown industries, and for sometimes voting against ESG proposals. But blanket divestment is often not the most effective way to improve corporate ESG behaviour (Edmans, Levit, and Schneemeier, 2022) and many ESG proposals do not create long-term value (Gantchev and Giannetti, 2021).

Even setting aside these concerns, funds should absolutely be held to account for doing what they say. Yet it's not clear why investors in non-ESG funds deserve any less protection. Any thematic fund claims to follow a strategy.

Does the Jupiter Global Financial Innovation hold only companies that are truly financially innovative? Does the Capital Group New World fund only invest in the most frontier economies? Should a value fund be punished for buying stocks that aren't actually good value?

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What about a growth fund who owns firms that don't end up growing? Cooper, Gulen, and Rau (2005) find that funds that changed their name to match current 'hot' styles (eg. adding 'cautious' in a downturn or 'growth' in an upswing) enjoyed abnormal inflows of 28% over the next year – even if their actual holdings didn't change.

And it's not just thematic funds that make pledges – any actively-managed fund claims to beat the market. But a fund that underperforms the market 5 years in a row, costing its investors thousands of dollars in retirement savings, is unlikely to be as publicly shamed as a manager of a sustainable fund who opposes a high-profile ESG proposal.

Funds that consistently underperform, actively managed funds that are closet indexers, and thematic funds that persistently deviate from their theme, should be scrutinized as much as their ESG counterparts.

4. ESG controversies

4.1 ESG ratings

Viewing ESG as a set of long-term value drivers also helps defuse many of the controversies surrounding it. One is the significant disagreement between ESG rating agencies (Berg, Kölbel, and Rigobon, 2022). Critics interpret this as evidence that rating agencies are failing – why can't they agree about a company's ESG, like since S&P, Moody's, and Fitch do about creditworthiness?

But reasonable people can disagree about the long-term value potential of a company's ESG – which factors are relevant (will companies suffer financially from producing electromagnetic radiation?), how to assess them (how inclusive is a company's corporate culture?), and the relative weight to put on each. An ESG rating isn't fact; it's opinion.

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Credit ratings aren't a good analogy as there's no ambiguity on what they're trying to measure – whether a company will repay its debt. There might be different views on how to assess it, but the object of the assessment is clear. For ESG, it's not even clear which factors should be measured to begin with. The better analogy is to equity research reports, which also try to measure long-term value[4].

No-one would argue that stock analysts can't do their job because Goldman Sachs says 'buy' and Morgan Stanley recommends 'sell'. Indeed, another word for disagreement is 'diversity', ironically something ESG advocates should embrace rather than lament. A diversity of opinion is far more informative than if everyone said the same thing.

The main complaints are from ESG-by-numbers investors who want a single unambiguous ESG rating they can use for portfolio selection. But a mainstream investor would never automatically buy just because Goldman Sachs says so; she'd read the reports of different brokers, use her expertise to evaluate whose arguments are most convincing, and supplement them with her own analysis.

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4.2 ESG classifications

Prior to Russia's invasion of Ukraine, many investors considered defense companies as 'non-ESG'. Afterwards, many did a hasty U-turn, rewriting their investment policies to redefine defence as ESG. A *Financial Times* article, *Are Defence Stocks Now ESG?*, describes this binary thinking. The less black-and-white we make our classifications, the less inflexible they'll be, and the less back- tracking we'll need to make if the world changes.

It makes even less sense to classify stocks as ESG or non-ESG when we view them through the long-term value lens. Some companies might have more value-creation potential than others, but it's a continuum, not a binary classification.

Moreover, thinking of ESG as intangible assets reduces the temptation to see it in such a binary way. The value of any asset must be compared to its price. Yet many ESG advocates would give three cheers to environmentally-friendly, diverse companies that donate generously to charity without any regard for its price, which can lead to ESG bubbles (as we've seen with electric cars).

Some ESG factors may be best thought of as risks rather than assets. However, risks must also be compared against their price. A common phrase is 'climate risk is investment risk', and used to imply that investors are imprudent (from a purely financial perspective) if they don't completely decarbonize their portfolio.

But if climate risk is priced in, as found by Bolton and Kacperczyk (2021), then investors earn a return for bearing that risk. Holding stakes in young firms, tech companies, and fifteen emerging markets bears investment risk, but that risk is compensated for by a return.

If an asset manager wanted to avoid investment risk, it would ironically eschew clean energy and carbon capture. Even if ESG risks aren't fully priced in, they shouldn't lead to an investor automatically excluding an ESG laggard; it may remain a good investment if it has other valuable and unpriced intangible assets.

In 2021, Nasdaq aimed to prohibit firms without sufficient board diversity from listing on the market, claiming this would protect investors. The evidence for the value of board diversity is mixed or negative (Fried, 2021), but even if it were unambiguously positive, regulation wouldn't be needed to protect investors as non-diverse firms would trade at a discount.

Even if they didn't, there'd be no more reason to regulate diversity than any other less-than-fully-priced drivers of value. It's not clear why a company with a diverse board but poor capital allocation, strategy and innovation should be deemed investible but one with the opposite characteristics should not[5].

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Similarly, classifications into ESG and non-ESG buckets are typically based on current status rather than future potential. This highlights another problem with the metric-driven approach: metrics only capture what's happened in the past.

Any analysis of long-term value would focus on a company's future potential; certainly, historic data is useful, but only to the extent it helps you forecast future cash flows. If ESG were viewed through the long-term value lens, assessments might not be so backward-looking.

Naturally, different investors (or rating agencies) may have different opinions about future performance, but this diversity is to be embraced rather than lambasted as inconsistent.

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4.3 The politicization of ESG

Recognizing that ESG is no more or less than a set of long-term value drivers will hopefully defuse the worrying politicization of ESG. ESG critics label its advocates as the woke Left; devotees accuse anyone who questions the value-relevance of ESG as being a conservative corrupted by lobbyists.

Reasonable people can disagree about how relevant a factor is for both financial and social returns. But views on ESG often move beyond opinion to ideology, and impugn nefarious motives to anyone sharing a different opinion.

A senior ESG practitioner who teaches at a top university messaged me *"Hiya Alex. You want to fight?! Me and Aswath Damodaran about to get in boxing match about his ESG takedown piece. Please consider co-writing a counterpoint op-ed with me?"*

But my initial instinct was not to fight; if someone dubbed the 'Dean of Valuation' has a differing view on the relevance of ESG for valuation, I'd like to learn from it. A Managing Director at a large investment bank wrote to me: *"See The Economist Special report on ESG this w/e – why do you think these papers give anti-ESG rhetoric oxygen? … They fan flames of the deniers."*

Yet those who recognize that ESG has cons as well as pros aren't necessarily driven by rhetoric; instead, they're able to see both sides of an issue. Most people aren't 'believers' or 'deniers' – language which focuses on ideology – but academics or practitioners who've developed their own view through a combination of evidence and experience.

It's unprofessional for ESG critics to label its supporters as 'woke', or portray them as hippies with no clue about business – in contrast, understanding ESG is critical to understand the value of a business. Some ESG sceptics pat themselves on the back for crushing the woke crowd, when they should view their contribution as providing a different perspective on what creates long-term value.

But respondents don't need to stoop to their level. One practitioner, whom I'll name Hugo, labelled concerns as 'just complete BS' that spread 'nonsense around ESG'. A professor whom I greatly respect and whose writings I've learned a lot from called sceptics 'Taliban' and 'Flat Earthers'; he titled a separate article *A Tutorial On ESG Investing In The Oil And Gas Industry For Mr. Pence And His Friends*.

In addition to slighting the target audience, suggesting they needed a tutorial but others don't, it politicized the issue, implying that true conservatives should be anti-ESG, thus reducing the article's effectiveness.

Research by the Yale Cultural Cognition Project (eg. Kahan (2015)) finds that the more you associate an issue with an identity (such as climate change with political affiliation), the less persuasive your arguments, as people base their view on their identity than your content.

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Another practitioner wrote *"Thank heavens for this excellent piece from Hugo, who tells it like it is: "I don't know about you, but when I see the likes of Ted Cruz, Marco Rubio, Greg Abbott, Mike Pence, and Elon Musk railing against 'ESG,' I know ESG must be doing something right.""*

But 'telling it like it is' involves using arguments based on facts, data, and evidence, not telling other people off. The criterion for the success of ESG is whether it creates long-term value for shareholders and society, not whether it riles conservatives. (The piece by Hugo was called *Why the Right Hates ESG* and the strapline began with *"It's all about them wanting to protect the fossil-fuel industry."*

Instead, sceptics may simply have healthy doubts, rather than hatred, and have reached their stance after considering both sides of the issue, rather than being oil and gas lobbyists.)

Unfortunately, many ESG supporters herald as heroes those who display the most extreme outrage rather than use the most convincing evidence. If you view ESG as understanding what drives long-term value, you celebrate the people who contribute most to your understanding, by helping you see both sides of an issue.

But if you view ESG as a political fight, you cheer the people who fight most aggressively. Another academic wrote an article that ended with *"Climate risk is investment risk. There is no credible other side, only an ideological opposition cynically seeking a wedge issue for upcoming political campaigns… Which side are you on?"*

But ESG is not a debate on which you have to take a 'side' – it's a subject, just like business is a subject; people's stance on a subject should evolve with the evidence rather than being anchored on a side. To be closed to the possibility of valid concerns is contrary to a culture of learning, and to assume that counterarguments are politically motivated is itself cynical.

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It's surprising that academics contribute to this polarization since they should appreciate the value of scientific enquiry and the importance of listening to different viewpoints.

Indeed, there's an entirely credible other side – many people believe the core problem is that climate risk is not investment risk, because the absence of a global carbon tax means that companies can pollute with few consequences.

One justification of a streetfighter approach is that ESG issues are so important to society that we need to get them right. But topics such as unemployment, free trade, and government spending also have huge impacts on both people and planet; academics have punched hard, but not below the belt.

Critical fields such as environmental economics, health economics, and economics of children have been around for decades, and advanced through reasoned debate rather than hyperbole and point-scoring.

It's precisely that ESG is so important that we need to use the best evidence to guide us, which involves listening to other viewpoints – and doing so with the intent to understand, not the intent to reply.

Doing so isn't betraying our ideals; as is commonly attributed to Aristotle, *"it is the mark of an educated mind to be able to entertain a thought without accepting it."* Even if 90% of what sceptics say is wrong, in our eyes, 10% might be right, and that 10% means we come away more informed than we were beforehand.

But if ESG is a political issue, we see any counterargument as a threat to our identity, just like a different perspective on abortion or gun control. Both sides can do better.

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5. Implications for research

Viewing ESG through a long-term value lens has several implications for academic research. The first is to be more broad. The long-term value lens highlights how we can study issues because they create value, regardless of whether they fit into an ESG bucket – indeed, I stumbled into ESG by exploring whether investors can support companies' pursuit of the long term, and whether intangible assets are priced by the market.

Sometimes, intangible assets other than ESG may be more relevant for answering a particular question – for example, a company's responsiveness to a changing economic environment might depend on its human, organizational, or innovation capital more than its ESG.

Similarly, a broader perspective might warn us that a certain research topic is less promising as it's already been addressed in a general context. Lots of ink has been spilled repeating widely documented results for the specific case of ESG.

For example, it's well known that scandals worsen a CEO's reputation, so it's not too surprising that ESG scandals do too. If there's no clear reason why a result might not automatically extend to ESG, the contribution from explicitly extending it is relatively minor.

As we've discussed, a major reason for the rise in ESG is its impact on externalities, yet externalities aren't unique to ESG. Future research can similarly study the externalities created by companies and investors, even if their actions don't fall under the ESG umbrella.

This may involve studying the impact of corporate decisions on other stakeholders (eg. Bernile and Lyandres (2019), Cunningham, Ederer, and Ma (2021), and Testoni (2022) for M&A) or the spillover effects of engagement from non-

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ESG investors (eg. Agrawal and Tambe (2016), Bernstein and Sheen (2016), Cohn, Nestoriak, and Wardlaw (2021), and Fracassi, Previtero, and Sheen (2022) for private equity).

The second is to be more granular. Sweeping questions such as 'Does ESG work?' are unlikely to be fruitful. No scholar would write a paper entitled 'Does investment pay off?', because it depends on what you're investing in; similarly, the value-relevance of ESG depends on the type of ESG.

ESG is an umbrella term, capturing many potentially contradictory factors. E and S is primarily about stakeholders, whereas G often ensures that management act in shareholders' interest (rather than their own). Closing a polluting plant is good for the environment, but bad for employees (an S factor).

In Edmans (2011, 2012) I had to explain why I was studying employee satisfaction and not other ESG factors – because there's a strong theoretical motivation for its link to long-term returns.

Similarly, future research could focus on the ESG dimensions most relevant for the research question being studied. Yet empiricists often use aggregate ESG scores, when the question or identification strategy focuses on a specific issue. For example, a paper might study how a company's response to climate change news depends on its ESG rating.

However, it may only be the E dimension that's relevant – and, within that E score, the components most relevant to climate change rather than other environmental factors such as noise pollution. Few researchers would use aggregate ESG scores to measure governance, yet many do so to gauge environmental stewardship[6].

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The third is to be more situational. While granularity is about focusing on specific ESG dimensions, situationality involves studying the contexts in which a relationship hold and, equally importantly, where it doesn't. An early attempt was Khan, Serafeim, and Yoon (2016), who claimed that ESG factors are only linked to long-term returns if they are material for a company's industry.

While Berchicci and King (2022) later showed that these results disappear under different modelling choices, Khan et al.'s hypothesis that the value of ESG is situation-specific was worth testing. Edmans, Pu, and Zhang (2022) document that employee satisfaction is positively associated with long-term stock returns in countries with flexible labour markets, but not those with rigid labour markets, potentially because regulations already ensure a minimum standard for worker welfare.

Moreover, if ESG is like any other asset, then companies may overinvest in it – Servaes and Tamayo (2017) use 'social capital' to describe some dimensions of ESG, and the return on any form of capital can be below its cost.

Thus, the value created by ES may depend on G – Krüger (2015) finds that the market responds negatively to positive ES events that are likely to result from agency problems. Similarly, research can relate governance to ES practices, without ascertaining whether they are positive or negative for firm value. For example, Cronqvist *et al* (2009) find that entrenched CEOs pay higher wages.

The fourth is to be less monotonic. Many papers use an ESG variable assuming that more is always better (even within the same context) – higher ESG scores, more frequent votes for ESG proposals, or tying pay to more ESG metrics. But, as discussed, companies can over-invest in ESG (Masulis and Reza, 2015), and investors might overly micro-manage it (Gantchev and Giannetti, 2021).

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Moreover, in addition to U-shaped or hump-shaped results, insignificant results can significantly advance knowledge – as is commonly attributed to Thomas Edison, *"I have not failed. I've just found 10,000 ways that won't work."*

To help companies and investors focus on the drivers of long-term value, it's important to identify the factors that are unrelated to long-term value. However, under the ESG lens, we'd torture the data to squeeze out unambiguously positive or negative results, to attract the attention of ESG cheerleaders or naysayers.

The fifth is to be less quantitative. This, in turn, can lead to research in two directions. One is to gather qualitative ESG assessments, such as the *Best Companies to Work For* survey, just as qualitative analysis has been used for other indicators of long-run value (see Loughran and McDonald (2016) for a survey of the research on textual analysis).

Given that some investors are adopting ESG-by-numbers approaches, qualitative factors are particularly likely to be mispriced by the market and thus associated with long-term returns. The other is to still use numerical data, but to pay attention to quality rather than just quantity.

Using an example on intangible assets rather than ESG, Cohen, Diether, and Malloy (2013) measure the quality of innovation based on the payoffs from past R&D expenditures. This quality-based measure significantly predicts future stock returns, while the mere quantity of R&D spending does not.

The final potential direction is to consider interactions between ESG and other drivers of long- term value. If putting ESG on a pedestal leads to companies paying less attention to these other factors (similar to Schoar's (2002) 'new toy' effect when firms diversify away from their core business), then ESG might be a substitute for other intangible assets such as innovation.

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In contrast, if a focus on ESG encourages management to look beyond short-term earnings to long-term value more generally, then it may complement other intangibles.

6. Implications for teaching

Some business school rankings are now evaluating the ESG content of courses, for example by asking core professors to report how many hours they dedicate to ESG. There are several problems with this practice, which parallel those for business.

First, it reinforces the impression that ESG is niche; courses need separate teaching hours tailored to ESG since the core material just isn't relevant. This is incorrect. As we've discussed, a basic principle of *Finance 101* is that a company is worth the present value of all its cash flows.

Thus, a carbon capture project or a wind farm can be analyzed by established finance techniques. Indeed, it can be justified by them – *Finance 101* stresses how projects should be evaluated with NPV, taking into account all future cash flows, rather than the payback period or accounting rate of return, which focus on the short term.

Another basic finance principle is that the relevant risk of a project is not its idiosyncratic risk, ie. its risk in isolation, but systematic risk that's correlated with the rest of the economy. Climate solutions bear significant technological risk.

But whether the technology fails or succeeds is unlikely to depend on the state of the economy; moreover, since these solutions are crucial for humanity, the need for clean energy should not be sensitive to whether we're in a boom or recession.

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Teaching these core finance principles really, really well may encourage the future leaders of this world to invest in ESG more than dedicated ESG content would.

Certainly, there's a huge wealth of ESG-specific material that won't be covered in the standard core, such as ESG regulations and data sources. But such material may be better suited for electives. Particularly in a core class, carving out specific ESG material may backfire.

It gives the impression that the core business principles, that have been researched and taught for decades, don't apply to ESG, and so an executive or investor who wants to prioritize ESG has to swing in the wind. It also suggests that ESG is a separate topic from creating long-term value, and so it's only relevant for students who want ESG jobs.

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A second concern is that the ranking inputs are entirely self-reported, and thus prone to greenwashing. A finance professor could teach how to calculate NPV of a car factory. Simply by adding a single word, so that it now becomes the NPV of an electric car factory, without changing any of the cash flows, he can now claim he's teaching ESG.

Or he can change the name of a protagonist in a case study to minority and count this as diversity and thus 'S' content. Such a superficial way to evaluate courses will allow schools to move up the rankings through window-dressing, rather than actually improving the content of their courses.

Third, rankings are entirely right to scrutinize the quality of business school teaching. But to adapt a phrase from earlier, as a society we want great teaching, not just professors who teach ESG. There are far more critical ways to improve teaching than adding more ESG content (see Edmans, 2022).

Most business schools put very little weight on teaching in tenure evaluations; some even put a negative weight, at least implicitly, by assuming that if you're winning teaching awards you can't be serious about research.

Teaching ratings predominantly reward entertainment and popularity rather than challenging and stretching students. They're also given straight after the course, rather than at the end of the degree which would allow students to evaluate whether core classes provided a good foundation for the electives, job interviews, and internships – indeed, one of the core principles of ESG is the importance of long-term outcomes.

There are no ratings for whether your teaching is based on rigorous academic research; whether it uses current, real-life examples; and whether it's practical rather than just theoretical.

If you teach the CAPM, you best create social value by teaching the CAPM really, really well – explaining where to get the inputs in the real world, when they're not handed to you in a homework problem; discussing what to do when the CAPM assumptions don't apply, such as investors being undiversified; and explaining how to make decisions when the CAPM predictions don't hold, such as the market being overvalued or undervalued.

Finally, rewarding core professors for teaching ESG disrespects the topic, by suggesting that anyone can teach it, regardless of expertise. One business school ranking has added the question *"How many of your core teaching hours contain climate solutions for how organizations can reach net zero?"*

Net zero is indeed important, but it's so important that it shouldn't be taught by a professor who reads *Wikipedia* for an hour to create a couple of new slides. How to reach net zero is extremely complex and many solutions are technological ones that should be taught by climate scientists or engineers.

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There are certainly finance-related elements, but challenges such as the difficulty in even measuring 'net' or 'zero'; the potential conflict between net zero and asset manager fiduciary duty (see Gosling and MacNeil, 2022); and the trade-off between net zero and other ESG issues, such as mass unemployment of energy sector workers, many of whom can't easily be retrained, require expertise.

Artificial intelligence, machine learning and fintech are also very important topics for the future, and thus could be considered core, but not all core professors should teach them.

Moreover, for the ESG issues that are finance-related, finance expertise is needed to teach them correctly. The professor who claimed that 'climate risk is investment risk. There is no credible other side' is a leading expert in other business fields, but has not published any papers in finance.

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As discussed earlier, *Finance 101* tells us that risks are rewarded, so there's no financial reason to avoid emitting companies. Extremism and refusal to consider other viewpoints are sometimes used to compensate for lack of expertise.

7. Conclusions

ESG is both extremely important and nothing special. It's extremely important since it affects a company's long-term shareholder value, and thus is relevant to all academics and practitioners, not just those with ESG in their research interests or job title. It also affects a company's impact on wider society.

This is relevant for anyone who cares about more than just financial returns, as well as for ensuring that capitalism works for all and safeguarding the public's trust in business.

But ESG is also nothing special. It shouldn't be put on a pedestal compared to other intangible assets that affect both financial and social value, such as management quality, corporate culture, and innovative capability.

Like other intangibles, ESG mustn't be reduced to a set of numbers, and companies needn't be forced to report on matters that aren't value-relevant. Funds that use ESG factors to guide stock selection and engagement shouldn't be lauded over those who study other value drivers, and investors in the latter deserve the same protection.

We can embrace differences of opinion about a company's ESG performance just as we do about its management quality, strategic direction, or human capital management.

And, perhaps most importantly, ESG needn't be politicized. Aggression and hyperbole are signs of weakness, not strength; as Karl Popper noted, *"Whenever a theory appears to you as the only possible one, take this as a sign that you have neither understood the theory nor the problem which it was intended to solve."*

Instead, reasonable people can disagree with each other about the factors that create value for both shareholders and stakeholders. More than that, they can learn from each other, thus enriching our knowledge on some of the biggest challenges facing business and society today. ■

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Endnotes

1. These need not be financial outcomes, but other outcomes (such as patents) that matter for long-term performance.

2. See Bebchuk and Tallarita (2022) for an extensive analysis of the potential problems with ESG-linked pay. The practice might be justified if there is one ESG factor that trumps all other factors, such as carbon emissions for an energy company, and there is little disagreement on how to measure it (Edmans, 2021).

3. For example, Barber, Morse, and Yasuda (2021) find that venture capital funds with both societal and financial goals earn 4.7% lower returns than traditional funds.

4. The two main differences are that equity research studies the long-term value of a company from all sources, not just ESG sources, and also compares the estimated value to the current price to make an investment recommendation.

5. One argument for regulating diversity in particular might be that it is easy to measure, and thus regulate. However, demographic diversity is a poor proxy for cognitive diversity, which many argue to be more relevant for firm value. Moreover, there are many measurable non-ESG factors that are positively or negatively correlated with firm value, such as diversification (Lang and Stulz (1994); Berger and Ofek (1995)).

6. How does "more granular" square with the suggestion to be "more broad"? The latter highlights the value of considering factors outside the ESG umbrella; the former emphasizes the importance of considering a focused set of factors – either a focused set of ESG factors or non-ESG factors.

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Monetary policy tightening and the green transition

Isabel Schnabel argues that unprecedented investments are needed in technical innovations and renewable energy to protect our planet

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The green transition will fundamentally transform our societies[1]. Protecting our planet requires unprecedented large-scale investments in technical innovations and renewable energies to bring our economies on a path towards net zero greenhouse gas emissions.

As our experience over the past two decades demonstrates, the relatively large upfront costs incurred in these capital-intensive expenditures are particularly susceptible to changes in the cost of credit. Low and declining interest rates have measurably contributed to the fall in the 'levelised cost of electricity', or LCOE, of renewable energies[2]. As a result, the cost of electricity from renewable sources is now comparable to, or lower than, that of conventional power plants[3].

These developments now risk being reversed by the marked rise in global interest rates over the past year. Since fossil fuel-based power plants have comparably low upfront costs, a persistent rise in the cost of capital may discourage efforts to decarbonise our economies rapidly.

Put simply, renewable energies are more competitive when interest rates are low[4]. While simulations suggest that the LCOE of a gas-fired power plant would change only marginally if discount rates were to double, that of offshore wind could rise by nearly 45% (Slide 1)[5]. Widening credit spreads may exacerbate these effects in many developing and emerging economies.

The insight that the effects of interest rate changes are not symmetric across economic sectors is not new and it is empirically well-documented[6]. The exceptionally high stakes involved in the green transition, however, have sparked a controversial public debate about whether the current monetary policy tightening may ultimately slow down the pace of decarbonisation.

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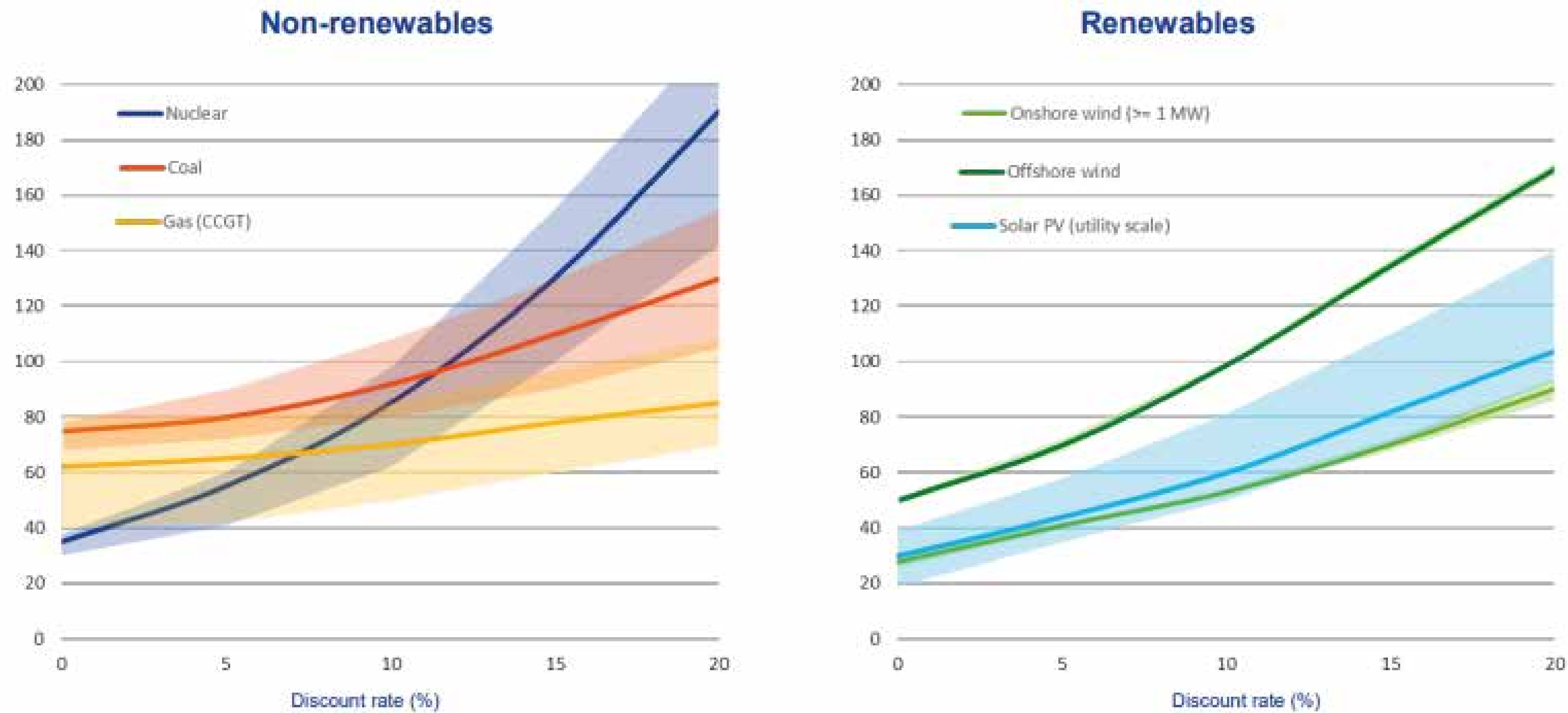
Slide 1. Higher interest rates weigh on price competitiveness of renewable energies



Notes: Lines indicate median values, areas the 50% (20% for renewables) central region.
Source: International Energy Agency, Projected Costs of Generating Electricity 2020.

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Some argue that such tightening may even be inconsistent with the objective of price stability: unless greenhouse gas emissions are cut rapidly, our economies will remain exposed to the risks of 'climateflation' and 'fossilflation' – that is, persistent inflationary pressures associated with more frequent natural disasters and a continued dependency on gas, oil and coal[7].

These concerns must be taken seriously. As they expose a potential dilemma directly relating to central banks' primary mandate of price stability, we cannot ignore them on legal grounds.

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Fiscal policy needs to remain in the driving seat and accelerate the green transition

It is therefore no surprise that climate change features prominently in a symposium on central bank independence. Independence grants central banks significant leeway in their actions. But it also requires central banks to be held accountable – a point that Stefan Ingves highlighted in a speech last year[8]. We need to justify the course of action that we consider as most appropriate in achieving our mandate.

This is what I intend to do in my remarks. I will argue that failing to arrest high inflation in a timely manner would jeopardise the green transition more fundamentally, and that a restrictive monetary policy stance today will benefit society over the medium to long run by restoring price stability.

I will also stress that fiscal policy needs to remain in the driving seat and accelerate the green transition, and that the decline in the ECB's balance sheet as part of our monetary policy tightening requires us to make additional efforts to align our actions with the objectives of the Paris Agreement.

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Green transition can only thrive with price stability

Over the past year, we have moved forcefully to contain inflation by first stopping net asset purchases and then by raising our key policy rates by a cumulative two and a half percentage points. We have also announced that the Eurosystem will no longer reinvest all of the principal payments from maturing securities in the asset purchase programme (APP).

We judge that interest rates will still have to rise significantly at a steady pace to reach levels that are sufficiently restrictive to ensure a timely return of inflation to our 2% medium-term target.

As interest rates rise, financing investments in green technologies will become more expensive, generating the risk that higher costs of capital may slow down the pace of decarbonisation. There are, however, three interrelated reasons why tighter financing conditions are the appropriate response to the challenges we are facing today.

First, current high inflation is a tax on investment. In many countries, it raises the user cost of capital by raising the effective tax rate on business investment[9]. High inflation also increases uncertainty and distorts relative price signals relevant for investment decisions. And it may slow down productivity growth, as occurred in the United States in the 1970s[10].

Therefore, the green transition would not thrive in a high inflation environment. Price stability is a precondition for the sustainable transformation of our economy.

Second, inflation will not subside by itself.

What started as a relative price shock has gradually morphed into a broad-based increase in the general price level. Preliminary inflation data for December point to a persistent build-up of underlying price pressures even as energy price inflation has started to subside from uncomfortably high levels.

To resolve today's inflation problem, financing conditions will need to become restrictive. Tighter financing conditions will slow growth in aggregate demand, which is needed to reduce the upward pressure on prices that has resulted from the long-lasting damage to the euro area's production capacity inflicted by the energy crisis.

By bringing aggregate supply and demand back into balance, we will accelerate the process by which inflation will fall back to our 2% target and thereby ensure that longer-term inflation expectations remain anchored.

Third, the experience of the 1970s shows that a policy that is falsely calibrated on the assumption that inflation will decline by itself could ultimately put the green transition more fundamentally at risk.

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In this case, monetary policy would need to raise interest rates even more forcefully to restore trust in the economy's nominal anchor. In the 1970s, financing conditions tightened to an extent that made capital accumulation prohibitively expensive.

Our current policy is calibrated to avoid such very bad outcomes[11]. A determined reaction to the risk that inflation may become entrenched not only safeguards price stability but also provides the conditions under which the green transition can thrive sustainably.

Indeed, while the cost of credit has become more expensive because of our actions, financing conditions remain favourable from a historical perspective. Measures of real long-term interest rates, for example, which matter most for green investments, remain low in historical comparison (Slide 2).

Accordingly, a large majority of leading climate economists polled last year see only a mild or very mild impact of rising borrowing costs on the transition to net zero emissions by 2050[12].

So far, there is also no evidence of funding shortages for green investment projects. While conventional bond and equity funds have experienced a sizeable decline in net inflows in 2022, the same was not true for environmental, social and governance (ESG) funds (Slide 3, left-hand side). ESG equity funds have even seen sustained inflows.

Such portfolio rebalancing has made green investments relatively more attractive from a funding perspective. In the case of German government bonds, for example, the yield of a green bond compared with that of a conventional bond with similar characteristics has declined, implying that the 'greenium' has reached record levels in absolute terms (Slide 3, right-hand side).

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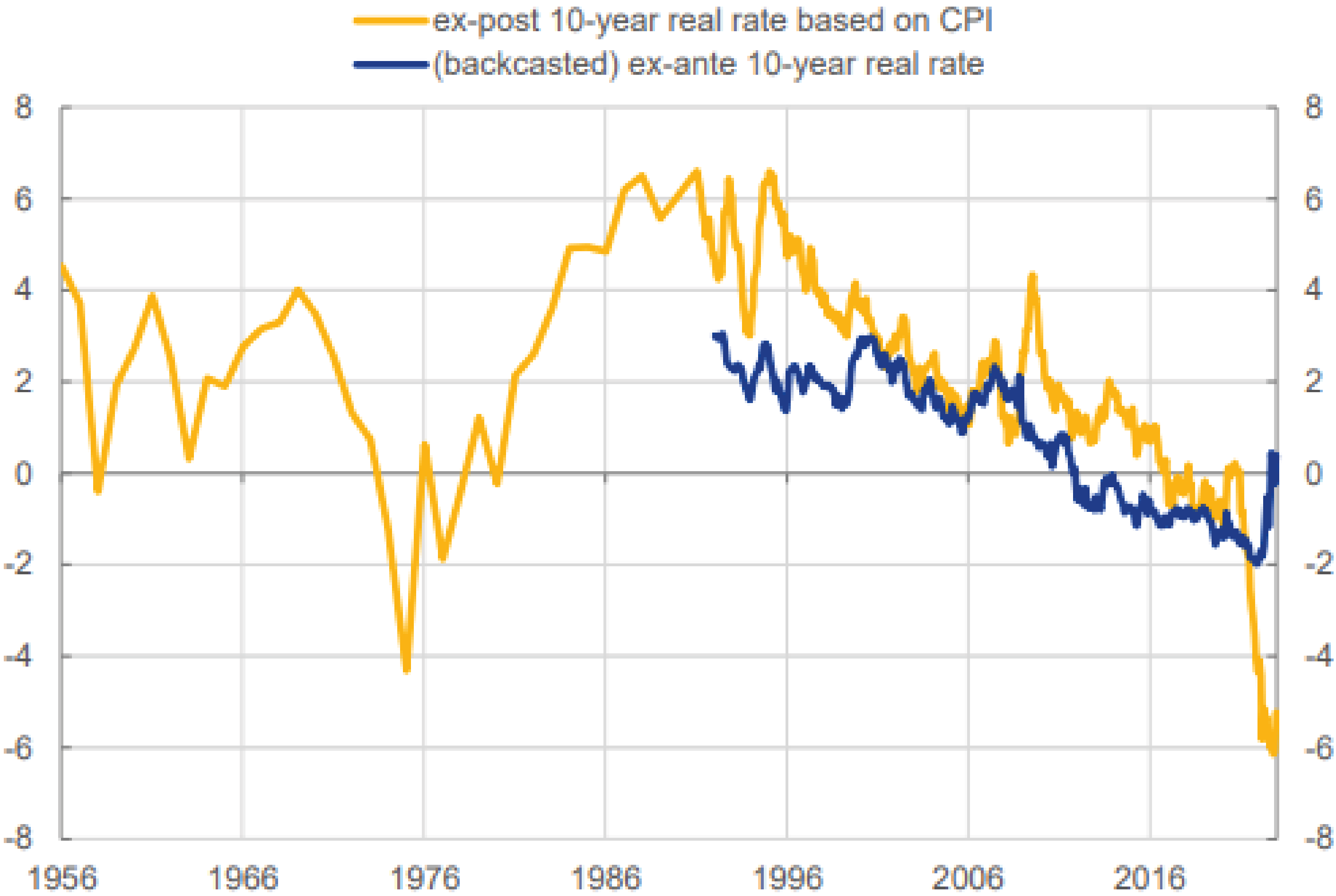
Slide 2. Real long-term yields remain low from a historical perspective



Notes: Real ex-post sovereign bond yields (yellow line) are the difference between the nominal annual yield in year t and realised inflation in year t until 1991 and the difference between the nominal annual yield in month m and realised year-over-year inflation in month m onwards. The real ex-post sovereign yield series is based on GDP-weighted data for Germany, France, Italy and Spain. Data for Italy before 1991, for Spain before 1980 and for Germany and France before 1973 are based on Jordà et al(2019), op. cit. As of August 2005 the ex-ante 10-year real rate (blue line) is computed by subtracting 10-year euro area ILS rates from 10-year OIS rates. Before August 2005 depicted real rates represent 'backcasts' based on a large set of macroeconomic and financial time series going back to 1992. Latest Observation: December 2022.
Sources: Jordà et al (2019), Bloomberg, OECD, Consensus Economics, Eurostat, EPU, Refinitiv, IMF, FRED and ECB calculations.

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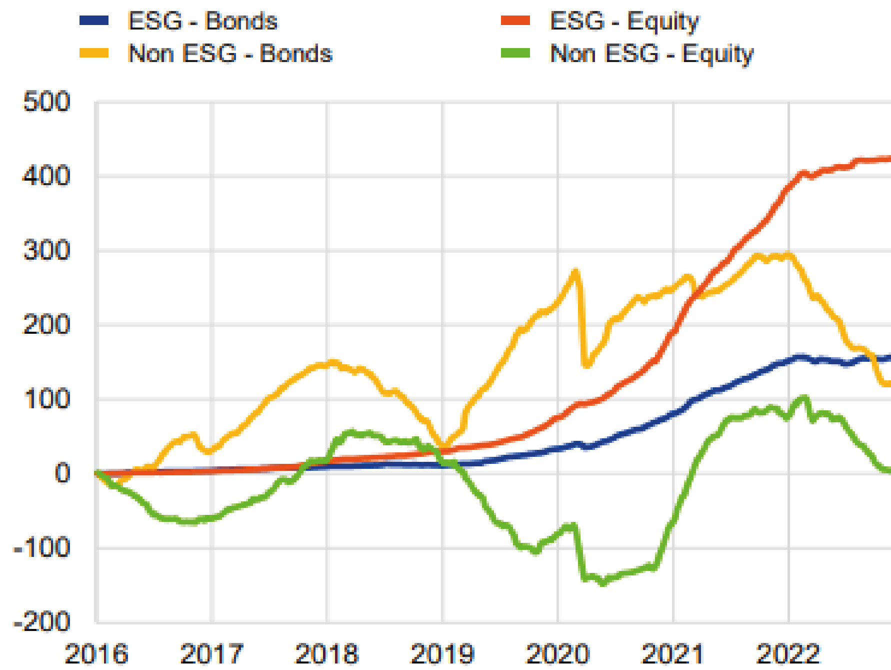
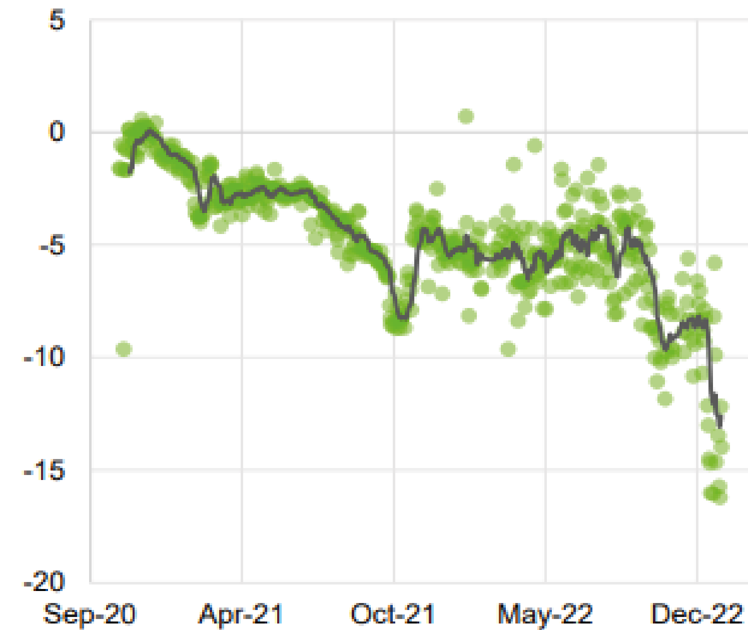
Slide 3. Flows into ESG funds have proven more resilient, boosting the 'greenium'





Notes: The chart shows cumulative flows of euro area domiciled funds covered by EPFR. ESG stands for Environment, Social and Governance. Only funds that are marketed as ESG Funds or indicate that investing in ESGbeingone of their main objectives are included in the EPFR database with the ESG tagging.
Sources: Emerging Portfolio Fund Research (EPFR)

Notes: Chart shows the greenium of the German twin government bond maturing in 2025 over time. Dots show daily observations and the green line indicates 10-day moving averages. Last observation: 6 January 2023
Sources: Bloomberg, ECB calculations

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Recent research also warns firms not to delay the transition as nominal interest rates rise. ECB staff document a positive relationship between the greenhouse gas emissions resulting from a firm's operations and credit risk estimates[13]. That is, firms that do not actively reduce their carbon footprint will face higher risk premia and hence higher borrowing costs at any level of risk-free interest rates.

All this means that it would be misleading to use tighter financing conditions as a scapegoat for further delays in the green transition. By bringing inflation down in a timely manner, monetary policy restores the conditions that are necessary for the green transition to thrive.

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Fiscal policy needs to accelerate the green transition

In this environment, fiscal policy needs to remain in the driving seat when it comes to fighting climate change. Regrettably, many governments failed to use the past years of low interest rates to accelerate investments in greener and more sustainable energy carriers at a pace commensurate with the challenges we are facing.

Hence, the largest impediment to a rapid decarbonisation is not the cost of capital, but rather the considerable lack of progress by governments in implementing prior climate commitments.

The OECD, for example, estimates that global fiscal support for the production and consumption of coal, oil and gas almost doubled in 2021. Russia's invasion of Ukraine has almost certainly led to a further increase in inefficient fossil fuel subsidies to ensure short-term energy security.

Governments must end the reliance on fossil fuels as quickly as possible. They should step up their efforts at a time when average interest costs – thanks to the long period of low interest rates and the extension in bond maturities –

are still projected to remain below growth rates for some time to come, thereby supporting their capacity to foster private and public investments[14].

Viable support schemes for renewable energies and green technologies, such as first-loss guarantees, interest rate subsidies and government-sponsored financing facilities, should be continued and expanded where feasible.

Unlike untargeted, broad-based transfers and fossil fuel subsidies that distort incentives, such measures are welcome from a monetary policy perspective: their positive impact on the economy's productive capacity will help both restore price stability over the medium term and support debt sustainability by boosting potential growth[15].

Several structural measures are equally important.

One is a comprehensive use of carbon prices to spur substitution away from fossil fuels. All else equal, a higher LCOE of renewables requires a higher carbon price to preserve incentives for decarbonisation.

Removing red tape is another area where action is urgently needed. At present, administrative bottlenecks prevent that the rollout of renewables happens at a pace that is consistent with reaching climate neutrality by 2050 at the latest.

Finally, governments should reinforce their efforts to deepen capital markets and create a green Capital Markets Union. ECB research has long shown that stock markets are more effective than banks in supporting the decarbonisation of the economy[16].

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Yet, EU equity markets remain fragmented and often illiquid. Reliance on bank lending at a time of rising constraints on banks' balance sheets considerably reduces the set of options for firms to push ahead with their green agenda.

The European Commission's recent package of legislative measures, including the proposed harmonisation of key aspects of corporate insolvency law and the removal of red tape for companies to list and raise capital on public exchanges, is an important step in the right direction[17].

But further decisive steps are needed to fast-track the establishment of a European green capital markets union[18].

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The ECB needs to intensify its efforts to support the green transition

While governments need to accelerate their efforts to put the economy on a path towards net zero emissions, the drastic change in the macroeconomic and financial environment over the past year also requires central banks to review the scale and scope of their own contribution to the green transition.

Without prejudice to the ECB's primary mandate of price stability, we are obliged to support the EU's general economic policies in line with our secondary objective. We must therefore ensure that all of the ECB's policies are aligned with the objectives of the Paris Agreement to limit global warming to well below 2 degrees Celsius.

Climate actions are still falling short of the Paris objectives

Over the past few years, we have embarked on a demanding journey to make our monetary policy framework climate change-proof. In 2021, we decided on a comprehensive and ambitious set of measures as part of our first climate change action plan and we have begun to deliver on those commitments[19].

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We have started to integrate climate change considerations into our macroeconomic models. We will soon publish new experimental statistical indicators related to climate change. And we will increasingly address climate risks in our risk control and collateral frameworks, including by eventually making climate-related corporate disclosures compulsory for bonds to remain eligible as collateral in our refinancing operations.

The Eurosystem itself will start to disclose the climate change-related exposures of parts of its own balance sheet around the end of the first quarter of this year.

Moreover, we are now tilting our corporate bond portfolio towards issuers with better climate scores, with a view to removing the existing bias towards emission-intensive firms[20].

Although our current actions in relation to climate change are ambitious, they are still falling short of the Paris objectives as they are not sufficient to ensure a decarbonisation trajectory that is consistent with carbon neutrality of our operations by 2050.

Three areas, in particular, require additional efforts.

Greening the stock of corporate bond holdings

First, the ongoing decline in our balance sheet will visibly diminish the effect of some of our actions going forward.

For example, for our corporate bond portfolio we are following a flow-based tilting approach where we adjust our reinvestments of corporate bonds based on a climate score that reflects issuers' carbon intensity, their decarbonisation plans and the quality of their climate-related disclosures.

Our main steering tool in this process is the tilting parameter – that is, the weight we put on the climate score in our benchmark allocation for new purchases. However, the tilting parameter lost part of its punch when we decided to stop net asset purchases (Slide 4). The forthcoming reduction in reinvestments will further significantly constrain the ability of a flow-based approach to decarbonise our corporate bond portfolio at a pace that is consistent with our climate ambitions[21].

The decarbonisation of our corporate bond portfolio depends not only on our tilting parameter but also considerably on the rate at which the firms in our portfolio decarbonise their businesses[22].

For example, assuming full reinvestment, we would achieve only half of the total decarbonisation of our corporate bond holdings by 2030 if firms were to stop taking steps to decarbonise their activities (Slide 5, left-hand side). This effect depends to a significant extent on the actions of a few high-emitting companies (Slide 5, right-hand side).

Together, this implies that by ending our reinvestments, the speed of decarbonisation of our portfolio would slow down substantially and be largely out of our control.

A flow-based tilting approach is thus insufficient to achieve our goal. The Paris Agreement requires a stable decarbonisation trajectory in our portfolio irrespective of our monetary policy stance or companies' individual actions.

We therefore need to move from a flow-based to a stock-based tilting approach for our corporate bond portfolio. This means that, absent any reinvestments, actively reshuffling the portfolio towards greener issuers would need to be considered.

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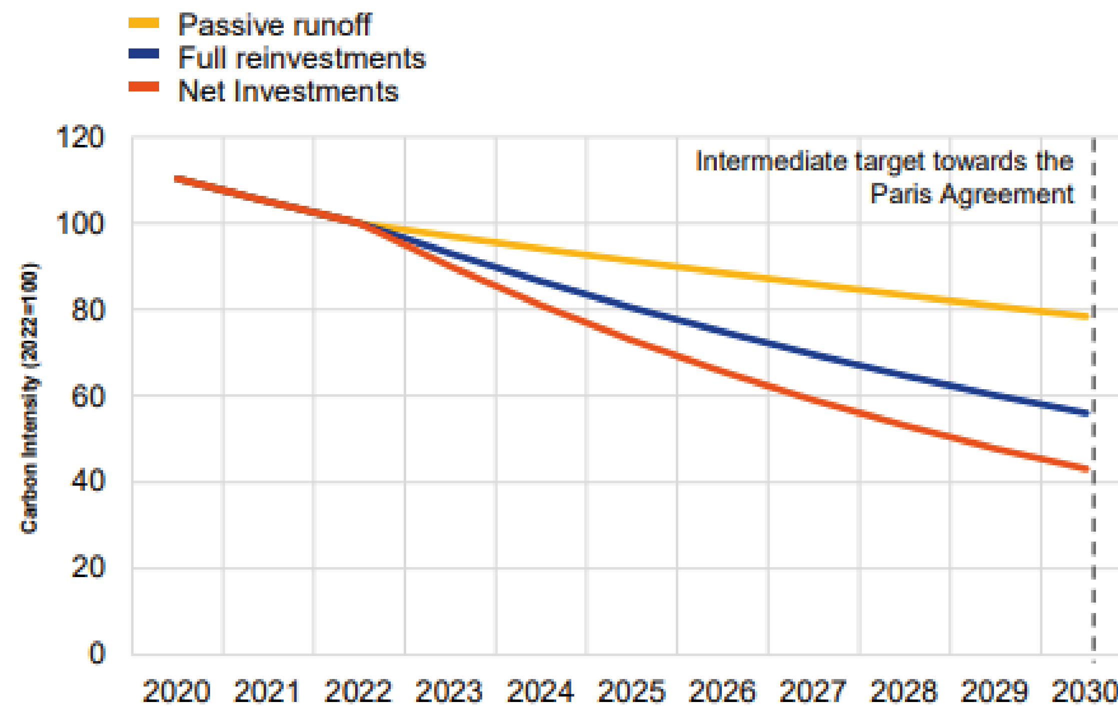
Slide 4. Ending net asset purchases and reinvestments slows down pace of decarbonisation



Notes: Chart shows hypothetical decarbonisation pathways of the CSPP and the corporate PEPP portfolio under different purchase scenarios but identical tilting parameters. Net investments refers to a scenario with net purchases of approximately €2 billion per month. A passive runoff indicates a scenario in which maturing bonds are not replaced in the portfolio. All pathways assume a constant decarbonisation pace and abstract from short-run fluctuations due to the concentration of maturing bonds from high or low carbon emitters in particular years.
Sources: ECB calculations.

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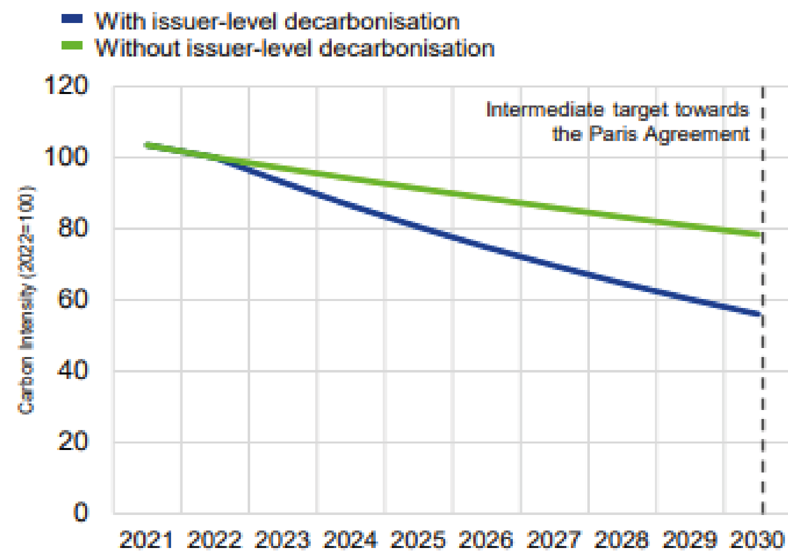
Slide 5. Pace of portfolio decarbonisation strongly depends on firms' own climate efforts

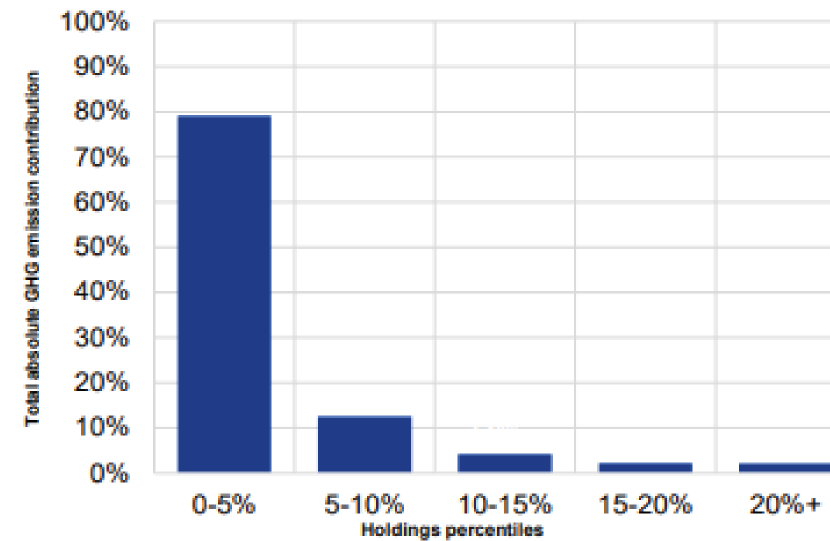
Decarbonisation of corporate bond portfolio under full reinvestment scenario with and without issuer-level decarbonisation

(Carbon intensity normalised to 100 in 2022)



Notes: The analysis simulates a constant annual reinvestment in the CSPP and the corporate PEPP portfolio that prioritises green issuers that are held underrepresented relative to their benchmark allocation. Companies' own decarbonisation efforts are assumed to follow their commitments (7% p.a. for 1.5°C decarbonisation targets, and 3.2% p.a. for well-below 2°C targets, and 0% for all others).
Source: ECB calculations.

Distribution of greenhouse gas emissions by % of corporate bond holdings



Source: ECB calculations. Latest update: 12 December 2022.

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At the same time, we should not divest completely, at least not initially, from those companies whose actions are particularly important in managing the green transition, but rather foster incentives for them to reduce emissions further.

The stock-based approach would also have to apply to other private asset classes in our portfolio, namely covered bonds and asset-backed securities. That requires a framework for assessing the climate impact of such exposures.

Greening our public sector bond holdings

The second question is how to put our public sector bond holdings, which currently account for around half of our balance sheet, on a Paris-aligned path.

Aligning our large public sector bond holdings with the objectives of the Paris Agreement is proving challenging for a variety of reasons. First, purchases of sovereign bonds are guided by the capital key, which limits the scope for tilting strategies based on countries' carbon intensities.

Second, there is not yet a reliable framework in place to assess the extent to which sovereign bond portfolios are aligned with the Paris Agreement. And, finally, the amount of green sovereign bonds is still limited, in particular when compared with the size of our current bond portfolio.

Finding options for overcoming these constraints within our mandate is critical: any attempt to green the stock of our bond holdings needs to include a solution for our sovereign bond portfolio, in particular in the light of the review of the ECB's future operational framework, which is likely to imply a larger steady-state balance sheet, potentially including a structural bond portfolio.

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At present, there are two options to make our sovereign bond portfolio greener in a timely manner.

One is to increase the share of bonds issued by supranational institutions and agencies. A considerably larger fraction of their outstanding bonds is already green (Slide 6).

Tilting our purchases towards green bonds issued by supranational institutions and agencies would be in line with the objectives of the Paris Agreement and would not conflict with the requirement to be guided by the capital key.

The second, complementary option is to steadily reshuffle our sovereign bond portfolio towards green bonds as governments expand their supply of green bonds over time.

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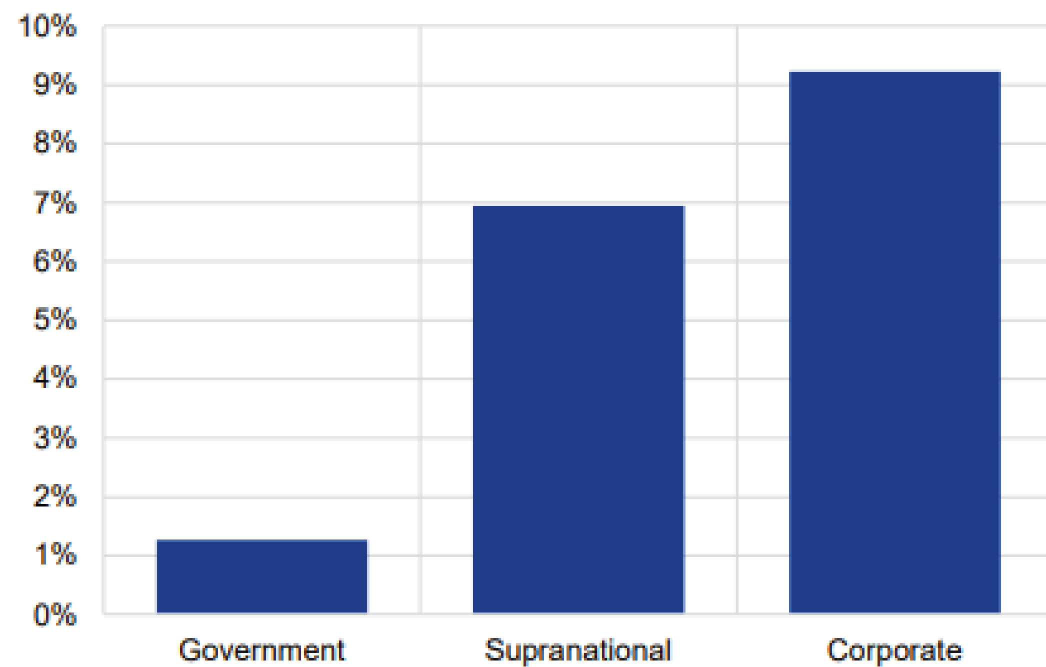
Greening our lending operations

Finally, we need to intensify efforts to green our lending operations, including the collateral framework. As a first step we will limit the share of assets issued by entities with a high carbon footprint that can be pledged as collateral by individual counterparties when they borrow from the Eurosystem. We will also consider climate-related risks when determining haircuts for corporate bonds.

But these measures will have only a small impact on the overall collateral provided by our counterparties. A systematic greening of the ECB's collateral framework is therefore an important tool to ensure that all of our monetary policy actions are aligned with the Paris Agreement, especially in an environment in which we have started shrinking our balance sheet, as this reduces the set of options available to support the green transition during the current tightening cycle.

Slide 6. Green bond universe larger for supranational institutions than for sovereigns



Sources: Bloomberg, ECB calculations. Latest observation: 23 December 2022.

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Green targeted lending operations, for example, could be an instrument worth considering in the future when policy needs to become expansionary again, provided the underlying data gaps are resolved. But they are not an option for the immediate future given the current need for a restrictive monetary policy.

Conclusion

Many central banks globally are responding to current high inflation by tightening financing conditions. While a higher cost of credit will make the financing of renewable energies and green technologies more expensive, it would be misleading to use higher interest rates as a scapegoat for a further delay in the green transition, for two main reasons:

First, restoring price stability in a timely manner provides the conditions under which the green transition can thrive sustainably. And second, the largest barrier to a rapid decarbonisation remains the lack of progress by governments in implementing prior climate commitments.

Governments must remain in the lead in accelerating the green transition. By promoting green technologies and renewable energies, they will enhance the productive capacity of the economy and thereby help restore price stability over the medium term.

In line with our mandate, we stand ready to further intensify our efforts to support the fight against climate change, building on the achievements of our climate change action plan.

Our long-term goal is to make sure that all our monetary policy actions are aligned with the objectives of the Paris Agreement. This means greening our stock of bond holdings, including public sector bonds, as well as our lending operations and collateral framework.

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Greening monetary policy requires structural changes to our monetary policy framework rather than adjustments to our reaction function.

Restoring price stability through an appropriate monetary policy today will benefit society over the longer run and will facilitate the transition to a greener economy. ■

Isabel Schnabel is a Member of the ECB's Executive Board

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Endnotes

1. I would like to thank Benjamin Hartung for his contribution to this speech.

2. See, for example, Egli, F et al (2018), "A dynamic analysis of financing conditions for renewable energy technologies", Nature Energy, Vol. 3, pp. 1084-1092. The "levelised cost of electricity" is a measure of the average net present cost of electricity generation for a generating plant over its lifetime.

3. Fraunhofer Institute for Solar Energy Systems (2021), "Study: Levelized Cost of Electricity – Renewable Energy Technologies", June.

4. Monnin (2015) finds that at interest rate levels above 2%, the average cost of producing electricity is higher for green energy technologies. See Monnin, P (2015), "The Impact of Interest Rates on Electricity Production Costs", CEP Discussion Note, 2015/3, June.

5. International Energy Agency (2020), "Projected Costs of Generating Electricity 2020", December. See also Schmidt, TS et al (2019), "Adverse effects of rising interest rates on sustainable energy transitions", Nature Sustainability, Vol. 2, pp. 879-885.

6. See, for example, Durante, E et al (2022), "Monetary policy, investment and firm heterogeneity", European Economic Review, Vol.148, 104251; and Auer, S et al (2021), "Corporate leverage and monetary policy effectiveness in the euro area", European Economic Review, Vol. 140, No 103943, November.

7. See also Schnabel, I (2022), "A new age of energy inflation: climateflation, fossilflation and greenflation", speech at The ECB and its Watchers XXII Conference, 17 March.

8. Ingves, S (2022), "Inflation targeting for nearly 30 years – a robust framework for all times?", speech before the Swedish Economic Association, 31 May.

9. See, for example, Cohen, D et al (1999), "Inflation and the User Cost of Capital: Does Inflation Still Matter?", in Feldstein, M (ed.), The Costs and Benefits of Price Stability, University of Chicago Press for the NBER; and Andrés, J and Hernando, I (1997), "Does Inflation Harm Economic Growth? Evidence from the OECD", NBER Working Paper, No 6062.

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10. See, for example, Clark, P (1982), "Inflation and the Productivity Decline", American Economic Review, Vol. 72(2), Papers and Proceedings of the Ninety-Fourth Annual Meeting of the American Economic Association, pp. 149-154.
11. Schnabel, I (2022), "Monetary policy and the Great Volatility", speech at the Jackson Hole Economic Policy Symposium organised by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, 27 August.
12. Poll conducted by Reuters among 68 climate economists between 1 July and 13 September 2022. 50 of these 68 experts said rising borrowing costs would have a mild or very mild impact on reaching net zero carbon emissions by 2050.
13. Carbone, S et al (2021), "The low-carbon transition, climate commitments and firm credit risk", Working Paper Series, No 2631, ECB, December.
14. Schnabel, I (2022), "United in diversity – Challenges for monetary policy in a currency union", commencement speech to the graduates of the Master Program in Money, Banking, Finance and Insurance of the Panthéon-Sorbonne University, Paris, 14 June; and Bouabdallah, O et al (2023), "Fiscal policy: from free to affordable lunch", The ECB Blog, 4 January.
15. Schnabel, I (2022), "Finding the right mix: monetary-fiscal interaction at times of high inflation", keynote speech at the Bank of England Watchers' Conference, London, 24 November.
16. De Haas, R and Popov, A (2019), "Finance and carbon emissions", Working Paper Series, No 2318, ECB, September.
17. European Commission (2022), "Capital markets union: clearing, insolvency and listing package", 7 December.
18. See Lagarde, C (2021), "Towards a green capital markets union for Europe", speech at the European Commission's high-level conference on the proposal for a Corporate Sustainability Reporting Directive, 6 May.
19. See ECB (2021), "ECB presents action plan to include climate change considerations in its monetary policy strategy", 8 July; and ECB (2022), "ECB takes further steps to incorporate climate change into its monetary policy operations", 4 July.
20. Following its decision to decarbonise its corporate bond holdings on 4 July 2022, the ECB provided details on the tilting mechanism that was subsequently implemented as of October 2022 (see press release of 19 September 2022). Already in February 2021, the Eurosystem agreed on a common stance for climate change-related sustainable and responsible investment principles for its euro-denominated non-monetary policy portfolios (see press release of 4 February 2021). Empirical evidence shows that the Eurosystem holdings under the corporate sector purchase programme

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(CSPP) are biased towards more carbon-intensive firms as these have larger investment needs and therefore represent a disproportionate share of the investable universe. See also Schnabel, I (2021), "From green neglect to green dominance?", speech at the "Greening Monetary Policy – Central Banking and Climate Change" online seminar, 3 March; and Papoutsi, M, Piazzesi, M and Schneider, M (2021), "How unconventional is green monetary policy?", JEEA-FBBVA Lecture at ASSA, January.
21. The carbon footprint of the stock of corporate bond holdings depends on the net flow of assets, which is determined by not only the amounts of reinvestments following the tilted benchmark allocation, but also the amount and composition of maturing assets in any given month. If there are many redemptions of assets issued by carbon-intensive companies in any given month, this will reduce the overall carbon footprint of the portfolio and vice versa. This may lead to additional fluctuations in the carbon footprint of the portfolio from month to month.
22. The decarbonisation is also affected by conjunctural factors as the drop in absolute emissions during the pandemic has illustrated. At the same time, carbon intensities tend to increase in years with lower economic activity as the numerator (greenhouse gas emissions) falls more sluggishly than the denominator (eg. revenues). A Paris-aligned decarbonisation trajectory would ideally ensure a robust approach that looks through short-run fluctuations in carbon emissions and carbon intensities related to purely conjunctural factors.

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This article is a based on a speech delivered at the International Symposium on Central Bank Independence, Sveriges Riksbank, Stockholm, 10 January 2023.

Scaling up climate finance for EMDEs

The growing impact of global warming reminds us of the urgency of the green transition. Bo Li argues that without decisive action things are set to get worse

Let me first take stock of the wider economic context. We expect 2023 to be another challenging year for the global economy. In our latest IMF *World Economic Outlook*, we expect global growth to fall from an estimated 3.4 percent in 2022 to 2.9 percent in 2023.

In the euro area, the slowdown is even more pronounced — from 3.5 percent in 2022 to an expected 0.7 percent this year before a modest rebound to 1.6 percent in 2024. And despite the recent drop in energy prices, we expect energy security concerns will continue to loom large in Europe.

This speaks to the importance of the green transition—away from fossil fuels that are subject to supply disruptions and volatility, and towards renewables such as wind and solar energy.

The growing impact of global warming reminds us of the urgency. From heatwaves in Europe and wildfires in North America, to droughts in Africa and floods in Asia: last year saw climate disasters on all five continents. The effects of climate change are all around us.

Without decisive action, things are set to get worse because we are clearly not on the right trajectory for cutting global emissions. We need to cut global emissions by 25?50 percent by 2030 compared to pre-2019 levels to contain temperature rises to between 1.5 and 2 degrees celsius.

IMF analysis of current global climate targets shows, unfortunately, they would only deliver an 11 percent cut—less than half of the minimum reduction that is needed. And so we need higher ambition, stronger policies, and more finance for implementation. This last point is where I will focus my remarks.

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Financing needed to meet adaptation and mitigation goals are estimated at trillions of US dollars annually until 2050. But so far, we are seeing only around $630 billion a year in climate finance across the whole world—with only a fraction going to developing countries.

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To deliver on our shared climate goals, we must combine policy reforms, capacity development, and financing arrangements. What we need today is unprecedented cooperation and coordination

This is particularly concerning—because emerging and developing economies have vast needs for climate finance. And it underlines why it's so important for advanced economies to meet or exceed the pledge of providing $100 billion per year in climate finance for developing countries.

This is not just the right thing to do, it is the smart thing to do. Why? Because under a business-as-usual scenario middle- and low-income countries are expected to account for 66 percent of global CO_2 emissions by 2030, up from 44 percent in 1990.

In other words, because climate change is a global problem, it requires coordinated global solutions. So, what can we do to boost financing?

First , focus on the policies that can redirect investment flows from high-carbon projects towards climate friendly opportunities. Here, think of smarter regulation, price signals and well targeted subsidies that incentivize low-carbon investment while paying attention to each country's unique fiscal and macro-financial characteristics.

The second priority is to build capacity. We need to strengthen public financial management and public investment management related to climate projects for policymakers to implement needed reforms. Countries need the capacity to identify, appraise and select good quality projects, as well as to manage relevant fiscal risks.

There is a significant scarcity of high quality and reliable data, harmonized and consistent set of climate disclosure standards, and taxonomies to align investments to climate-related goals. So, capacity building is needed to strengthen the climate information architecture that will help develop and deepen the capital markets and improve the bankability of projects.

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Innovative financial structures can also catalyze technical assistance programs to support the creation of new markets for climate finance by developing guidelines, providing training programs for local stakeholders, and facilitating the adoption of the principles and international best practices in emerging markets.

This brings me to my third priority: innovative financial mechanisms including de-risking instruments and a broader investor base.

At a more granular level, investors who want to deploy capital into emerging and developing economies must overcome a host of constraints. These include high upfront costs and long timeframes associated with climate investments, lack of liquid markets, foreign exchange risk, and scarcity of well-planned and scalable projects.

Overcoming these obstacles requires a change of mindset – from the public sector, the private sector, and multilateral institutions – to revamp the financial architecture so more private finance is pulled towards climate projects.

That means being flexible -- ready to complement a national strategy with a regional strategy as appropriate; or adopt a programmatic approach in addition to the traditional project-based approach in implementation to suit institutional mandates and needs. Above all, public-private synergies will be critical.

Consider green bond funds that can tap into the vast resources of institutional investors by using relatively limited public resources. Such funds have great potential, as the example of the Amundi Planet Emerging Green One fund shows.

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Set up with the support of the International Finance Corporation (IFC) and EIB, the Amundi green fund successfully leveraged private capital by several multiples. And let's not forget the investors who contributed to that success by taking calculated risks, including the IFC and EIB which invested in the equity and senior tranches of this fund.

But this isn't the only way that multilateral development banks can help. Blended finance can play an important role to crowd in public and private sector investors. Public sector, including national governments and multilateral development banks like the EIB, could provide first-loss investments, equity capital, or credit enhancements.

And by prioritizing equity over debt, development partners and multilateral development banks would also avoid adding to the sovereign debt burdens of developing countries.

At the IMF, we have stepped up and embraced the mindset change that is required to tackle climate change.
We have put climate at the heart of our work – in surveillance, capacity development, lending, and in data and diagnostic tools, including the climate information architecture,

In collaboration with the World Bank, the Bank for International Settlements, and the OECD, the Fund is developing operational guidance on the G20 high-level principles for sustainable finance alignment approaches. And the new G20 Data Gaps Initiative will help develop detailed statistics on climate finance and forward-looking physical and transition risks indicators.

On the lending side, our new Resilience and Sustainability Trust (RST) will provide longer-term affordable financing for our vulnerable low- and middle-income members.

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Our goal is that – through the RST – policy reforms, capacity development, and financing arrangement can be delivered in a package used to improve the policy and capacity environment and scale up climate finance by crowding in large-scale private capital.

For example, capacity development can empower policymakers to better identify, appraise, and select good quality projects. And climate-friendly public financial management and public investment management promote accountability, transparency, and more effective spending.

Such measures can not only help governments manage potential relevant fiscal risks from the various financing options – they can also give investors greater certainty that their funds are spent effectively and bring in new, interested donors through improved transparency and governance.

In addition, with the IMF's expertise in macroeconomic and financial sector issues, we are hopeful that we can gather national authorities, multilateral development banks, and the private sector including institutional investors, export credit agencies, and others to identify and explore solutions to broaden the investor base and scale up private finance.

We are already working with some of these partners to see how the RST—by leveraging sound policies and creating additional fiscal space—can promote financing arrangements or facilities that could mobilize large scale private capital.

To deliver on our shared climate goals, we must combine policy reforms, capacity development, and financing arrangements. What we need today is unprecedented cooperation and coordination.

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And each of us has a unique role to play – and we must all step up. Because if we do not deliver on the financing needs of emerging markets and developing economies, we cannot hope to meet the goals of the Paris Agreement. ■

Bo Li is a Deputy Managing Director at the International Monetary Fund

This article is based on a speech delivered at EIB Group Forum 2023, February 27, 2023.

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Climate versus trade?

Reconciling international subsidy rules with industrial decarbonisation. David Kleimann argues that environmental subsidies could be justified

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Executive summary

The vast environmental subsidies that may be required for the transition to net zero greenhouse gas emissions are starting to generate international trade and political frictions between the world's largest economies. This puts (supra-)national industrial decarbonisation efforts on a collision course with international subsidies rules and national countervailing duty (ie. anti-foreign subsidy) laws and regulations.

International cooperation will be essential to defuse such tensions before they escalate and impede effective climate policy rollouts, and before they lead to economic countermeasures that create new barriers to trade in environmental goods. This requires agreement on permissible environmental subsidy practices that minimise distortions.

Meanwhile, it will be crucial to provide financial transfers to assist poorer economies with industrial decarbonisation at the same time as those poorer economies are suffering from the crossborder negative economic impacts of otherwise net-global-welfare enhancing environmental subsidies paid out by wealthy countries.

Various forums can host the technical and political negotiations necessary to set the parameters of net global-welfare enhancing subsidies. These include the G7, the G20, the Organisation for Economic Co-operation and Development, the World Trade Organisation's Trade and Environment Committee and WTO Trade and Environmental Sustainability Structured Discussions, and the Coalition of Trade Ministers on Climate.

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1 Introduction

The greater the benefit conferred on domestic industries, the more likely subsidies will alter competitive conditions in the international marketplace

Environmental subsidies are typically conceptualised as public spending (including governmental revenue foregone and in-kind contributions) that supports the attainment of environmental objectives that would remain elusive if left to market forces (Charnovitz, 2014).

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The greater the benefit conferred on domestic industries, the more likely it is that such subsidies will alter competitive conditions in the international marketplace in favour of the companies on which the benefit is conferred

There is a strong economic argument that subsidies are an essential instrument in the transformation towards the net zero global economy. While taxation can address the negative environmental externalities of emissions (reflecting the polluter-pays principle), it cannot simultaneously correct the externalities associated with green innovation.

As the United Nations Environment Programme (UNEP) pointed out in 2003: *"public financing is essential for the transition to a green economy and more than justified by the positive externalities that would be generated"* (UNEP, 2003). Environmental subsidies could also be justified when emissions taxation (carbon prices) is not feasible or is insufficient due to political economy constraints. In such cases, decarbonisation may require consumer incentives to purchase low-carbon goods and services, and/or producer incentives to invest in the decarbonisation of industrial production processes or increase renewable energy production capacity.

However, this category of subsidies may – proportional to their volume – impact international trade and investment. First, public investment directly linked to the decarbonisation of energy generation and other industrial processes, as well as government incentives for purchases of low-carbon goods and services, will enhance national economies' international competitiveness in decarbonised merchandise trade.

For instance, government funding for the replacement of blast furnaces with electric arc furnaces for steel-making, or incentives for the use of clean hydrogen as an input to steel production, will give a competitive edge to producers of clean steel.

This distortion of competitive conditions will be even greater in jurisdictions that disincentivise high-carbon steel consumption and production through taxation and enforceable carbon intensity standards. In turn, certain subsidy

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schemes that are geared towards industrial decarbonisation are likely to distort the distribution across countries of benefits derived from international trade.

The greater the benefit conferred on domestic industries, the more likely it is that such subsidies will alter competitive conditions in the international marketplace in favour of the companies on which the benefit is conferred.

These circumstances can be expected to generate political tensions. Transatlantic tensions have already surfaced over the United States Inflation Reduction Act (IRA), which subsidises production and investment in renewable technology in the US[1].

Depending on how the US's trading partners react, this could trigger a global subsidies race to attract investments in clean technology and production. This would be particularly problematic in a world in which governments have widely diverging access to the public resources needed to finance national decarbonisation efforts.

Economies characterised by public-resource scarcity could be expected to be hit particularly hard by a subsidised race in clean-technology innovation and industrial decarbonisation. Trade and investment effects could be reinforced by carbon border adjustment mechanisms and other border measures that restrict imports on the basis of the carbon intensity of traded goods, resulting in further market segmentation.

Crucially, however, the negative crossborder economic impacts of environmental subsidies may be outweighed by positive crossborder effects that arise from the same policies. The potential benefits include trade-induced technology transfers, domestic emission abatement and the cost-effective supply of environmental goods.

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In other words, environmental subsidies that alter crossborder competitive conditions may not be all bad. They may tackle market failures in a net-global-welfare enhancing manner and may therefore be entirely appropriate.

Public financing of this category, however, leaves policymakers with a distributional challenge: they must mitigate immediate negative crossborder impacts through least-trade-distortive policy design and/or provide crossborder transfers to finance industrial decarbonisation in public resource-poor jurisdictions, with the goal of ensuring a just net zero transition for all countries and their citizens.

1.1 Governance failures and domestic-content requirements

Environmental subsidies could also create economic damage if mixed with protectionist policies. Such policies often take the shape of local-content requirements that give domestic producers a competitive edge over foreign suppliers, eliminate benefits of competition and therefore frequently result in higher prices, lower quality, less variety and, overall, less availability of undersupplied clean technologies and environmental goods: *"such trade restrictions cannot possibly enhance global welfare, and are also dubious policies for any user country because of the higher costs to domestic consumers and the loss of export opportunities from mimetic foreign practices"* (Charnovitz, 2014).

The applicable World Trade Organisation rules on subsidies – embodied in the WTO Agreement on Subsidies and Countervailing Measures (ASCM) – prohibit the making of subsidies contingent on local-content requirements (WTO, 1994a).

The ASCM was designed precisely to reign in governments' beggar-thy-neighbour public financing schemes by tying their hands when tempted to give in to political siren calls. In this respect, the ASCM retains a clear and functional legal rule disciplining the actions of WTO members.

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1.2 Towards an enabling international regulatory framework for environmental subsidies

The ASCM was not, however, drafted to accommodate net-global-welfare enhancing public investments in the transition to net zero. The ASCM does not provide for a legal shelter for environmental subsidies that may be needed in order to mend the market failure they seek to address, but which also exert negative crossborder trade effects.

The ASCM is biased towards limiting crossborder economic spillovers, even if they are outweighed by positive economic and environmental impacts and the reduction of negative environmental externalities of production.

Three decades after the ASCM was drafted, this omission creates an international regulatory challenge as the governments of the world's economies have begun to disperse hundreds of billions of euros as core elements of climate legislation.

Certain types of public investments that are needed to achieve the transition, however, are likely to be caught up in WTO dispute settlement proceedings or will become subject to national countervailing duties, which the ASCM regulates and explicitly allows for.

These frictions can and should be avoided by all means (section 4). What is needed – beyond enhanced transparency of public financing and empirical analysis thereof – is political convergence among governments on permissible environmental subsidies that minimise negative crossborder economic externalities while maximising positive economic and environmental spillovers.

Beyond the interests of high-income country governments and their taxpayers in limiting the cost to the public accounts of subsidy races, political convergence among a broad set of actors could be facilitated by linking the

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signature and ratification of an agreement on subsidies to credible and specific commitments to financially support poor economies in their national industrial decarbonisation efforts.

2 WTO rules applicable to environmental subsidies

Under the ASCM, a subsidy is deemed to exist if a public body provides a financial contribution in the form of a direct transfer, revenue forgone (eg. tax breaks) or in-kind contributions, and if such a contribution confers a benefit.

A benefit is deemed to be conferred if the financial contribution alters the competitive conditions in the marketplace in favour of the receiving economic operator (Article 1 ASCM; WTO, 1994b).

Yet, the ASCM only restricts subsidies if they are made specific to an enterprise or industry, group of enterprises or industries (Article 2 ASCM), for instance to certain energy-intensive trade-exposed industries (WTO, 1994b).

2.1 Prohibited subsidies

Specific subsidies are outright prohibited if they are made contingent on export performance or the use of domestic over imported goods. Article 3 ASCM thereby gives justice to the notion that export subsidies and subsidies that are subject to local content requirements are a priori considered to be trade distortive (WTO, 1994b).

In WTO dispute-settlement proceedings, a finding of a prohibited subsidy will result in the obligation to immediately remove the subsidy, and the authorisation of countermeasures if the measure is not removed within a reasonable period (Article 4 ASCM).

Subsidies contingent on the use of local content would also violate the General Agreement on Tariffs and Trade's (GATT) national treatment provision provided for in GATT Article III:4 (WTO, 1994b).

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2.2 Actionable subsidies

Specific subsidies that are neither contingent on exports nor the use of local content are merely considered to be 'actionable' under the ASCM. Actionable subsidies are only found to be inconsistent with the ASCM if it can be demonstrated that they distort trade generally, or in relation to the complainant WTO member specifically (Articles 5, 6 and 7 ASCM).

The ASCM provides for legal remedies in case a subsidy is found to cause adverse effects to the domestic industry of another WTO member (as evident from observable effects of the subsidy on bilateral trade volumes, price, revenue, sales, profits, productivity, etc), to nullify the benefits otherwise accruing to that member under the WTO covered agreements, or to cause serious prejudice to the interests of that member (including by displacing or impeding exports or imports that would otherwise occur, undercutting, suppressing or depressing prices, or increasing world market shares of the subsidising member's exports).

If a subsidy is found to cause adverse effects as a result of a finding of injury, nullification or serious prejudice, the subsidy must be withdrawn or the adverse effects removed.

The notable difference between 'injury to the domestic industry' and 'serious prejudice' is that the latter spans a wider set of circumstances than the former, taking into account the effects on international trade generally. The scope of the former concept, in contrast, permits an investigation into, and positive findings, of a subsidy's effect on bilateral trade only.

2.3 The main threat to environmental subsidies: national countervailing (anti-subsidy) duty laws and regulations

An industry on the receiving end of an actionable subsidy may ultimately be subject to countervailing duties (CVD) imposed by a third country government.

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The imposition of countervailing (anti-subsidy) duties requires an investigation by a government agency – conducted in accordance with ASCM provisions – and a finding of injury to the domestic industry producing the like product, measured as effects on bilateral trade volume, price, revenue, sales, profits, productivity and capacity utilisation (Part V ASCM).

Governments frequently employ countervailing duties to address foreign subsidies, compared to relatively rare use of WTO dispute-settlement proceedings.

Given this, the most significant action countering arguably net-global-welfare enhancing environmental subsidies should be expected to take the form of CVDs. In 2022, 291 CVD measures were in force globally, with a sharply increasing trend over the past decade (Figure 1).

About two thirds of all measures in force globally in 2022 were taken by the United States, with Canada (12 percent), and the European Union (8 percent) making for distant second and third places.

Currently, developing countries and China and India are the main targets of North American and European CVD measures. However, US CVDs targeting climate-related subsidies in EU countries have begun to surface recent years (Figure 3).

In sum, WTO subsidy disciplines may be invoked via WTO dispute settlement or national countervailing duty statutes that mirror WTO CVD rules codified in Part V of the ASCM, if the existence of trade effects can be causally linked to public financing that may, nonetheless, have net-welfare enhancing effects.

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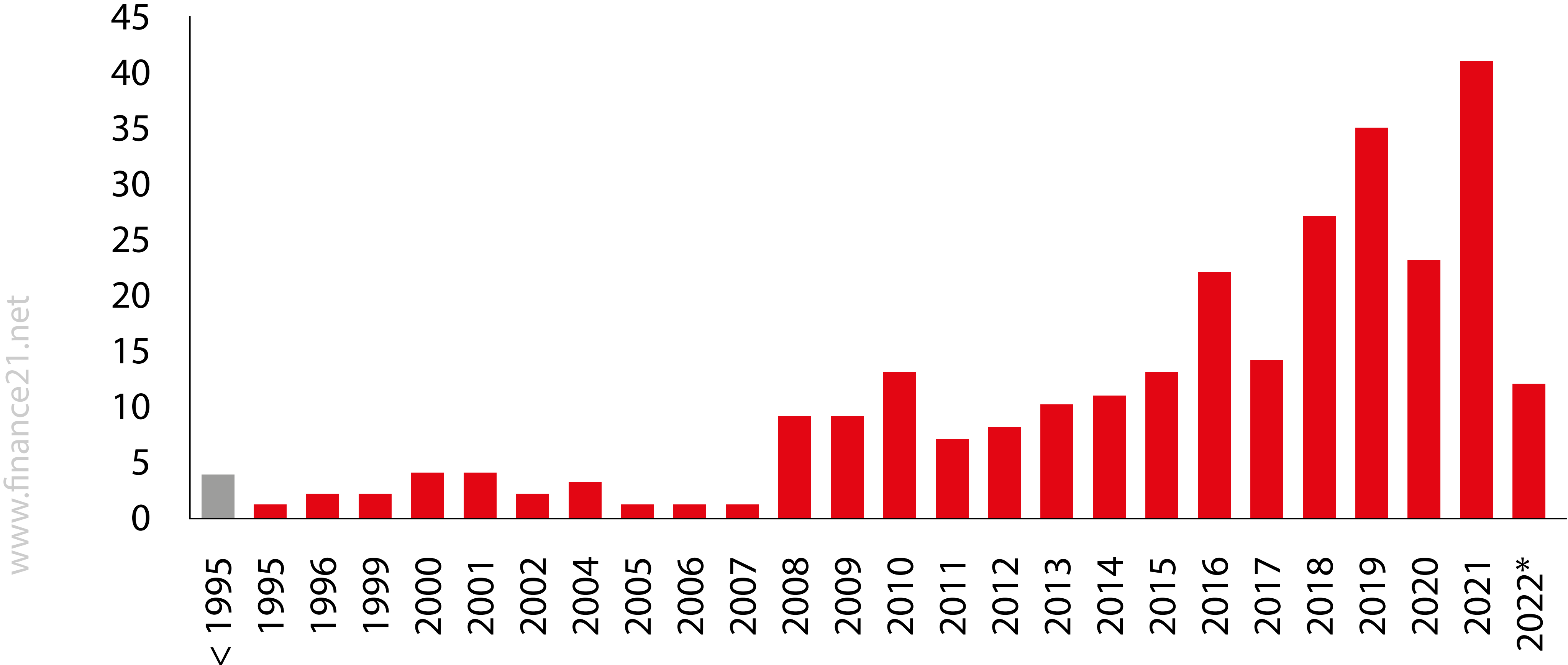
Figure 1. Countervailing duty measures in force on or after 01/01/2022 by year of application



*Source: Bruegel based on WTO. *Data relates to the January to June period only.*

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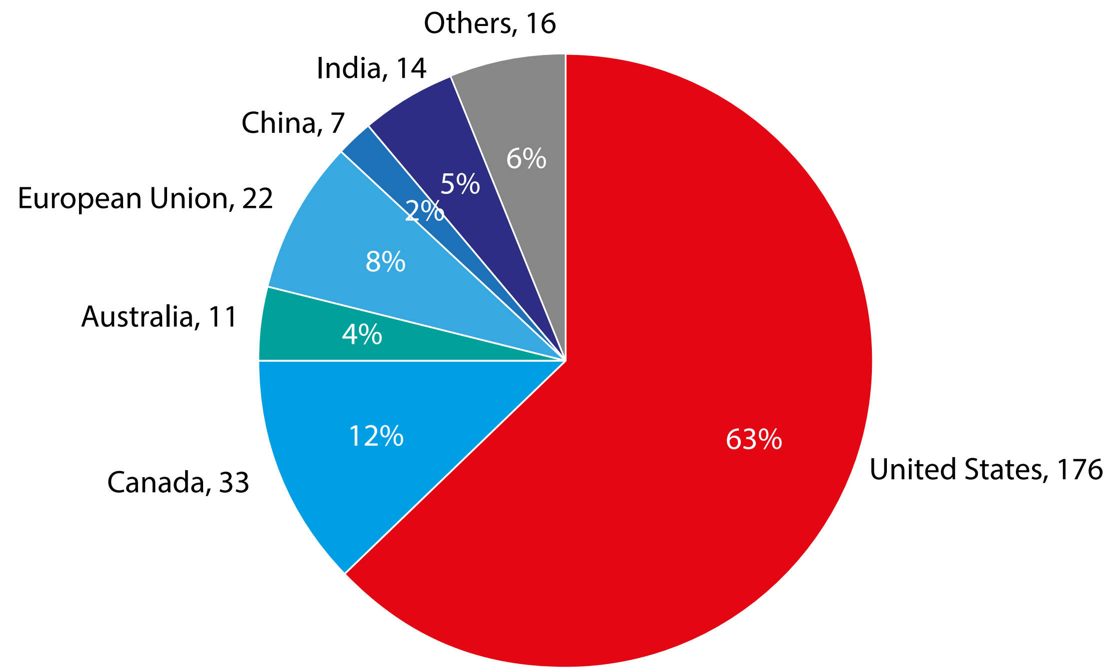
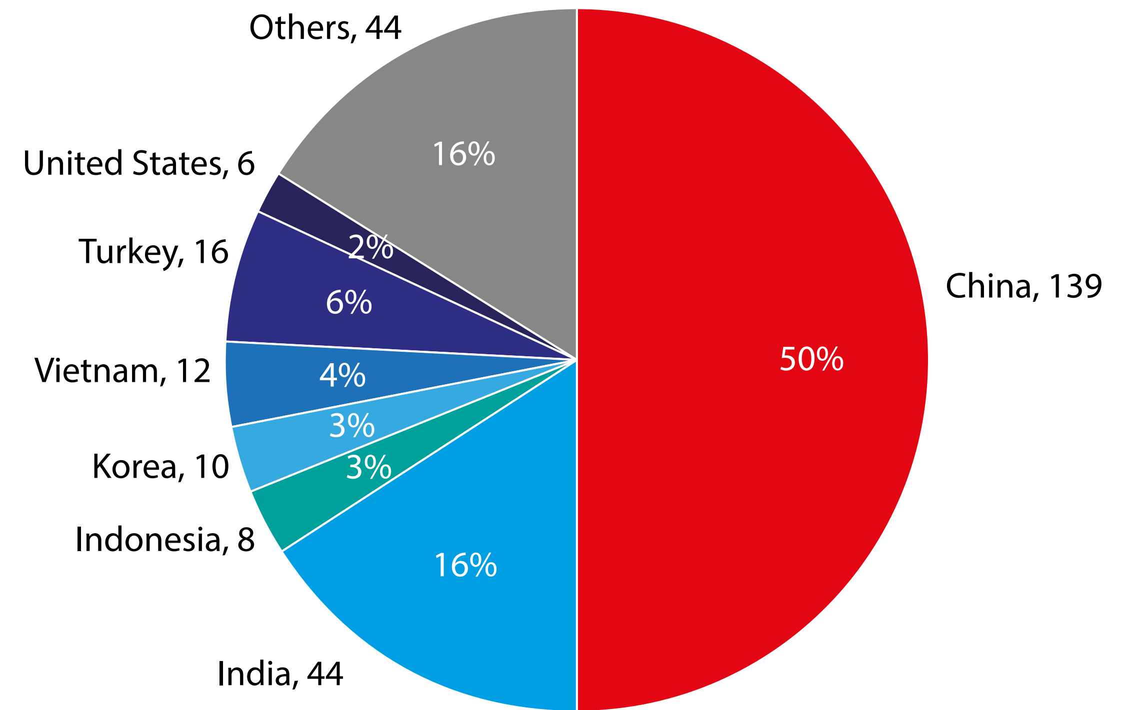
Figure 2. Countervailing duty measures in force on or after 01/01/2022 by reporting member



Source: Bruegel based on WTO.

Figure 3. Countervailing duty measures in force on or after 01/01/2022, by exporter



Source: Bruegel based on WTO.

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2.4 No exceptions for environmental subsidies in international economic law

It is noteworthy, in this context, that the ASCM included a category of 'non-actionable' subsidies covering up to 20 percent of existing facilities' costs of adapting to new environmental regulations or requirements, as well as assistance covering not more than 75 percent of industrial research (Article 8 ASCM). Even this rather limited (and for current purposes insufficient) carve-out expired in 2000, while the rest of the agreement remains in force.

Moreover, unlike the GATT, the ASCM lacks general exceptions of the kind codified in GATT Article XX, which include the protection of legitimate policy objectives such as *"the conservation of exhaustible natural resources"* (WTO, 1994b).

While the question of the applicability of Article XX GATT to the ASCM has not been concluded in WTO dispute-settlement proceedings, the prevalent legal opinion leans strongly towards a negative answer (Rubini, 2012).

This would, crucially, prevent access to legal justifications for net-global-welfare enhancing environmental subsidies that otherwise generate negative economic externalities.

3 Contemporary environmental subsidies in the context of the ASCM and national countervailing duty statutes

As noted in the previous section, environmental subsidies may distort international trade even if they aim at, and result in, decarbonisation and do not feature a priori prohibited regulatory qualifications, such as domestic content requirements.

The likelihood that subsidies will have such effects increases commensurately to the extent that transfers, concessional loans, tax incentives or in-kind contributions directly support the decarbonisation of domestic

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production capacities, or are coupled to domestic per-unit production (in contrast to, for instance, consumption subsidies, the financing of research and development, or of public infrastructure for technological innovation).

Trade effects that can be linked to otherwise net global welfare maximising – and therefore entirely appropriate – environmental subsidy schemes render such financing vulnerable to legal challenges under the WTO dispute-settlement mechanism.

A faster and therefore far more frequently employed alternative is offered by national trade defence instruments (so-called trade remedies)[2] in general, and by countervailing-duty ('anti-subsidy') statutes in particular. These national laws and regulations frequently mirror WTO members' rights and obligations, as codified in Part V of the ASCM.

They allow WTO members to adopt duties to counter third country subsidies[3] that cause or threaten to cause injury to their domestic industries (WTO, 1994b), as long as they – de jure and as applied – comply with the rights and obligations set out in Part V of the ASCM.

Most government agencies tasked with countervailing duty investigations (ie. to determine whether the domestic industry suffers from injury caused by a foreign subsidy) and the adoption of countervailing-duty measures retain discretion in their final decisions, even if the result of the investigation is positive. European Union institutions, for instance, must take into account the 'Union interest'[4].

In sharp contrast, in the United States, the legally defined process applying to the investigation of third-country subsidies and adoption of countervailing duties is quasi-automatic and compulsory once an industry petition to investigate reaches the US Department of Commerce (Department of Commerce, 1994).

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This circumstance may explain partly why the United States remains – with 175 out of 291 countervailing measures currently in force globally – by far the most frequent user of CVDs.

As a 2022 episode around US solar panel imports from four southeast Asian (ASEAN member) economies demonstrated, the inflexibility of the US countervailing-duty statute may not only create a barrier to subsidised (and therefore commercially cheaper) environmental goods, but also harms US companies engaged in processing and installing the goods (in this case, solar panels).

In this case, the industrial self-harm expected to result from the effect of the countervailing duties requested by a single US company (Auxin Solar Inc.), forced US President Joe Biden, in an unprecedented course of action, to adopt an executive order pausing the adoption of respective measures for two years, while employing a highly questionable 90-year old legal basis providing the president with emergency powers (White and Case, 2022).

Several other (quasi-) legislative acts exemplify the tensions between potentially legitimate domestic industrial interests, the imperative to support the development of environmental technologies and the urgency of decarbonising industrial capacities.

First, the 2022 European Commission Guidelines on State Aid for Climate, Environmental Protection and Energy provide EU national authorities with a framework for permissible financing of – inter alia – environmental technology development and the decarbonisation of energy supply and current industrial production processes, for up to 100 percent of the funding gap (European Commission, 2022).

With respect to current industrial production, the Commission guidelines mirror the rationale of the now-expired Article 8 ASCM. While it is widely acknowledged that non-discriminatory subsidies to incentivise environment-

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related R&D and energy supply are part of the first-best policy response to the given market failure, the decarbonisation of industrial production capacities (eg. steel or cement production plants) would, in theory, arguably be dealt with more efficiently by imposing levies on industrial emissions only, eg. via the EU emissions trading system (ETS), including to give effect to the polluter-pays principle.

The Commission guidelines implicitly acknowledge this dissonance (paragraph 93). The Commission argues, however, that *"State aid can, in principle, be an appropriate measure in achieving decarbonisation goals, given that other policy instruments are typically not sufficient to achieve those goals (…). Given the scale and urgency of the decarbonisation challenge, a variety of instruments, including direct grants, may be used."*

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From an economic and environmental perspective, decarbonisation subsidies aimed at maintaining existing domestic industrial capacities may be, at least partially, justifiable. But, be that as it may, public financing of the decarbonisation of industrial production capacities makes exports that benefit from such support a clear target for the standard third-country national countervailing-duty statute.

Second, transitional free emission allowances provided to energy-intensive trade-exposed sectors allocated under emissions trading systems, are already subject to US countervailing duties with respect to allowances provided under the EU ETS and South Korea's ETS, as upheld for Korea by the US Court of International Trade[5]. This is despite those allowances only conferring a benefit in context of domestic regulatory restrictions applicable to other sectors.

While these countervailing duties offer a political side-effect of incentivising the phase-out of free allowances provided to the highest emitting industries in the EU and Korea, they disincentivise third-country regulatory pilot projects of a nature similar to the ETS, where free allowances are provided during a transition until the effect of carbon pricing on potentially strategic sectors is more discernible.

In the case of US CVDs against EU steel exports, in addition, the US also imposes duties against certain German climate and energy-efficiency related tax breaks[6].

It is noteworthy, in this context, that the 2020 EU ETS state aid guidelines (European Commission, 2020) enable a budget of more than €60 billion to compensate for ETS-induced energy costs of energy-intensive, trade-exposed sectors such as steel, aluminium and certain chemicals, to prevent companies in these sectors from relocating carbon-intensive production to 'polluter havens' outside of the EU.

These subsidies, which are an important element of the European Green Deal, would similarly fall within the scope of the US CVD statute, which knows no environmental exceptions.

Third the currently unfolding EU subsidy response to the US Inflation Reduction Act, too, will likely result in US business petitions to the US Department of Commerce requesting CVD investigations against EU industries that export goods benefitting from EU funds and state aid[7].

Fourth, in 2026, the European Commission will review the possibility of a WTO-compatible modus operandi for the adoption of export refunds for domestic carbon costs. The purpose of such export refunds is to level the playing field for carbon-priced EU exports and third-country exports that are not subject to carbon pricing in their home jurisdictions.

As a result, export refunds help mitigate the risk that carbon-intensive EU production migrates to 'polluter havens' outside of the EU. Moreover, export refunds are arguably a crucial element of a prospective international CBAM network, with a view to effectively pricing carbon embedded in internationally traded goods.

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Export refunds for domestic regulatory charges, however, are likely to fall within the scope of the ASCM export-subsidy prohibition, and would not be exempted by footnote 1 of the ASCM, which otherwise provides an exception to the export-subsidy prohibition for the reimbursement of indirect taxes at the border upon export.

In another example, an uncapped amount of US federal tax credits allocated to suppliers of clean hydrogen contingent on domestic production has drawn considerable criticism from EU officials (Internal Revenue Service, 2006).

This includes demands that the scheme, which is provided for in the 2022 US Inflation Reduction Act, be transformed into a non-discriminatory consumption subsidy, which would render the instrument less distortive to trade and investment that may otherwise lead to a CVD response from third-country governments.

The arguable climate and net-global-welfare benefits of the above-mentioned policies clearly distinguish these instruments, however, from the inherently discriminatory domestic content requirements that are embedded throughout the US Inflation Reduction Act (CRS, 2022), and which led – in addition to substantive criticism from European Commission (Internal Revenue Service, 2022), Japanese and South Korean officials – French finance and economy minister Bruno Le Maire to call for a response in kind[8].

Such a response could be achieved by making EU countries' environmental state-aid payouts conditional on local content shares, constituting the welfare-reducing mimicry predicted by Charnovitz (2014; see section 1). Environmental subsidy nationalism and respective subsidy races must be considered the least-best policy option.

As noted above, domestic sourcing requirements attached to otherwise environmentally beneficial payouts render such financing less efficient from an economic point of view, and less effective from a climate point of view.

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It is in this regard, specifically, that WTO subsidy rules and national trade remedy laws and regulations remain functional and appropriate, because they are sufficiently restrictive as in: a priori prohibitive.

4 The challenge: creating an enabling international framework for environmental subsidies

WTO litigation and national trade-remedy laws and regulations place stumbling blocks in the way of urgently needed government climate-policy rollouts. Mending this unfortunate situation is as urgent as it is difficult.

A 2022 IMF, OECD, World Bank, and WTO report on subsidies, trade and international cooperation noted that: *"better understanding of the objectives and effects of various types of subsidies will further the development of rules and norms. Fact-based dialogue among governments—drawing on high-quality impartial inputs that elucidate the effects of particular subsidies on trade and investment and identifying subsidy designs that reduce negative international spillovers—will lay the critical groundwork for improved or expanded international rules"* (IMF, OECD, World Bank, and WTO, 2022).

With this, the international governmental organisations have not only identified the priorities for themselves, but also for non-governmental organisations with respective capacities:

1. Data collection to generate transparency of public financing of the transition to net zero in G20 economies; conduct analysis of the immediate environmental and economic impacts of subsidies, and of the crossborder positive and negative externalities;

2. Draft proposals for categories of permissible first-best, legitimate second-best and impermissible green-subsidy practices;

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3. Raising political awareness among key constituencies and stakeholders, foster public and private dialogue, and inform bilateral, plurilateral and multilateral exchanges and negotiations.

4.1 Transparency and analysis of G20 public financing of the green transition

Private non-profit organisations may be necessary to support international organisations in the tasks of generating subsidy transparency and providing analysis.

Indeed, private bodies should be considered as complementary collectors and analysts of subsidy data in general, and in relation to environmental subsidies in particular.

From a WTO perspective, the urgency for research NGOs to step in arises because subsidy analysis falls outside of the organisation's remit, while data collection has fallen victim to dysfunctional subsidy notification requirements and unreliable member government notifications.

As the Chair of the WTO Subsidies and Countervailing Measures Committee reported in October 2022, 89 members — more than half the WTO membership — had still not submitted their 2021 subsidy notifications. In addition, 76 members had still not submitted their 2019 subsidy notifications, while 65 had failed to submit their 2017 notifications (WTO, 2022).

The OECD, on the other hand, has done exceptionally valuable work on agricultural, fisheries and fossil-fuel subsidies over the past decades[9]. The organisation has only begun to collect and analyse sector and value-chain-specific data in the field of industrial subsidies with an – at this point – anecdotal focus on environmental impacts relative to crossborder market distortions (Sauvage and Garsous, 2022).

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These efforts require cooperative complementation through private initiatives. Private organisations such as the Global Trade Alert (GTA), for instance, have conducted impartial data collection and analysis on new barriers to international trade since the global financial crisis of 2007-08 in order to monitor protectionist developments[10].

A similar initiative should take monitor and analyse the economic and environmental impacts of G20 public financing of the decarbonisation of industrial production, power generation and respective vulnerabilities under current and prospective international subsidy disciplines, benefitting from the experience and methods of OECD and GTA researchers.

4.2 Drafting an informed set of reform proposals and policy recommendations

In parallel with the process of data collection and analysis, there is currently an absence of proposals on draft best practices and on international subsidy rules reform.

Ideally, such proposals would carve out more than the currently existing policy space for environmental subsidies that are appropriate to rapidly expedite the decarbonisation of industrial production and power generation and, in their positive global-net-welfare effects, outweigh immediate negative economic externalities.

Such proposals could take the form of an expanded Article 8 ASCM carve-out for the decarbonisation of existing production capacities, a set of technical guidelines for subsidy best practices, recommendations for national trade remedies reform, draft political agreements among the governments of the 20 largest economies not to impose countervailing duties (and not to challenge in WTO dispute settlement), certain types of 'green-light category' environmental subsidies of third countries, or all of the above.

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These proposals should – last but not least – include suggestions for crossborder transfers and project-specific funding for the industrial decarbonisation of economies located in public-resource-poor jurisdictions that suffer from short term negative spillovers caused by the public investments of OECD and G20 countries.

4.3 Political process, forums and communication

It may seem elusive to tackle the challenge of environmental subsidy agreement negotiation via a multilateral negotiations track and respective forums – ie. the WTO Subsidies and Countervailing Measures Committee and WTO Trade and Environment Committee.

However, it makes for the necessary – because inclusive – starting point with a view to gathering government support for both the reform process and substantive proposals.

Beyond the multilateral track, the most recent wave of WTO plurilateral initiatives in general, and the Joint Statement Initiative regarding the Trade and Environment Sustainability Structured Discussions (TESSD) in particular11, could host a useful process and forum with a view to jump-starting urgently needed exchanges and inspiring like-minded governments that desire political convergence.

Having already formed an initial Informal Working Group on Subsidies, the TESSD provides a space in which research NGOs could inject valuable analysis and policy proposals to work towards political convergence on evidence-based policy proposals.

At the same time, climate NGOs can be instrumental in communicating problem statements and proposing solutions to policymakers and stakeholders in key political constituencies around the world, with a view to generating a critical mass of political support among G20 and OECD governments.

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In addition, the recent inception of a Coalition of Trade Ministers for Climate may – depending on the agenda that is currently in development – provide for useful forum for discussions and even negotiations of an urgently needed international agreement on environmental subsidies[12]. ■

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Endnotes

1. For background on the Inflation Reduction Act's implications for the EU see Maria Demertzis, 'The EU response to the United States Inflation Reduction Act', Bruegel, 1 February 2023.

2. See the WTO's Trade Remedies Data Portal.

3. See the WTO's database of Countervailing Measures.

4. As specified in Article 31 of EU Regulation 2016/1037 on protection against subsidised imports from non-EU countries.

5. On the EU ETS, see Jesse Kreier, 'Countervailing the EU's Emissions Trading Scheme, Part 2', International Economic Law and Policy Blog, 17 December 2022. For court proceedings on South Korea's ETS, see https://www.courtlistener.com/docket/63128503/50/dongkuk-steel-mill-co-ltd-v-united-states/.

6. For court proceedings, see: https://www.courtlistener.com/docket/63175250/48/1/bgh-edelstahl-siegen-gmbh-v-united-states/.

7. See Samual Stolton, 'Vestager proposes 'urgent' state aid reforms to keep business in EU', Politico, 13 January 2023.

8. William Horobin and Albertina Torsoli, 'France Says EU Should Respond in Kind to Biden's EV Subsidies', Bloomberg, 26 September 2022.

9. See https://www.oecd.org/subsidies/.

10. See https://www.globaltradealert.org/.

11. See https://www.wto.org/english/tratop_e/tessd_e/tessd_e.htm.

12. For details on the Coalition of Trade Ministers on Climate, see Jonny Peters and Ignacio Arróniz Velasco, 'Where next for the Coalition of Trade Ministers on Climate?' E3G, 19 January 2023.

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Development debates in a historical perspective

Globalization is changing. José Antonio Ocampo argues that the United Nations should be at the centre of a revitalized multilateralism

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The concept 'development' was originally thought in strict economic sense – as rising per capita income. Under the United Nations leadership, it came to encompass its social and environmental dimensions: the International Labor Organization developed the concept of 'basic needs' in the 1970s, and the United Nations Development Program that of 'human development'.

The environmental dimensions of development were also gradually incorporated and led to a broad concept of 'sustainable development' that in the United Nations terminology includes the economic, social, and environmental dimensions, as incorporated in particular in the 'sustainable development goals' approved in 2015.

Development economics was born in the 1940s and 1950s in Eastern Europe and Latin America, the two regions of the developing world that had achieved an intermediate level of development. Paul Rosenstein-Rodan and Raùl Prebisch are clear examples. From the start, it was associated with broader intellectual economic debates, particularly on the role of the state in economic policy, which had made a push forward in the 1930s with the Keynesian revolution.

The United Nations played an important role in development thinking and in advising developing countries at the time. ECLAC was an early leader in this regard, with Prebisch as the intellectual leader. The UN also became the centre of the debates on the need to reform the world economic system. Since its creation, UNCTAD played a crucial role in this regard.

The ideas put forward by the new field of economics took place in a world economy that was already highly unequal in terms of levels of development, and characterized by a division of labour in which developed countries were exporters of manufactures and developing countries of primary goods.

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This was behind Prebisch's view of the world system as a 'center-periphery'. In his view and that of Hans Singer, one feature of that system was the tendency for the terms of trade to move against primary goods and, thus, of developing countries.

We should add that the basic conception of classical development economics was the need to industrialize to accelerate economic growth and technological change: the 'Industrialization Consensus', as I have called it, to borrow from the contrasting term which came to be called the 'Washington Consensus'.

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The United Nations should be the centre of a revitalized multilateralism, both to manage the geopolitical but also the sustainable development challenges well captured in the SDGs, one of the major agreements in world history

In terms of macroeconomic issues, a major topic was how export fluctuations were a major source of periodic balance of payments crises in developing countries. Given their strong dependence on the imports of machinery, equipment and many intermediate goods, the availability of foreign exchange was also seen by some classical development economists as a long-term constraint to growth (balance of payments constraint on growth.

The strong role of external trade in the macroeconomic dynamics of developing countries, and the subsidiary role of domestic demand, the issue most underscored by the Keynesian revolution, is that I have come to be called 'balance of payments dominance', gain in contrast with the concept of fiscal dominance that has played a central role in the macroeconomic literature.

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The 1960s and 1970s led to three significant changes.

a) The world economy started to offer developing countries increasing opportunities to export manufactures. This led to an increasing differentiation between those countries that were able to benefit from that trend and those that continued to depend on exports of primary goods.

b) Rise of a new brand of orthodox economics critical of state intervention. It included a strong criticism of import substitution. It was also critical of other forms of state intervention – eg. in the financial sector, against what this school referred to as 'financial repression'. The orthodox views were codified in what came to be known as the 'Washington consensus'.

c)The third trend was the return – for the developing countries particularly in the 1970s – of private international capital flows, which had collapsed with the Great Depression in the 1930s.

However, the volatility of those flows became a problem of its own and implied a return to boom-bust financial cycles and associated crises, starting with the Latin American debt crisis of the 1980s. Such volatility became therefore a central element of the 'balance of payments dominance' that affects developing countries.

The first and third were part of a 'globalization' process, which offered very unequal opportunities to different groups of developing countries, with successful manufacturing exporters from East Asia leading the process but other countries experiencing slower growth, including processes of 'premature de-industrialization'.

Globalization also generated crises that involved a large number of countries: the 1997 East Asian crisis that spread to large parts of the developing world; and the North Atlantic financial crisis of 2008-09; the COVID-19 crisis, which was perhaps the most global, but its origins are not economic, and was followed by the current crisis.

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The international division of labour and the terms of trade debate

In Prebish's 'centre-periphery' system, and the views Hans Singer, a major characteristic of the world economy was the tendency of the terms of trade of commodities – and thus of developing countries – to experience a long-term decline.

This represented a major break with the views of classical economics (David Ricardo, in particular), according to which the laws of diminishing returns in primary production and the increasing returns in manufacturing implied that the terms of trade of primary goods would show a long-term improvement vis-à-vis manufactures.

The Prebisch-Singer Hypothesis, as it came to be called, can be understood as involving two different theoretical variants.

The first drew on the negative impact that the low income-elasticity of demand for primary commodities – and particularly, agricultural goods – had on the terms of trade of developing countries.

The second – and, in my view, a more interesting one – was based on the asymmetric functioning of factor markets in the developed vs. developing countries: the fact that the second group of countries faced a labour surplus – what in Arthur Lewis terminology came to be known as an 'unlimited supply of labour'.

The fundamental difference between the two variants was that, in the first case, the downward pressure was reflected directly in the barter terms of trade, whereas, in the second, it was generated through factor markets – the factorial terms of trade – and only indirectly, through the effects of production costs on commodity prices.

Another important difference is that the first variant applied only to primary commodities, whereas the second should affect all goods and services produced in developing countries. Singer posed it very clearly in 1998: the terms of trade between standardized manufactures produced by developing countries would also tend to deteriorate relative to the innovative products of developed countries.

This meant that, even though developing countries could industrialize and produce manufactures, the fact that these products were standardized meant that they did not create new economic rents. Instead, the rents associated with innovations were captured by developed countries' entrepreneurs.

The concept of labour surplus fitted well the complementary terms-of-trade theory of Arthus Lewis, according to which the international terms of trade were determined by relative wages in developing versus developed countries, which were determined, in turn, by the levels of productivity in the production of food (or of subsistence goods in general) in the two groups of countries.

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As pointed out, according to the second variant, the trend in the terms of trade was not associated with the types of goods produced but rather with the structural characteristics of the countries that produced them.

The North-South models developed in the 1980s, by Ronald Findlay and Lance Taylor, among others, formalized this analysis. A common feature of these models was that, due to differences in economic structures, wage increases in the North were proportional to the rise in productivity, while the unlimited supply of labour implied that real wages were not affected by technological change, which was then 'exported' to the rest of the world through lower prices.

The expansion of world trade also offered since the 1960s opportunities for the diversification of primary good exports towards goods of higher income elasticity of demand and value added. This included manufactured goods, as well as an array of perishables – fruit, vegetables, and flowers – the development of which required special transportation and handling.

On top of the now well-established view on the features of the centre-periphery system, the literature identified since the 1980s the risks of 'Dutch-disease' effects of commodity booms and, in particular, the de-industrialization processes that they could generate. Latin America is the best example of this process. But it also limits the industrialization of Sub-Saharan Africa.

In relation to the empirical validity of the P-S Hypothesis, the literature written up to the end of the 1970s was ambivalent. A breakthrough was a World Bank 1988 paper by Enzo Grilli and Maw Cheng Yang, who showed that there was indeed evidence of a long-term deterioration in real non-oil commodity prices through the twentieth century. This paper became a milestone in the debate.

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The later empirical literature has reinforced this conclusion, although indicating also that that the adverse trend of the commodity terms of trade was a feature of the twentieth century (particularly after World War I), not of the nineteenth or the twenty-first centuries.

In turn, the adverse trend in the twentieth century is largely explained by two major downward shifts: one after World War I and the other in the 1980s. In both cases, these adverse shifts represent the delayed effects of sharp slowdowns in world economic growth.

An additional conclusion is that the adverse price trend in the twentieth century was particularly strong for tropical agricultural goods. This literature also showed that, beyond short-term fluctuations, there are long-term cycles of commodity prices (as long as 30 years).

From the Industrialization Consensus to market reforms, and to a revival of industrial (production sector) policies
An important implication of the P-S Hypothesis is that the transmission of technological change in the world economy was 'relatively slow and uneven'.

Therefore, industrialization was the principal means at the disposal of developing countries to share in the benefits of technological progress, absorb surplus labour from the rural sector, and raise through both of these mechanisms the standard of living of their population. For the intellectual leaders behind this Hypothesis, the case for industrialization was thus broader than the issues associated the tendency of the terms of trade.

In Prebisch's view, it was essential to speed up technological transfer from the centre to the periphery, and in Singer's analysis to exploit the strong technological externalities generated by manufacturing. The terms of trade

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debate may have side-tracked the discussion from what remained for several decades a broader consensus on industrialization.

An interesting parallel discussion was Alexander Gerschenkron theory of 'late industrialization' of Western Europe. The major challenges required strong state intervention (but perhaps the industrialization of England also did, according to research by Ha-Joon Chang). But the challenges are greater for the 'late-late industrialization' of Latin America and Eastern Europe or Asia, and the 'late-late-late industrialization' of Sub-Saharan Africa.

Industrialization was, of course, a major challenge in many ways, as it took place in an unequal world economy.

The first was that technology had to be imported, but also that there were learning process associated with technology transfer, a point strongly emphasized since the 1980s by Jorge Katz and Sanjaya Lall.

Additionally, imported machinery was more capital intensive than what made sense for the developing world, given their abundant labour supply and lower wage costs.

Industrialization also involved significant linkages among sectors, which required policies that could help develop them.

It also involved macroeconomic issues, particularly how to finance the long-term capital required by industrial sector, and using export income in order to finance imports of capital goods.

A central element of state intervention to support industrialization in the developing world at the time was protectionism. It had been at the centre of US policies since its independence. And it became a rule in the last

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decades of the nineteenth century in many developed countries and in several politically independent developing countries, particularly in Latin America.

In turn, the Great Depression of the 1930s led to the explosion of protectionism worldwide and to the collapse of international trade. In this context, looking at the opportunities that domestic markets provided to encourage industrialization through import substitution was not only natural but, in a strong sense, the only alternative available.

The rising anti-colonialist movements in Asia and Africa and the de-colonization process that took place in the post-World War II years, gave industrialization and protectionism an additional political push in those parts of the world, as an expression of national self-determination.

Furthermore, the reconstruction of world trade after World War II concentrated initially on flows among industrial economies. The opportunities for developing countries, particularly for manufacturing exports, came only in the 1960s, and benefited those countries where industrialization was already underway, thanks to prior import-substitution processes.

The idea that the structural transformation of the economies implied industrialization was at the centre of the work of Simon Kuznets, and in relation to the development process of that of Hollis Chenery, who became the first Chief Economist of the World Bank in the 1970s.

This institution came to be one of the centres of analysis on this issue, as reflected in the first *World Development Report*, particularly the second, published in 1979, on *Structural Change and Development Policy*.

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More generally, the link of industrial development to long-term economic growth became one of the strongest observed 'regularities' in development.

The implementation of the 'Industrialization Consensus' faced, of course, major challenges, some of which have already been mentioned.

The first was that technology, and the machinery and equipment in which it as embodied, had to be imported. An alternative was attracting the firms that controlled the technology through foreign direct investment.

Strong support for domestic firms, including with protection and export subsidies, was a necessary complement – in the latter case, when export opportunities opened up.

Additionally, given the capital intensity of imported technologies vs. abundant labour supplies, developing countries developed dualistic economic structure, in which some labour would be employed in the productive sectors, but a large proportion were left in the traditional agricultural activities or were absorbed in a growing urban informal sector.

To be successful, industrialization also required the creation of significant linkages among sectors, which generated externalities and required policies to help develop those linkages. This implied that the development process was characterized by major complementarities, in wide contrast to the emphasis on substitution (in the choice of consumers or the selection of production techniques) emphasized by neoclassical microeconomic theory. Albert Hirschman classified the associated complementarities as a mix of 'backward' and 'forward' linkages.

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The idea that there are strong complementarities gave rise to another series of concepts that came to occupy a central role in classic development debates. The most important were Paul Rosenstein-Rodan's 'big push' (1943) and Ragnar Nurkse's 'balanced growth' (1961).

In both cases, the central idea was the need to design a policy package that involved the simultaneous development of complementary industries. In contrast, Hirschman argued that this required developing countries to implement policies that were beyond their capacities.

As an alternative, he formulated the view that the development process takes place through a sequence of imbalances, which implied that the policies it required were sequential rather than simultaneous (Hirschman, 1984). In his view, imbalances actually played a positive role if they generated policy innovations and induced investments to correct them.

The opportunities for export development, particularly from the 1960s, introduced a new element in the development debate. Chenery became in the late 1970s a leading thinker in arguing that the use of those opportunities was an important source of success in the developing world.

He claimed that sustained economic growth required a transformation of the structures of production compatible with both the evolution of domestic demand and the use of the opportunities provided by international trade.

The call for greater integration into international trade was made in a radical way by more orthodox thinkers, and particularly by his successor as Chief Economist of the World Bank, Anne Krueger, who argued that protectionism associated with import substitution policies generated inefficiencies, and particularly an 'anti-export' bias that

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reduced growth opportunities. Trade liberalization and full integration into international trade was thus essential for developing countries to accelerate economic growth.

An interesting contrast was made by development economist who studied the East Asian export experience. Alice Amsden argued that export performance generated a 'reciprocal control mechanism' that allowed incentives generated by government policies to be aligned with performance.

Her work, as well as that of Ha-Joon Chang and Robert Wade on the East Asian success stories indicated that they were associated with active government development strategies aimed at diversifying manufacturing exports towards sectors with higher technological contents.

Therefore, these success stories were export-led but also involved strong state encouragement of industrialization. Since the late twentieth century, China adopted, with a lag, similar policies, in equal or even more aggressive ways.

The contrast was that of the countries that did not, and followed the recommendation to stronger trade liberalization. This led to the experiences of 'premature de-industrialization', particularly of Latin America.

The opportunities for export development did not eliminate, therefore, the classical case for industrial policies, as part of active industrialization strategies, though they certainly changed the type of industrialization needed. The revival of industrial policies over the past decade or so, is behind this way of thinking.

My understanding of this issue is that, borrowing from Kuznets, Chenery and the classical development economists, growth is always a process of structural transformation. A successful policy must be based, therefore, on the dynamic efficiency, understood as the capacity to generate new waves of structural change.

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This concept is in sharp contrast with static efficiency, the central focus of traditional microeconomic and international trade theories. It requires state intervention but also innovative ways of interaction between the public and the private sectors, as emphasized in her recent work by Mariana Mazzucato.

The dynamics of production structures may be understood, therefore, as the result of the interaction between two basic forces:

> *Innovations*, broadly defined as new technologies, new activities, and new ways of doing previous activities, and the learning processes that characterize their full realization and their diffusion through the economic system.
>
> The *complementarities* underscored by classical development economics, and the networks of production activities that they generate – 'value chains', as they have come to be called. The public and private sector institutions required to enhance these structural processes are crucial, and also subject to learning.

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No innovative process is passive: it requires investment and learning. This is an important lesson from the work of Jorge Katz and Sanjaya Lall. As the recent work of Keun Lee emphasizes, climbing up the ladder in the world hierarchy entails shortening technology transfer periods, taking 'detours' to manage existing intellectual property rights and, most importantly, gradually becoming a more active participant in technology generation.

In broad terms, it requires national innovation systems to be built up, which should include an institutional framework to coordinate the various actors engaged in innovation and learning – research and development centres, universities, extension services, and the innovating firms themselves. And it requires, of course, strong state investments in science and technology.

Two final comments on global trends are in place. The first is that the ongoing shift away from manufacturing into services is transforming the global economy. The rise of modern services, especially those associated with Information and Communications (ICT) technologies is as essential as manufacturing and has been at the centre of recent successful development experiences.

We also know that at high levels of income the dynamics of services eventually overtake that of industrialization, and that the revolution in ICT has induced major changes in manufacturing itself. These issues, as well as the innovations that take place in primary sectors and the value chains in those sectors that were discussed in the previous section, should certainly be at the centre of development strategies.

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There are, of course, other technological waves that are equally important, notably that to generate energy that is consistent with global climate change goals, and those that are associated with new biological technologies and their effects on both medical treatment and agriculture. This is why a prefer to talk about the need for 'production sector policies' and not only industrial policies, which in a sense focus on manufacturing.

The second is that world trade slowed down significantly since the 2008-09 North Atlantic financial crisis. To this we must add the disruptions of value chains generated by the COVID crisis (nearshoring) but also by new waves of protectionism, particularly the between the US and China. All of these have generated both threats to existing trade patterns, the effects of which are re-shaping globalization.

Macroeconomic policies and development

In the initial stages of development economics, the major macroeconomic issues were the availability of savings to finance the investment needed for industrial development, and as the foreign exchange required to pay for the imports of machinery, equipment, and intermediate goods that that process required.

With the return of capital flows and the growing role of domestic private finance, the attention increasingly focused on how to manage the boom-bust cycles in private flows, avoiding also possible domestic financial and international debt crises.

In the debates that characterized the early decades of development economics, the first of these issues involved the management of fluctuation in commodity prices and, from a longer-term perspective, how savings or foreign exchange gaps could affect the growth process.

In relation to commodities, an important proposal was the possibility of moderating price fluctuations with the creation of international commodity agreements. Although there were precedents since the 1920s, the creation of commodity agreements became a strong trend in the mid-1950s and early 1960s after the collapse of the commodity price boom that had taken place in the early post-World War II period, some with several consumer countries participating in those agreements.

The Organization of Petroleum Exporting Countries (OPEC) was created in 1960, but its decisions in the 1970s to reduce oil supplies, which generated two major price shocks, contributed to the lack of support of consuming countries for commodity price agreements in general.

Domestic stabilization funds are also essential to manage commodity price fluctuations. They save commodity export revenues during price booms to have them available when the succeeding crises hit. One of their objectives was stabilizing domestic commodity prices, with taxes or forced savings imposed on producers during booms, matched with compensatory subsidies or refund of forced savings during crises.

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A good example was the Colombian National Coffee Fund, created in 1940 to manage domestic effects of the Inter-American Coffee Agreement. The Norwegian oil fund is generally recognized today as the best instrument of this kind, but several oil exporting countries have similar instruments.

Another good example is also the series of Chilean stabilization funds for its main export, copper, the first of which was launched in 1987. But these stabilization funds are missing in most commodity-exporting countries.

From a long-term perspective, the essential issue is the possibility that the availability of foreign exchange would become a major constraint on economic growth. A basic issue underscored by classical development economics was the effects of the asymmetry between the high income-elasticity of the demand for imports by these countries vs. the low elasticities of demand for their export goods, particularly for several commodities.

Under these conditions, the availability of foreign exchange could become the basic determinant of economic activity. The work of Anthony Thirwall has been the most influential in the analysis of this issue. This underscores the role that active export strategies and, more generally, structural diversification plays in overcoming possible foreign exchange gaps.

The development of national development banks, as well as public-sector investments in new industrial sectors came to occupy an important place in managing these issues in several developing countries.

A central issue today is how to manage capital account volatility. The literature on this topic has identified a sort of hierarchy of volatility of capital flows, with FDI being the more stable, and short-term bank lending and portfolio flows the more unstable, according to Dani Rodrik and Andres Velasco, among others.

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In this context, the major risk that developing countries face is the possibility of a 'sudden stop' of volatile financial flows (Guillermo Calvo), which can generate 'twin crises' (ie. combined external and domestic financial crises) if the abundance of external financing has generated a parallel boom in domestic financing.

The management of external financial cycles require active counter-cyclical fiscal and monetary policies. In the first case, the best is the design of fiscal rules that determine the medium-term trajectory of the fiscal balance and debt ratios but allow for deviations around that trend to counteract positive and negative terms of trade shocks to smooth the fluctuations in aggregate domestic demand.

However, the domestic political economy tends to generate pressures in most developing countries to spend in good times, which in turn limit the policy space to adopt expansionary policies when crises hit. The limited availability and higher costs of financing may also constrain counter-cyclical fiscal policies during crises.

If austerity policies are adopted as a result, the political pressure to expand during the subsequent upswing in economic activity would be strong. For these reasons, and in contrast to developed countries, pro-cyclical fiscal policies tend to prevail in developing countries.

In the case of monetary policy, counter-cyclical policies face two major dilemmas. The first one is that, if domestic interest rate or monetary aggregates in a counter-cyclical way, they may increase rather than reduce the volatility of capital flows –ie. bring more capital flows during booms if monetary authorities increase interest rates to reduce domestic demand, and generate more capital flight during crises if they reduce interest rates.

For this reason, the recommendation of the traditional macroeconomic literature is to let exchange rates be flexible. Expressed in terms of the 'trilemma' of open economies, in economies with open capital accounts, the authorities can control the exchange rate or the interest rate, but not both.

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However, this generates a second dilemma, because of the negative effects on growth that the appreciation of the exchange rate during booms may generate, both through the reduction of investment in tradables sectors in the short term but also to the unstable incentives generated by the instability of the exchange rate in the long term.

In other words, this policy may contribute to the 'Dutch Disease' effects of export booms. A growing literature has shown that long-term growth in developing countries is positively associated with the capacity to guarantee a competitive and relatively stable real exchange rate.

The limitations that monetary policy faces in open developing economies generate a case against full capital account liberalization and to actively use regulations to manage the associated volatility.

The broad agreement that capital market liberalization generates stronger business cycles in developing countries was supported by a major 2003 International Monetary Fund (IMF) study led by Eswar Prasad.

There is also strong evidence and a broad consensus in the literature that capital account regulations help improve the composition of capital flows toward less reversible flows and provide room for countercyclical monetary policies.

The IMF's 'institutional view' on capital account management, adopted in 2012, accepted that the full liberalization is not always desirable, and that regulations can play a positive macroeconomic role to manage capital account volatility.

Capital account regulations must be complemented at the domestic level with regulatory policies aimed at avoiding unsustainable credit booms and managing maturity and currency mismatches in portfolios. The provision of countercyclical financing at the national level is also crucial.

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National Development Banks can play a counter-cyclical, aside from their long-term development goals, in fact counteracting the pro-cyclical character of private financing at the national level.

The current crisis

The current crisis has many dimensions, underscored by the concept of 'polycrisis', which has become a fashionable term. I will concentrate on the economic dimensions, but many are associated with the geopolitical tensions, particularly of the war between Russia and Ukraine, but also the growing tensions between the US and China. In economic terms, they involve at least seven effects:

- The remains of the COVID-19 crisis, including because of large inequalities in the access to vaccines and the possible effects of the elimination of the Chinese on restrictions to mobility.
- The mix of inflation and interest rates, and the possible recessions (although not quite stagflation).
- The food crises in many parts of the developing world, largely generated by the effects of the war in Ukraine, but also to natural disasters associated to climate change.
- The worldwide rise of interest rates and rising risk margins that generated an outflow of capital from emerging economies in 2022.
- The high debt ratios generated by the COVID crisis but also by high interest rates, which has generated debt crises in many developing and emerging economies.
- The reversal of climate change policies generated also by the war in Ukraine, as well as the clearly insufficient efforts to adopt policies to reach the climate change goals reached in Paris in 2015.
- The changes in world trade that are taken place due to the slowdown in international trade, the disruptions of value chains generated by the COVID crisis (nearshoring) but also by new waves of protectionism, particularly the between the US and China. To this, we must add the inward orientation of China.

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In the face of these events, let me end with comments on three urgent policy issues:

- The need to improve international tax cooperation, improving on the 2021 agreement in the OECD Inclusive Framework, in its two dimensions: limiting tax competition and fair taxation of multinational companies. To these we should add combating tax evasion.
- The need for counter-cyclical financing of developing and emerging economies, including in that regard the central role of Multinational Development Banks. To this add the need for my active Official Development Assistance and adequate funds to finance climate change mitigation and adaptation.
- Both permanent institutional frameworks to renegotiate public sector debts, but also a new ad hoc mechanism to manage the current debt crises.

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We could add that globalization is changing, both due to economic and geopolitical events. A major issue, as argued by Dani Rodrik, among others, is that it should be more friendly to developing and emerging economies. The rupture of multilateralism is the major constraint in this regard.

I want to underscore that the United Nations should be the centre of a revitalized multilateralism, both to manage the geopolitical but also the sustainable development challenges well captured in the SDGs, one of the major agreements in world history. ■

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Reaching full potential: overcoming the financing squeeze

Abebe Aemro Selassie discusses the impact of COVID-19 on African countries, the financing challenge, implications for long-term investment, and how it can best be navigated

MIND THE GAP

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The pandemic, for the most part, is behind us. To be clear though, the economic consequences of the pandemic continue to be felt acutely in most African countries. Unlike much of the rest of the world, these countries had limited ability to use fiscal and monetary policies to dampen its negative effects on their populations. And subsequent efforts to regain lost ground have been frustrated by the adverse external developments.

The region is facing a brutal financing squeeze. To be sure, this is not unique to African countries. But this region is the one that can least afford the implications of this squeeze, given Africa's much-higher level of poverty and remaining development gaps.

In fact, my worry is that the current financing challenge is one that looks set to endure. And unfortunately, beyond the odd nod of the head here and there, this is not something that is being acted upon with the seriousness and urgency that it needs—either by the international community or the region's policymakers.

Certainly, awareness is not in line with the profound implications for our futures. And I dare say that it is not garnering much attention by the academic community.

If I sound a bit melodramatic it is because an obsession of mine is the belief that, one way or another, this will be the African Century. Africa is where I think much of the incremental global demand for investment and consumption will happen in the coming years—if only because the region is where all incremental global population growth is set to happen. A process well in-train.

In the rest of my remarks, I intend to expand on the financing challenge as I see it, and how best it can be navigated.

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I. How did we get here

I'd like to start with a story. And like most great stories, this one has a classic arc that can be organized into three acts.

Act 1: a newish beginning—in rough terms, 1990 to 2006 was a period of much market-friendly reforms, high volumes of aid flows, and an opening of political space. This engendered a marked pick-up in economic growth and significant improvements in development indicators.

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Much additional revenue mobilization in the near-term is likely to be devoted to reducing fiscal deficits rather than making space for incremental spending

Act 2: the price of success. I think it was Arvind Subramanian who once noted: growth begets more growth. And so it was that, as economic growth accelerated, confidence and investment opportunities increased. Debt relief from official and multilateral creditors under the Heavily Indebted and Poor Countries (HIPC) and Multilateral Debt Relief (MDRI) schemes made significant contributions.

From the mid-2000s onwards, this was followed by quite a lot of financing flows to the region—from both official and private sources. And from the side of country authorities, the availability of increased financing made it possible to start addressing long-standing development needs. The consequence was a marked increase in the level of public debt in most countries in the region.

Act 3: the tide goes out. Thus, it was that, by 2015-16, many countries were already close to the edge. And few could have anticipated the scale of the shocks that were to follow. starting with the COVID-19 pandemic.

The impact on the region's funding outlook was immediate and devastating. Spreads widened sharply—more than twice the increase associated with the global financial crisis on 2008-09. Private portfolio inflows were quickly replaced by outflows, and in the face of urgent pandemic-related needs, many authorities found themselves without the finance to mount an adequate response.

Indeed, in contrast to the extraordinary fiscal support seen across most advanced-market economies, Africa's reaction to the crisis was much more constrained.

To be sure, some debt service payments to G20 bilateral official creditors were temporarily postponed under the Debt Service Suspension Initiative (DSSI). And both the World Bank and the IMF rapidly ramped up their concessional lending.

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Following the onset of the crisis, for example, the amount of finance provided to Africa by the IMF during 2020-21 amounted to over $70 billion, several multiples of the financing provided over the preceding 10 years. And these resources served as an important safety net for the region.

Coupled with the agile and bold measures undertaken by the region's leaders to contain the pandemic, these funds helped contain the greater damage that the pandemic would have otherwise wrought. But we are now at the point where this surge in support has dried up.

I have painted a rather linear picture of the complex and varied developments and processes that have got us here, with a lot of generalization. It is so that I can get to the conjuncture quickly.

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II. What exactly is the problem?

Put simply, the region's most pressing economic problem right now is the funding squeeze. This reflects several factors: loss of external market access after a brief post-pandemic respite and, indeed, capital flight from some countries; adverse effects of Russia's invasion of Ukraine (particularly on food prices and fuel-importing countries); continued declines in official development assistance; and much lower flows from China and other new sources of financing. The domestic cost of funding has also gone up, limiting recourse to that alternative.

This is not just an immediate concern but can have lasting effects with implications for longer-term development. During the recent crisis—unlike major advanced economies—Africa had limited fiscal space, hampering policy makers' ability to mount an effective response.

With insufficient funding, authorities were less able to protect their most vulnerable, and were also forced to divert resources from critical development sectors such as health, education, and infrastructure, curtailing the region's growth prospects. The crisis has never really passed, and the funding constraint persists.

We of course don't know how the current squeeze will evolve. It could yet be the case that borrowing costs will attenuate and capital markets will once again become more benign, allowing countries, at a minimum, to rollover maturities falling due in coming years.

But my sense is that the current difficult environment is likely to persist. Firstly, the global fight against inflation has been much more complicated than we had hoped, and tighter financial conditions will likely be with us for some time to come.

Second, we are moving into a more volatile world—in which larger and larger shocks seem to be arriving more and more frequently. This has clear implications for risk premia and borrowing costs. But it also means that future flows, such as official assistance, may be somewhat less reliable.

The funding squeeze is all the more problematic because countries have emerged from the pandemic with elevated levels of fiscal deficits and public debt. Even if a country were to engineer a smooth return to a more normal fiscal position, the higher level of debt and higher borrowing costs (spreads over US treasuries) are more than double their pre-pandemic level—meaning that there are less resources for primary (non-interest) spending outlays.

What I am trying to get at here is the difficulty that countries are facing in sustaining current levels of per-capita spending on health, education, infrastructure, much less increasing the spending required to meet the SDGs!

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Our Managing Director, Kristalina Georgieva, always encourages us to hope for the best, but plan for the worst. In this vein, it is going to be very important for countries to carefully consider their funding mix. In a world where finance is cheap and easily replaced, the consequences of a particular decision can be contained.

But we no longer live in that world. Resources have become scarce and more expensive. In this world, countries have to be more cautious about the type and composition of their financing, and they should be much more deliberate in mobilizing new resources.

III. Three choices

To state the somewhat obvious, and simplifying things, a government's ability to address development spending needs is bounded by the amount of revenues that it raises, its ability to supplement this by borrowing from either domestic or external markets, and any aid resources (grants and concessional borrowing) it has access to.

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Against this backdrop, and in the broadest of terms, there are three broad choices that governments face, and I will try and lay out the trade-offs next.

Choice 1. Public vs private

Perhaps the most important choice in financing development is whether spending should be undertaken by the public or the private sector. In practice though, most African countries (and indeed elsewhere) tend to fund development largely through public finance.

On average, some 79 percent of total government spending in sub-Saharan Africa is covered by revenues, a further 19 percent by borrowing, and 2 percent through grants and/or other concessional budget support. Needless to say, averages mask great heterogeneity across countries.

To be clear, the size of government is a deeply political and very country-specific issue. And given the important externalities involved in public spending in health, education, and much large-scale infrastructure—coupled with limited private sector capacity-government provision of such services is very appropriate.

The challenge for governments is that with borrowing space limited (see below) and aid flows highly circumscribed, the only way to make more room is through domestic revenue mobilization.

There are though many challenges on this front. Take developments over the last 10 or so years. African countries have done much to invest in human capital and improve public infrastructure. But for political and technical reasons, they have found it very difficult to capture the returns on this investment through their tax systems.

Hence, the ratio of interest payments on debt to revenues has continued to drift upwards in country after country—with the median doubling to 10 percent in just a decade—leading to the debt difficulties that we are now seeing in some countries in the region.

In general, cross-country experience shows that countries can at most generate between ½ and 1 percent of GDP in additional revenues per year. Given the need to reduce still-elevated fiscal deficits to more sustainable levels in the next few years, much additional revenue mobilization in the near-term is, I fear, likely to be devoted to reducing fiscal deficits rather than making space for incremental spending.

This makes it important to consider what role private finance could play in supporting development in the region—much as has been the case in Asia.

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At the moment, the private sector plays a somewhat limited development role—public entities carry out 95 percent of infrastructure projects in the region, and despite the continent's clear potential, Africa attracts only 2 percent of global foreign direct investment.

Further, when investment does go to Africa, it is predominantly in natural resources and extractive industries, much less so, health, roads, or water. To attract private investors and transform the way Africa finances its development, an improved business environment is critical.

But that is not enough. Even in the most favourable environments, development sectors are special in a way that often complicates private sector participation.

For instance, infrastructure projects often have large upfront costs, but returns accrue only over long periods of time, which can be difficult for private investors to assess. Private sector growth also thrives on networks and value chains, which may not yet exist in new markets.

When these problems are acute, governments may need to provide extra incentives. And these can sometimes be costly. But the truth is, many projects in development sectors simply won't happen without them. In East Asia, 90 percent of infrastructure projects with private participation receive some government support.

Now, there are ways in which governments can maximize impact while minimizing risks and costs. For example, support should be targeted, temporary, and granted on the basis of clear market failures. It should also be transparent, leave private parties with sufficient skin in the game, and should focus tightly on worthy projects that would not happen otherwise.

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With this in mind, African countries and their development partners might consider reallocating some resources towards public incentives for private projects. Underpinned by sound governance and transparency, a more innovative private-sector approach may significantly increase the amount, range, and quality of services for people in Africa.

Choice 2. Domestic vs external

Another important choice is whether development spending should be financed with domestic or foreign funds. As just noted, for the most part, countries finance themselves from domestic resources. But at the margin, foreign flows, particularly borrowed resources, contribute meaningfully to government finances.

And beyond just bridging the fiscal funding gap, external borrowing helps reduce the large current account deficits that are typical during the early stages of development. To put it another way, external flows punch well above their weight.

In recent years, recourse to external borrowing in sub-Saharan Africa has been significant. For one, the global economic and financial environment was conducive—and following the large debt relief of the HIPC/MDRI it was believed that market borrowing would help instil discipline. And with low domestic savings and limited financial markets, for many countries in the region it was the only meaningful way to raise the resources needed to increase development spending.

But with funding costs having increased markedly for all countries, and set to remain that way, this source of funding is going to be a less and less likely option. For example, since Russia's invasion of Ukraine and the upheaval in capital markets it unleashed, no sub-Saharan country has been able to issue a Eurobond.

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This leaves domestic savings. Of course, the need to foster more domestic savings has long been understood as the kernel of economic development. Some 70 years ago, Arthur Lewis noted:

> *"The central problem in the theory of economic development is to understand the process by which a community which was previously saving and investing 4 or 5 per cent of its national income, converts itself into an economy where voluntary saving is running at about 12 to 15 per cent of national income…We cannot explain any 'industrial' revolution until we can explain why saving increased relatively to national income."*

There is a large and still unresolved literature that seeks to explain why some countries save more than others. Demographics seem to play a role. But also, many other factors.

At the IMF—with an eye on generating practical policy options—we have been paying close attention to the role of domestic financial systems. A poorly developed system, with low inclusion, ineffective regulation or supervision, few options, limited competition, and constrained deposit rates will generally do poorly in mobilizing domestic savings and channelling those savings to people who can use them most productively.

Moreover, the challenge in Africa is particularly complicated by the fact that a large portion of economic activity is in the informal sector, where much of the population remains unbanked and where savings are kept as non-financial assets such as livestock, goods, grain, or other materials. These resources are not deposited in savings accounts or other formal financial channels and so are unavailable for investment.

This is why at the Fund we have made a growing focus on financial inclusion. Not only does inclusion provide greater opportunities to some of the region's most vulnerable, but it can also help our countries tap into an

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underused pool of savings, placing them in a better position to meet more of their own development needs locally. But like revenue mobilization this too of course is a gradual process.

Choice 3. Concessional vs non-concessional borrowing

Within the envelope of external financing, a further important option for financing development concerns the mix between concessional and non-concessional funding.

Concessional resources are a sizeable component of external flows—representing around a quarter to a third of external flows for the region as a whole. And with few countries able to take on significantly more debt at market rates, going forward the need for concessional financing is more critical than ever.

To my mind, Africa's progress over the past couple of decades—across all development metrics—has been nothing short of remarkable. Improvements in life expectancy, literacy, health outcomes, access to education, etc have all profoundly reshaped the continent. This was made possible by three important factors:

- Far-reaching reforms by countries to considerably improve public finances, the quality of institutions, and the business environment;

- A highly supportive global environment, with countries benefitting from strong growth in trading partners, favourable global financial conditions, and growing exposure to a surging Chinese economy; and

- Much support from the international community, starting with debt relief initially and followed by significant concessional budget support, particularly up to around 2009-10.

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Of course, aid flows have over the years been declining[1]. But because this could be offset by non-concessional financing in many countries, its adverse effects have been limited. However, the lower level of concessional financing is now going to be felt more as alternative sources of financing have dried up.

But to note: lower aid/concessional financing flows have still had considerable adverse effects. Almost always, lower aid flows mean lower fiscal space. As aid flows have declined over the years and been replaced by more expensive financing, the effect has been to increase countries weighted average cost of financing, while also making them more exposed to shifting market sentiment.

IV. Debt restructuring

You must be wondering why I am leaving out another important avenue to create fiscal space in countries—debt restructuring. I wanted to get to this last as a bit of an antidote to the rather pervasive narrative out there that the region's main challenge is too much debt, particularly to China.

Yes, high indebtedness is a major problem in some countries and debt vulnerabilities have generally increased. But in most other cases public debt is elevated but still manageable. And, yes, while China is an important creditor to some countries, in most cases debt to China is modest. Note public debt to China accounts for around 8 percent of total sub-Saharan Africa public debt.

Hence the problem is much broader. From a region-wide perspective, it is the funding squeeze that matters most—it threatens to push even those countries with manageable debt positions into insolvency.

For cases where debt is unsustainable, it goes without saying that it needs to be restructured. In such cases, the burden of making repayments should not fall unduly on debtor countries. But this is easier said than done.

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Debt restructurings have always been difficult, and even more so now in the context of a more diversified creditor base and more complex structure of public debt. Take domestic debt, which now accounts for about half of all public debt in sub-Saharan Africa.

In cases where public debt is unsustainable and this exposure needs to be included in the restructuring perimeter, careful consideration needs to be given to the effects on the domestic banking sector, how quickly market access can be regained etc.

And with respect to external creditors, countries of course have even less sway over the pace at which restructuring can happen, as clearly shown by the ongoing challenges with the Common Framework. This is even more frustrating in unsustainable cases where the official creditors' inability to agree on a needed debt treatment prevents the IMF from providing timely support to countries during periods of acute distress.

V. Some takeaways

Forgive me if I have been a bit too glum. My optimism about the region's prospects remains undiminished. As difficult as conditions are at the moment, I strongly believe that the vast majority of countries have reached a threshold where even in the face of the many challenges they face, they will get by; indeed, go on to prosper.

Rather, what is frustrating is that with a modicum of increased support, the region could be helped to reach its full potential sooner and the global economy could be much better for it.

While countries have a clear role to play, what is required of the international community going forward are the following:

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- Much higher volumes of countercyclical flows, particularly from International Financial Institutions (IFIs), to neutralize the highly procyclical nature of private capital flows. At the Fund, for example, right now our ability to sustain our recent high levels of support is increasingly being constrained by the limited availability of concessional resources. A challenge that we are working very hard to address via pledges from our wealthier members.

- A more agile and effective sovereign debt resolution framework. The G20's Common Framework is an important innovation, and we would be in a much worse place without it. At the same time, it has not been able to provide the required financing assurances and debt relief in a timely manner.

  This needs to change, and quickly. Again, as an institution, we are working relentlessly to improve this process and, with the World Bank and the G20, launched a new Global Sovereign Debt Roundtable in February to bring together key stakeholders involved in sovereign debt restructuring to address the current shortcomings in debt restructurings.

- Finally, more support from advanced countries is needed. As one British mandarin once put it to me, the 'authorizing environment' for this is not exactly favourable. Indeed, we are seeing significant cuts in such flows, and a significant share of what is not being cut is instead being directed elsewhere.

  Two quick points on this. First, as the preceding discussion has, I hope, convinced you, this cut in aid, particularly its diversion away from budgets, is having the very significant effect of proportionally reducing development spending. Second, if it is perhaps too much to ask for higher aid, then one change that could at least be made is to ensure that there is much more progressivity in aid flows to the poorest and more fragile countries.

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Again, absent making sure that we devote the resources needed now to build human capital and help integrate Africa into the global economy, it is not just slower growth and development progress in the region that is in store, but also a much weaker and less resilient global economy. ■

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Endnote

1. From a peak of around 6 percent of recipient country GDP in the 1990s, aid flows so sub-Saharan Africa now average only 2½ percent. Moreover, increasingly, such aid flows are no longer in the form of budget support.

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