EUROPEAN CENTRAL BANK

EUROSYSTEM

Monetary policy: the challenges ahead

Colloquium in honour of Benoît Cœuré

held on 17-18 December 2019

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Foreword

By Christine Lagarde

I was glad to host the colloquium held on 18 December 2019 in Frankfurt in honour of ECB Executive Board Member Benoît Cœuré. Benoît's intellectual strength, international experience, European vision and audacity to innovate were put to good use during the last eight years. During Benoît's tenor, our monetary union has faced extraordinary challenges which the ECB has successfully surmounted. At the same time, the global economy has experienced profound changes, with fast paced technological advancements and the emergence of new patterns of globalisation. The colloquium was a unique opportunity to discuss these challenges and I would like to thank all those who gathered in Frankfurt around Benoît. Benoît continues to serve the central banking community as head of the Innovation Hub of the Bank for International Settlements. I wish him all the best, and I am sure that he will continue to innovate for the public good.

Christine Lagarde
President of the European Central Bank

Opening address
by Mario Draghi[1]

It is a pleasure to be back here this morning to celebrate Benoît's contribution to the European Central Bank (ECB) over the past eight years.
The theme of this colloquium – "monetary policy: the challenges ahead" – leads our eyes not only to the past. Fitting Benoît's personality and celebrating his insights, it asks questions about the many challenges that lie on the horizon.
My remarks today are primarily in praise of and friendship for Benoît. But precisely because Benoît is a person of substance over form, it is not possible to praise him without being drawn into the substance of the policy to which he has devoted his mandate.
Benoît's time as a Board member was one of change and innovation in many areas. The issues facing monetary policy over his tenure at the ECB, however, can be broadly divided into two questions:
First, whether the central bank can control financing conditions in the economy.
And second, crucially, whether those financing conditions impact on real behaviour – investment, consumption, saving – in the way desired by the central bank.

Central banks and financing conditions

Before we get into the first question, let me make clear that the primary subject central banks look at when making their decisions is the real economy. Once this is absolutely clear, we can consider other issues such as the relationship between the central bank and the market – which is the topic of the first panel today.
How central banks and markets interact – and critically, who leads whom – is an important topic. Benoît reflected on a great deal during his time as a Board member.
From a policy perspective, however, any framing of the issue that pits the central bank and the market against one other is not especially fruitful. Ultimately, the central bank must make the market work alongside it.
Jeremy Stein in previous work used a particularly evocative image to convey this notion: he said that central banks "recruit" banks and other financial intermediaries to transmit their policy impulses to the broader economy.
This is because many channels of monetary transmission operate through financial markets, and

[1] Former President, European Central Bank.

first among them is the bond market. Market prices reflect expectations of central bank policy and how its reaction function is understood. They transmit its policies into financing conditions for the real economy. And they reveal the degree of confidence in the effects of monetary policy on output and inflation.

Market prices, in other words, are a mirror of the policy stance, a channel of transmission and a barometer of central bank effectiveness. However intensively a central bank deploys its instruments, it can only succeed if it recruits the market to extend its reach.

So the most important policy question is: what is the best way for central banks to ensure that the market is working with them to achieve their goals?

Central banks first have to be clear about their assessment of the economy and, second, prepared to deploy the necessary tools, within their mandate, so as to steer the economy in the direction that is most consistent with attaining their mandate.

If these two conditions are met, then the market will follow and be a key ally, helping the central bank deliver its intended policy stance.

Indeed, my view is that monetary policy is fundamentally guided by an assessment of the economy. And it is only when the central bank shares that assessment with the market, and convinces the market that it is ready to do what is necessary within its mandate to achieve its objective, that the market will be recruited to its side.

We saw this during the crisis. Before the crisis, it was generally thought that the capacity of monetary policy to steer financing conditions would diminish as interest rates approached zero. But major central banks showed this was not a foregone conclusion.

By explaining why unconventional policies were needed given the state of the economy, and by showing their commitment to using them, the central banks were able to continue easing financing conditions even as rates hit zero – be it by breaking through the zero line and/or by using asset purchases to lower term premia further out along the yield curve.

In the ECB's case, successive policy packages were able to lower the whole matrix of interest rates – across the maturity spectrum and asset classes – to levels that could spur the recovery and inflation normalisation. That process was so powerful that monetary policy became the main driver of the economic recovery after 2014.

And, once the market understood how and why these policies worked, it opened up another possibility, which was for a more transparent disclosure of the reaction function that reinforced the stabilisation capacity of monetary policy.

Forward guidance is an example of this. In the case of the ECB, it now means that expectations on the start of rate lift-off, the end of net asset purchases and the end of reinvestments are all automatically revised by markets in line with the latest data releases. That in turn leads to rate expectations and term premia adjusting in the direction desired by policy.

So this illustrates how, with the right tools and communication, markets can "fight alongside" the central bank – but with policy leading and prices following.

That said, central to the effectiveness of this mechanism is confidence that the central bank is institutionally empowered to use all the instruments it needs to fulfil its mandate.

Post-2008, the ECB faced an exceptionally complex environment where, for some time, the irrevocability of the euro was not taken for granted; where monetary policy was complicated by fiscal policies and sometimes financial sector policies acting pro-cyclically; and where the ability of the ECB to act to secure price stability was challenged in court.

This meant that the ECB had to restore policy transmission not only by adjusting the parameters of policy, but also by dismantling false conceptions about its willingness and capacity to act. This was also reinforced by the rulings of the European Court of Justice.

So, I am confident that those exceptional circumstances are now consigned to the past.

Throughout this period, Benoît contributed greatly to the success of the ECB's actions, in particular as the Board member in charge of markets. That gave him a key role in the design of the Outright Monetary Transactions programme and in the execution of the asset purchase programme.

But Benoît also helped turn financial markets into an ally in a more indirect, but equally powerful way: he convinced through the strength of argument.

Indeed, central bankers can influence markets not just by expressing their views about the state

of the economy, calibrating their tools or defining their reaction functions. They can also do so by leading the debate in economic and policy circles about the tools that are needed in any specific circumstance and how they work to achieve their goals.

That is why we make so many speeches, and Benoît himself has made around 175 as a Board member. But remarkably, he has rarely ever repeated himself.

Rather, he shed light on many critical issues for the ECB and, in doing so, shaped public opinion and built confidence – a confidence that was crucial when we were introducing measures for which there was no precedent.

Financing conditions and real activity

Still, even if central banks are successful in making the market work with them, the second question remains: how accommodative financing conditions affect the real economy.

There is ample evidence that easier financing conditions lead to higher consumption and investment. We have seen all of the main transmission channels at work in the euro area over the last five years: intertemporal substitution through credit, wealth effects and income effects.

Importantly – and contrary to a common narrative – monetary policy exerts some its strongest effects via those at the bottom of the income scale. These people are typically net debtors, and so experience a positive income effect from lower interest payments. They also benefit disproportionately from the employment gains created by expansionary policy.

And, since these households have a higher marginal propensity to consume than those higher up the income scale, the subsequent effects on consumption are significant.

But that being said, one can also envisage situations where the causality between easier financing conditions and stronger demand might become looser.

One example is when there are high levels of macroeconomic uncertainty, which can affect private sector transmission, in particular via business investment.

Another example is when there is institutional uncertainty, which can lead to precautionary saving as countries are forced to self-insure. President Lagarde recently talked about how insufficient risk sharing within Economic and Monetary Union (EMU) can create a "paradox of thrift" in this regard.

A third example is the question surrounding the "reversal rate", and how close policy rates are to a point where they might hamper monetary policy transmission and/or trigger mass retrenchment from credit creation.

Whether we are close to the reversal rate is an empirical question. But, insofar as these various effects are plausible, they call for independent central bankers to reflect. They imply a need to think beyond their sole field of action and to understand interactions between policies.

For example, if macroeconomic uncertainty is constraining the private sector transmission of monetary policy, the public sector transmission channel becomes more important as a counterweight. So, monetary-fiscal interactions become more relevant.

Likewise, if the slow pace of institutional deepening is producing precautionary saving, a commitment to move faster can raise confidence and provide a demand stimulus. So, monetary policy and EMU reform become part of the same policy mix.

In other words, one can conceive of situations where the classic interpretation of the Tinbergen principle – where single tools are assigned to single objectives – becomes less useful, because it is in fact multiple policies working together than can best deliver those objectives.

Independence and democratic accountability require central bankers to fulfil their mandates even when policy areas do not contribute enough. Of course, they should act carefully under uncertainty and be aware of the financial stability risks that their actions might entail.

But one question that is rarely asked is whether these risks would be lower in the absence of the monetary policy that is required by their mandate.

At the same time, central banks cannot compel other policy areas to act alongside them. Instead, they have to explain to others what is needed to deliver price stability most efficiently, and to convince them of why it is necessary.

And since this is in the service of price stability, it is not contrary to the principle of "monetary dominance". It is rather its natural extension in new economic times. "Monetary dominance"

means that alignment between policies must serve the central bank's objectives and never detract from them.
This brings me back to Benoît. Few have done so much to explain – and so convincingly – why other policy areas need to play their role in a well-functioning monetary union.
He has explained the interactions between monetary policy and structural policies. He has set out how a euro area fiscal capacity could be constructed while avoiding moral hazards.
And in his role in charge of International and European relations, he has led debates on the institutional reform of EMU and its link to the transmission of monetary policy.
I hope that, in a future where policy coordination becomes more salient, the world will continue to heed what Benoît has to say from his new position in Basel.
So, let me conclude be saying: thank you Benoît. Thank you for everything you did. And thank you in advance for everything you will continue to do.

"Après Benoît le déluge?"

by Mark Carney[2]

Before I begin, I must emphasise that those who might be searching for cryptic central bank signals about future policy will be disappointed. I am speaking in the Monetary Policy Committee (MPC)'s quiet period, and my comments have no bearing whatsoever on the decision the MPC will announce on Thursday.
This wonderful evening celebrates an extraordinary individual. There should be, and will be, great joy and immense gratitude. But as with all such occasions there is also the melancholic feeling of an end of an era, the passing of the *ancien régime*.

Certainly, central banks face many challenges:

- markets prone to severe bouts of illiquidity;
- a global economy that risks falling into a low growth, low-inflation rut caused by deep structural forces, limited policy space and growing concerns over the fracturing of the global trading system;
- innovations in private payments encroaching on central banks' very raison d'être, the provision of money;
- a growing climate crisis that will affect every aspect of finance.

So, it is tempting to ask: Après Benoît le déluge?
Fortunately, the financial guillotine is not preordained, for Benoît did not spend his days in power as did Louis XV. Where the king grew idle, Benoît remained frenetic (189 public speeches during his eight years). Where the king was conservative, Benoît was radical. Where the king became nostalgic, Benoît always looked forward.
If central banks are to rise to their challenges and serve our citizens, we will need to build on Benoît's legacy.

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[2] Governor, Bank of England. I am grateful to Clare Macallan and James Benford for their assistance in preparing these remarks.

Improving market functioning

Let me start with market functioning.

Before the crisis, financial alchemy appeared to have sliced, diced and distributed risk to those who wanted it most. The revolutions in securitised and derivative finance were cheered on by policymakers who saw more markets as the solution to any market failures and who believed the lie that markets always clear.

But of course markets always clear only in textbooks. In reality, people are irrational, economies are imperfect, and nature itself is unknowable. The pre-crisis system had merely spread risk, contingently and opaquely, in ways that often increased it.

Once the crisis began, risk quickly concentrated on the balance sheets of intermediaries that were themselves capital constrained. And with the fates of borrowers and lenders tied together via hyper-globalised banks and markets, problems at the core spread violently to the periphery.

The post-crisis response included major reforms to simplify markets and make them more robust.

A vital plank was to encourage greater central clearing of over-the-counter trades, which prior to the crisis had been largely unregulated, unreported and bilaterally settled. When Lehman fell, uncertainty about these exposures sparked panic.

Routing bilateral trades through central counterparties (CCPs) untangles this tangled web. Globally, the stock of centrally cleared derivatives has more than doubled since the crisis.[3] And around two-thirds of outstanding interest rate derivatives in the United Kingdom and Europe are cleared through central CCPs.[4]

Of course, central clearing means that CCPs are sources of systemic risk, which is why Benoît led efforts to build their resilience and improve their resolvability.

As Chair of the Committee on Payments and Markets Infrastructures (CPMI), he oversaw the implementation of the Principles for Financial Market Infrastructures – a set of demanding, international standards for payment, clearing and settlement systems that ensure CCPs are robust to shocks. As a result, an additional $1 trillion of collateral is now held globally against all derivative trades.

Under Benoît's leadership, the CPMI has worked with other authorities to finalise and implement global standards for resolution. And he has consistently encouraged greater cross-border cooperation, better information sharing and more coordinated stress testing.

While the infrastructure that underpins our markets is now in much better shape, nascent risks remain that, if left unchecked, could bring new problems. Consider market liquidity.

During the crisis, liquidity dried up, particularly in the interbank market, as cash-rich banks hoarded excess funds. In parallel, a "run on repo", triggered by increased haircuts on collateral to guard against counterparty risk, pushed the shadow banking sectors in advanced economies to collapse. In the euro area, the sovereign debt crisis compounded these problems, causing some markets to splinter along national lines.

Global reforms address the fault lines that caused this fiasco. New global standards for liquidity regulation are now in place, including the Liquidity Coverage Ratio and Net Stable Funding Ratio. Bank capital standards now take into account exposures to shadow banks, including step-in risk, and through-the-cycle margining prevents Minsky cycles in secured lending.

These reforms are transforming banks' approach to liquidity management and building the resilience of the system as a whole. For example, liquid assets – relative to liabilities that can readily run – are tenfold higher than before the crisis.

However, the recent volatility in US dollar repo markets suggests there are still frictions that need to be addressed. Contrary to expectations, banks did not step into the market to lend cash, viewing the profit opportunity to be insufficient to offset the impact on perceived regulatory liquidity requirements. The Federal Reserve System's open market operations have since calmed the market, but term repo rates remain elevated, as dealers are pricing in a higher likelihood of similar spikes in future.

While it may be tempting to conclude this is an isolated incident, there have been others,

[3] See https://www.fsb.org/wp-content/uploads/R191118-1-1.pdf.

[4] See https://www.esma.europa.eu/sites/default/files/library/esma50_157_2025_asr_derivatives.pdf.

including the taper and bund tantrums. These could signal a broader problem of discontinuous market liquidity in stress.

The solution is not to unwind post-crisis liquidity regulation, a recidivism that would only recreate, with time, the enormous systemic risks of the past. Moreover, the limited systemic consequences of these events should be noted. After all, the riskiness of an asset depends on who holds it. A "crisis" in the periphery is a bad day in the markets; one in the core is an *annus horribilis* for the real economy.

Nevertheless, market infrastructure must evolve to take account of new dynamics. In one of Benoît's (many) speeches last month, he identified one of the potential problems underlying the repo market stress: that what may look to be sufficient liquidity in aggregate can prove too little if it is asymmetrically distributed – either across institutions or national boundaries.

As Benoît noted, this may require central banks to provide more liquidity in aggregate, including by widening access to their balance sheets. Prompted by the potential risks that come with Brexit, the Bank of England has come to a similar conclusion: we are already running weekly auctions in pounds sterling, US dollars and euro that could be used to absorb pressures as they arise. We also have a contingent term repo facility that we could activate at a higher frequency if needed, and we – like the ECB – can lend to a very broad range of counterparties against a wide range of collateral.

Central banks and regulators must also be clear that liquidity facilities and buffers are there to be used. For example, in October the Bank clarified our supervisory expectations to re-emphasise our commitment to providing liquidity in the ordinary course of business. We do not expect firms to justify any usage, nor is there any presumption they would use their own buffers before our facilities. Next year's first system-wide liquidity stress test will be another opportunity to demonstrate that liquidity buffers are fully useable.

Increased central clearing would be a capital-efficient way to further improve repo market liquidity; this would be most effective if smaller institutions participated directly. And a more holistic approach by firms to internal capital management would make them more agile, including not applying the leverage ratio at the desk level.

Liquidity concerns also go to the heart of otherwise immensely positive developments in market-based finance.

As is the case for banks, the institutions at the heart of market-based finance, particularly open-ended investment funds, must prudently manage their leverage and liquidity. Mismatches between redemption terms and the liquidity of some funds' assets means there is an advantage to investors who redeem ahead of others, particularly in stress. This has the potential to become a systemic risk as first-mover advantage could prompt a destabilising rush to the exits.

In response, the Bank of England and the Financial Conduct Authority have decided that there should be greater consistency between the liquidity of a fund's assets and its redemption terms. Specifically:

- the liquidity of funds' assets should be assessed either as the price discount needed for a quick sale of a vertical slice of those assets or the time period needed for a sale to avoid a material price discount;
- investors who redeem should receive a price for their units that reflects the discount needed to sell the required proportion of a fund's assets in the specified redemption notice period;
- redemption notice periods should reflect the time needed to sell the required proportion of a fund's assets without discounts beyond those captured in the price received by redeeming investors.

Our next steps are to consider how these principles could be implemented and, in particular, the stress against which liquidity measures and redemption terms should be calibrated. We expect to publish the review's conclusions in the summer and these will, where appropriate, inform the development of UK standards for open-ended funds. Our conclusions will also inform our international engagement, for example with the Financial Stability Board, IOSCO and other competent authorities, on the financial stability risks of asset management activity.

Creating monetary policy space

Effective market functioning matters for price stability as well as financial stability.
During the crisis, the impaired banking system and dysfunctional corporate debt markets muted the transmission of monetary stimulus and led to inefficiencies in risk sharing and capital allocation. Ultimately, companies and households bore a heavy cost.
Strains in monetary policy transmission were particularly pronounced in the euro area, where the fragmentation of markets along national lines meant cuts to the ECB's policy rates were not passed through equally in all countries. Households and companies of comparable creditworthiness faced different borrowing rates depending on their location. These problems worsened over 2012, when markets began to price in some redenomination risk in a few euro area countries.
It fell to Benoît and his fellow members of the ECB's Governing Council to fix the problem.
Throughout the crisis, the ECB rightly and swiftly injected huge quantities of additional reserves into the system, as asset-backed commercial paper and the interbank markets dried up.
In response to the worsening sovereign debt crisis in 2012, the Governing Council created Outright Monetary Transactions, a programme whose very existence eliminated the unwarranted and self-reinforcing fears of a euro area break-up and restored sovereign bond spreads to levels more consistent with credit rather than currency risk.
During this time, Benoît added his voice to the calls for a capital markets union, not least because it would broaden the transmission mechanism and increase the potency of monetary policy.
He also recognised that the ECB's actions could only tackle the symptoms of financial market fragmentation. Addressing their root causes required stronger banks, a more resilient financial system, solvent governments, and the delinking of bank and sovereign credit risk.
On two of these imperatives, the EU has made welcome progress, with the establishment of the Single Supervisory Mechanism and the European Systemic Risk Board. These bodies are helping address a classic collective action problem by overcoming the inevitable temptation of national supervisors to ring-fence liquidity and capital within national boundaries to the detriment of a single market for capital.
Alongside improving the transmission mechanism, the ECB made important advances in the conduct of monetary policy. It has reduced the effective lower bound on policy rates and created additional stimulus through forward guidance, new lending facilities and innovative asset purchase programmes. These actions have helped shape the expectations of both market participants and the general public.
The challenge now facing the ECB – and monetary policymakers more broadly – is to provide sufficient stimulus to meet its price stability objective when powerful structural forces are pushing down equilibrium interest rates.
As I noted at Jackson Hole,[5] the risk of a global liquidity trap puts a high premium on getting more than just monetary policy right. In a global liquidity trap, central banks cannot be the only policymakers who do "whatever it takes." There are clear gains from coordination, with other policies – particularly fiscal policy – having important roles.
The biggest gains would come from lowering trade tensions. This is pushing up hurdle rates on investment, swamping the impact of lower policy rates. Reducing uncertainty would turn a vicious cycle – in which falling equilibrium interest rates eat into policy space, exacerbating downside risks and pushing down equilibrium rates further – into a virtuous one, of rising equilibrium rates, increased policy space, and stronger global growth.

Transforming payments

During Benoît's time at the ECB, the public provision of money has faced challenges, from bitcoin to stablecoins.
The Bank of England has an open mind but not an open door when it comes to such innovations.

[5] See Carney, M. (2019), "The growing challenges for monetary policy in the current International Monetary and Financial System", speech at the Jackson Hole Symposium.

Unlike social media, for which standards and regulations are only now being developed after the technologies have been adopted by billions of users, the terms of engagement for any new systemic private payments system must be in force well in advance of any launch. And there are a host of issues that still need to be addressed – from maintaining the highest standards of operational resilience and managing financial risks, to addressing privacy and anti-money laundering concerns.

Like Benoît, we recognise that these initiatives were not conceived in a vacuum; rather they seek to address long-standing problems in payments. Despite the ongoing revolution in online commerce, payments are often more expensive than they need be and still take too long to clear.

UK card payments are convenient and they are now the most popular means of payment, but they can cost between 0.5% and 2% of the total transaction value and it can take three days for the merchant to receive their money.

The scope for improving cross-border payments is bigger still. These can cost up to ten times their domestic equivalent. Anti-money laundering checks that are rightly required can be cumbersome. Settlement is slow, with money taking up to a week to reach the recipient.

During his time at the ECB, Benoît oversaw significant progress in building a pan-European payments system for the wholesale side.

Nonetheless, developments in retail payments have lagged. Euro area customers are now starting to turn to non-European cards when making non-cash payments.

Last month, sensing the opportunity for another speech, Benoît announced that the ECB's Governing Council was relaunching its retail payments strategy. The goal is to create a retail payments system that is as convenient, cost-effective, safe and secure when operating across borders as across the shop counter; and one that works as well for merchants outside the EU as it does for those within it.

Delivering a better retail payments experience will require the ECB and the Bank of England to provide a best-in-class payment infrastructure that can enable private innovators to deliver the payment products and services our citizens need. We intend to collaborate closely, sharing perspectives on policy issues and technical designs. And we look forward to leveraging advancements arising from Benoît's new role leading the Bank for International Settlements (BIS) Innovation Hub.

Innovation is best achieved by empowering competition. For the Bank, this means levelling the playing field between old and new by allowing new entrants access to the same resources as incumbents, while holding similar risks to similar standards. It also means updating our public infrastructure to enable state-of-the-art private sector solutions to emerge which will lower costs, increase speed and improve customer experience of domestic and international payments.

Any new payments system must be efficient, resilient and secure. A safe payment system is only useful if people use it, which means it must deliver fast, user-friendly and inclusive services. This in turn requires that payment systems are open to innovation and competition, and are built around the comparative advantages of central banks and the private sector.

Addressing the climate crisis

My final challenge facing central banks is the most fundamental. Indeed, it is existential.

Four years since the Paris Agreement, a more sustainable financial system is being built. It's funding private sector innovation, it has the potential to amplify the effectiveness of government climate policies and it could accelerate the transition to a net zero economy.

But we must go much further if the world is to reach net zero carbon emissions. Disclosure must become comprehensive. Risk management must be transformed. Sustainable investing must go mainstream.

In short, every financial decision must take climate change into account.

Achieving that requires improvements on three Rs: reporting, risk management and return.

- On reporting, TCFD standards must be enhanced to be as comparable, efficient and decision-useful as possible. And we need to develop pathways to mandatory climate disclosures.

- To manage risks, disclosures need to go beyond the static to the strategic. We must assess the resilience of the core of the financial system to transition risks, including through stress testing. The Bank will publish a discussion paper on our planned climate stress test tomorrow and we look forward to taking this forward internationally through the Network for Greening the Financial System.
- On returns, asset managers and asset owners will increasingly have to assess the transition paths of their investments and report their impact to their clients. Our citizens need to be able to see whether their investments are consistent with the path to net zero.

Central banks cannot stand on the sidelines of this revolution. And with Benoît's research and Christine's leadership, I am confident that the ECB will be at the vanguard.

Conclusion

Benoît, on behalf of everyone here tonight, I'd like to thank you for your tremendous work at the ECB and as Chair of the CPMI. The flood of acclaim you've received is rightly bestowed. You have provided exemplary leadership, driving progress on improving the functioning of payments systems and broader financial market infrastructure, both within the euro area and internationally.
If anyone has prepared us to withstand the coming deluge, it's you.
Whether my remarks leave you seeing the world's glass as half full or half empty, I'd ask you to charge yours now to toast: Benoît Cœuré.

Panel discussion:
"The role of bond markets in the conduct of monetary policy"[6]

Chair: Laurence Boone[7]. Panellists: Hélène Rey[8], Jeremy Stein[9] and Charles Wyplosz.[10]

Boone introduced the panel, noting that communication has not always been prominent among central bankers. Yet, modern central bankers have transformed themselves, and nowadays communicate openly through policy statements and press conferences, economic forecasts, official reports, speeches, interviews and testimonies before public bodies. Good communication can allow financial market participants to better anticipate policy action, particularly in a global environment of low nominal interest rates and reduced policy space. At the same time, there are reasons to be wary of too much communication. Markets must be able to process what the central bank says, which becomes harder if there are too many opinions on a monetary policy committee (Alan Blinder's "cacophony of voices"). *Boone* also highlighted the risk that central banks may act on market signals that echo their own past communication ("monkey in the mirror" syndrome).[11]

There is a risk that central banks may feel forced to act if they fear that not acting would cause market volatility.

[6] Nikolas Mayer and Julie Sylvestre helped summarise the panel discussion.

[7] Chief Economist and Head of the Economics Department, Organisation for Economic Co-operation and Development.

[8] Lord Bagri Professor of Economics, London Business School.

[9] Moise Y. Safra Professor of Economics, Harvard University.

[10] Emeritus Professor of International Economics, Graduate Institute of International and Development Studies, Geneva.

[11] Paul Samuelson famously compared the central banker who reads too much from movements in the bond markets to a monkey which "discovers his reflection in the mirror and thinks that by looking at the reactions of that monkey – including its surprises – he is getting new information". Quoted by Cœuré, B. (2017), "Central bank communication in a low interest rate environment", speech at an event organised by Bruegel, Brussels, 31 March.

Stein spoke specifically about the "monkey in the mirror" issues. Communication is an essential part of monetary policymaking: central bank watchers hang onto every comma in policy statements. However, *Stein* noted that, in his role as a Governor of the Federal Reserve System, he found it odd that central bankers placed so much importance on what the market thinks the Committee is thinking. Indeed, one can observe an upward trend in the frequency of terms related to financial markets in transcripts of the Federal Open Markets Committee. According to *Stein*'s own research, central banks would be better off if they paid less attention to financial markets, as overreliance on market data creates a time inconsistency issue.[12] On the one hand, the well-known pattern of gradualism in monetary policy (in which policy rates are adjusted slowly and gradually) may reflect a desire by central banks not to unsettle financial markets. On the other hand, it contributes to excess market sensitivity to information produced by central banks, such as data releases, and makes central banks susceptible to market sentiment shocks. As a result, there are very few cases where the Fed makes a move that is not fully anticipated by markets. The central bank may be better off making it clear that there is a default path for policy that is insensitive to small variances between each new information set. Ultimately, there is a tension between policymakers attending to low-frequency changes in financial conditions and caring too much about the short-term impact of their decisions. This tension is mitigated if, as seems to be the case, the short-term market impact of a policy announcement is transitory.[13]

[12] See Stein, J. and Sunderam, A. (2018), "The Fed, the Bond Market, and Gradualism in Monetary Policy", Journal of Finance, 73 (3), pp. 1015-1060.

[13] See Hanson, S., Lucca, D. and Wright, J. (2018), "The Excess Sensitivity of Long-Term Rates: A Tale of Two Frequencies", Federal Reserve Bank of New York Staff Reports, No. 810, October.

Wyplosz's starting point was the widespread consensus (in his view) that monetary policy has gradually become impotent in view of persistently low inflation, distortions created by quantitative easing and negative rates (with the "reversal rate" maybe around the corner), and forward guidance failing to anchor inflation expectations. Central banks saved the world in the dark hours of the crisis but have proved unable to raise inflation. Financial markets embrace the current accommodative monetary policy stance because it creates lower borrowing costs, higher asset valuations and less market uncertainty. Do they hold central banks captive? That may well be the case if central banks focus too much on not surprising them. Central banks must be wary of markets trying to influence them, as they are often wrong and quite insistent. The reason why the ECB's Governing Council makes decisions on monetary policy by consensus rather than by formal voting, *Wyplosz* opined, is to avoid spooking the markets. The more information you give to the market, the more every small piece of information could be exploited. There is something deeply wrong about this, he concluded, given that markets are almost never right as regards anticipating future policy or inflation outcomes.

Rey focused on the empirical evidence regarding the impact of central banks on financial markets, starting with evidence that risk aversion tends to increase when the Federal Reserve System tightens policy. As noted by *Cœuré* in his very first speech at the ECB, there is a self-reinforcing interaction between risk appetite and global liquidity.[14] This interaction works through

[14] See Cœuré, B. (2012), "Global liquidity and risk appetite: a reinterpretation of the recent crises", speech at the BIS-ECB workshop on Global liquidity and its international repercussions, Frankfurt am Main, 6 February.

two channels: a balance sheet channel, whereby higher asset valuations fuel leverage and credit expansion; and a composition channel, whereby more risk-tolerant financial intermediaries, characterised by more volatile balance sheets, step in.[15] In turn, the mix of financial intermediaries active in the market (banks, insurance companies, asset managers, etc.) influences global risk aversion in markets, and thus the pricing of assets.[16] The rise and fall of global banks in cross-border capital flows is a case in point. In the run up to the "Great Financial Crisis", global banks became larger and more leveraged, and increased their market power. Their stature ebbed again after the crisis, mainly owing to tighter regulation. Finally, *Rey* compared the international spillovers of US and Chinese monetary policy.[17] There is evidence that the People's Bank of China has limited direct influence on the global financial cycle but has a very important influence on the global trade cycle, while the Federal Reserve System has an important direct influence on the global financial cycle. As for the ECB, the picture is mixed: euro area capital markets are still underdeveloped and the international role of the euro is limited; the European Union is a trading power but euro invoicing is more limited than dollar invoicing. More research is clearly needed, *Rey* concluded.

Q&A session

One market participant agreed that markets often wrongly predict central bank policy actions and suggested that diverging theoretical underpinnings could provide an explanation. For example, central banks tend to focus on the stock effect of quantitative easing, while financial markets tend to focus on the flow of purchases. Views also differed among participants on subjects such as the "reversal rate". Using macroprudential tools more actively could help central banks become less anxious about a possible tightening in financial conditions. *Wyplosz* elaborated on monetary policy's failure to affect inflation to the extent expected, which he mainly attributed to sluggish inflation expectations. Prices are set by non-financial firms, who are less likely to understand central bank jargon than financial market participants. *Rey* noted that most people do not understand the objective of central banks and get basic facts fundamentally wrong, which points to a failure of central bank communication. To affect the way people form expectations, central banks should send repeated simple messages. *Stein* noted that the level of gradualism in policy rates is excessive, but admitted that there is a level of uncertainty to which central banks do not want to overreact. Central bank narratives are very important because a change in narrative changes the kind of data that market participants focus on.

[15] See Coimbra, N. and Rey, H. (2017), "Financial Cycles with Heterogeneous Intermediaries", NBER Working Paper No 23245.
[16] See Koijen, R. and Yogo, M. (2019), "A Demand System Approach to Asset Pricing", Journal of Political Economy, Vol 127(4).
[17] See Miranda-Agrippino, S., Nenova, T. and Rey, H. (2020), "Global footprints of monetary policies", mimeo.

To conclude, *Boone* asked panellists about their priorities for the ECB's forthcoming strategic review. *Rey* advised the ECB to focus on improving the transmission mechanism. *Wyplosz* advised reviewing the communication strategy, especially when talking to the broader public, and to accept that the inflation objective cannot be as precise as it is today. *Stein* concurred and advised the ECB to explore the concept of a "zone of indifference" for inflation, whereby it will not be forced to act at the margins of the range if not warranted by monetary policy considerations.

Panel discussion:
"Monetary policy, technology and globalisation" [18]

Chair: Agnès Bénassy-Quéré[19].
Panellists: Lael Brainard[20], Kristin Forbes[21] and Hyun Song Shin[22].

Bénassy-Quéré started by briefly recalling the objective of the panel, which was to discuss key changes in monetary policy, technology and globalisation – three salient topics during *Cœuré*'s journey as a central banker.

Brainard focused on digital currencies, stablecoins and the challenges ahead (see full intervention below).

[18] Nikolas Mayer and Julie Sylvestre helped summarise the panel discussion.
[19] Professor, University of Paris 1 Panthéon-Sorbonne and Paris School of Economics.
[20] Member of the Board of Governors of the Federal Reserve System.
[21] Jerome and Dorothy Lemelson Professor of Management and Global Economics, MIT Sloan School of Management
[22] Economic Adviser and Head of Research, Bank for International Settlements.

Forbes focused on changes in global capital flows since 2008 and their implications for global financial resilience. A major reason for the contraction of capital flows since the mid-1990s has been regulation, which has, among other side effects, curbed cross-border lending by banks. The regulation of banks' foreign exchange exposure is a case in point. Banks are less exposed to foreign exchange risk and that is a good thing, but this has squeezed cross-border lending. Less volatile capital flows going forward could contribute to a more resilient global financial system. However, Forbes noted that the decline in capital flow volatility has been more muted than it may appear. While the frequency of sudden surges or stops in global capital flows has declined, the fall has been driven by advanced economies. The evidence is more mixed in emerging markets. To conclude, Forbes praised Cœuré for not shying away from raising sensitive issues such as currency wars, and for always having relied on solid evidence and research.

Shin spoke of the search for global risk factors, using the broad dollar index as an example. He gave the example of a global lender with a diversified portfolio of dollar-denominated credit extended to borrowers around the world. Some borrowers face currency mismatches or otherwise benefit from a weaker dollar. The dollar depreciating against all other currencies implies lower credit risk for individual borrowers, reduced tail risk for diversified loan portfolios, reduced value at risk and an increased lending capacity.[23] As a consequence, the broad dollar index is a proxy for dollar credit conditions, and matters for capital flows, trade and dollar funding conditions. Broad dollar weakness generally coincides with growth in dollar-denominated debt in emerging market economies and tighter emerging market bond spreads. The broad dollar index is therefore an indicator of the shadow price of banks' balance sheet capacity and acts as a linchpin that ties together financial and real variables.

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[23] See Bruno, V. and Shin, H.S. (2015), "Capital flows and the risk-taking channel of monetary policy", *Journal of Monetary Economics*, Vol. 71, pp. 119-132.

Q&A session

A participant asked whether the dominance of the US dollar is due to the fact that many do not trust their own currencies. *Shin* viewed dollar dominance as partly historical but self-reinforcing, given that the dollar is the primary invoicing currency and there is a lot of dollar-denominated debt. If you invest in an oil plant, oil is priced in dollars and you must borrow in dollars to invest. *Forbes* was asked to elaborate on the contraction of cross-border bank flows. Economic contraction in Europe is part of the explanation, she said, alongside tighter regulation and crisis resolution measures (for instance, post-crisis measures in the United Kingdom provided incentives for domestic lending). *Forbes* also pointed to differences in tax rates having a big impact on capital flows, as was shown by Philip Lane.[24] New technologies could make capital flows shift once again.

[24] See Lane, P. (2013), "Capital Flows in the Euro Area", CEPR Discussion Paper No 9493.

“Update on digital currencies, stablecoins, and the challenges ahead”

Lael Brainard[25]

I am honoured to be here today to celebrate Benoît Cœuré’s tenure at the ECB. I have been working with Benoît now for a decade – starting at our respective treasuries where we both were drafted as financial firefighters, migrating to our respective central banks to help with stabilisation, recovery, and normalisation, and most recently preparing for the challenges that lie ahead. Over the course of that decade, I have developed a deep admiration for Benoît’s keen insights and outstanding judgement.

Equally important, Benoît always has a plan. Generally, it is the right plan addressed to the right problem, and he executes it with exceptional efficacy and strong support. That is a rare and invaluable combination in public service. Indeed, Benoît’s tenure at the ECB coincided with an incredible turnaround in unemployment and output growth. Both the euro area and the global economy have benefited greatly from Benoît Cœuré’s outstanding public service.

Moreover, Benoît’s research interests are forward-looking and extend well beyond the macro economy. When Benoît was appointed chair of the CPMI, the global standard-setter for payment issues, he doubled its output, resulting in 75 reports.[26] He turned its focus to distributed ledger, stablecoins, and central bank digital currencies long before many other central bankers realised these issues would be transforming their worlds. Indeed, the number of Google searches for “central bank digital currencies” increased sharply over the course of Benoît’s tenure as Chair of the CPMI.

[25] Member of the Board of Governors of the Federal Reserve System. I am grateful to Paul Wong, David Mills, Theresa Dinh, and Lacy Douglas of the Federal Reserve Board for assistance in preparing this text. These remarks represent my own views, which do not necessarily represent those of the Federal Reserve Board or the Federal Open Market Committee. All figures as updated on the FRB website on 31 January 2020.

[26] See https://www.bis.org/cpmi.

Digital currencies, money, and payments

I was asked to provide some brief thoughts about digital developments in the world of monetary policy and central banking. At the start of Benoît's ECB term, bitcoin's market capitalisation was small, and only a handful of cryptocurrencies existed. In the eight years since then, bitcoin's market capitalisation has grown rapidly and now exceeds €100 billion, and thousands of cryptocurrencies have been created.[27]
The potential of global stablecoins to scale rapidly is evident from the increasingly fast rates of technology adoption and the growth of large networks. Adoption rates for new technologies have accelerated over time. In 1921, 35% of US households had telephone service, and it took 40 more years for telephone lines to reach 80% of homes. In contrast, the internet achieved the same level of adoption in only 13 years. More recently, smartphones and social media have achieved the same level of US household adoption in less than a decade.[28]
Rapid adoption is also evident in the payments landscape, where network externalities figure prominently. Between the first quarter of 2014 and the first quarter of 2019, transactions through Venmo grew over 66 times to $21 billion (€18.5 billion).[29] Systems in other countries have also scaled rapidly. In China, mobile payments grew over 35 times during the same period to $8.2 trillion (€7.2 trillion).[30] India's Unified Payments Interface has grown even faster: between the fourth quarter of 2016 and the first quarter of 2019, the transaction value grew nearly 400 times to $49.7 billion (€43.8 billion).[31]
Digital currency payments projects from big technology firms that have network advantages have the potential to scale even more rapidly. Because the utility of any medium of exchange increases with the size of the network using it, the power of a stablecoin payment system depends on the breadth of its adoption. With nearly one-third of the global population as active users on Facebook, the Libra stablecoin project stands out for the speed with which its network could reach global scale in payments.
Stablecoin networks at global scale are leading us to revisit questions over what form money can take, who or what can issue it, and how payments can be recorded and settled. While central bank money and commercial bank money are the foundations of the modern financial system, non-bank private "money" or assets also facilitate transactions among a network of users. In some

[27] See https://www.blockchain.com and https://www.coinmarketcap.com.
[28] Ritchie, H. and Roser, M. (2019), "Technology Adoption," published online at OurWorldInData.org, retrieved from https://ourworldindata.org/technology-adoption [Online Resource].
[29] "Venmo's Monetization Will Be Worth Watching," Business Insider, January 31, 2017, www.businessinsider.com/venmos-monetization-will-be-worth-watching-2017-1.
[30] See http://www.iresearchchina.com/. Roughly 90% of mobile payments in China from 2014-19 were through Alipay and Tenpay.
[31] See https://www.npci.org.in/product-statistics/upi-product-statistics.

cases, such non-bank private assets may have value only within the network, while in other cases, the issuer may promise convertibility to a sovereign currency, such that this becomes a liability of the issuing entity. Stablecoins aspire to achieve the functions of traditional money without relying on confidence in an issuer – such as a central bank – to stand behind the "money". For some potential stablecoins, a close assessment suggests users may have no rights with respect to the underlying assets or any issuer.

We have already seen the growth of massive payments networks on existing digital platforms, such as Alibaba and WeChat. So far, these networks operate within a jurisdiction based on the sovereign currency as the unit of account, and balances are transferable in and out of bank or credit card accounts. We have also seen the issuance of stablecoins on a smaller scale, such as Gemini or Paxos. What would set Facebook's Libra apart, if it were to proceed, is the combination of an active-user network representing more than one-third of the global population with the issuance of a private digital currency opaquely tied to a basket of sovereign currencies.[32]

Libra, like any stablecoin project with global scale and scope, must address a core set of legal and regulatory challenges. A significant concern regarding Facebook's Libra project is the potential for a payment system to be adopted globally in a short time period and to establish itself as a potentially new unit of account. Unlike social media platforms or ridesharing applications, payment systems cannot be designed as they develop, due to the nexus with consumers' financial security. This is why in many jurisdictions, including the European Union, there is a regime to oversee retail payment systems.

Without requisite safeguards, stablecoin networks at global scale may put consumers at risk. Cryptocurrencies already pose a number of risks to the financial system, and these could be magnified by a widely accepted stablecoin for general use. Estimated losses from fraud and thefts associated with cryptocurrencies are rising at a staggering pace – from $1.7 billion (€1.4 billion) in 2018 to over $4.4 billion (€3.9 billion) in 2019, based on one industry estimate.[33] The hacking of exchanges represents a significant source of the theft, followed by the targeting of individual users through scams using QR codes, malware, and ransomware. These estimates reflect only known fraud and thefts; it is likely that not all losses are reported and some amount of cryptocurrencies is lost or forgotten. In most cases, customers bear the losses.

By contrast, over many decades, consumers in the United States and euro area have come to expect strong safeguards on their bank accounts and the associated payments. Statutory and regulatory protections on bank accounts in the United States mean that consumers can reasonably expect their deposits to be insured up to a limit; many fraudulent transactions to be the liability of the bank; transfers to be available within specified periods; and clear, standardised disclosures about account fees and interest payments. Not only is it not clear whether comparable protections will be in place with Libra, or what recourse consumers will have, but it is not even clear how much price risk consumers will face since they do not appear to have rights to the stablecoin's underlying assets.

Anti-Money Laundering (AML), Countering the Financing of Terrorism (CFT), and Know Your Customer (KYC) requirements are significant concerns. In one industry report, researchers found that roughly two-thirds of the 120 most popular cryptocurrency exchanges have weak AML, CFT, and KYC practices.[34] Only a third of the most popular exchanges require ID verification and proof of address to make a deposit or withdrawal. This is troubling, since a number of studies conclude that cryptocurrencies support a significant amount of illicit activity. One study estimated that more than a quarter of bitcoin users and roughly half of bitcoin transactions, for example, are associated with illegal activity.[35]

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[32] Active-user network includes people who were using at least one of the company's core products (i.e. Facebook, Instagram, Messenger, or WhatsApp).

[33] Ciphertrace (2019b), Cryptocurrency Anti-Money Laundering Report, 2019 Q3, November, https://ciphertrace.com/q3-2019-cryptocurrency-anti-money-laundering-report/ and Ciphertrace (2019a), Cryptocurrency Anti-Money Laundering Report, 2018 Q4, January 2019, https://ciphertrace.com/cryptocurrency-anti-money-laundering-report-q4-2018/.

[34] Ciphertrace (2019b).

[35] Foley, S., Karlsen, J.R. and Putniņš (2019), J.T. "Sex, Drugs, and Bitcoin: How Much Illegal Activity Is Financed Through Cryptocurrencies?," The Review of Financial Studies, volume 32(5), (May), pp. 1798–1853, https://doi.org/10.1093/rfs/hhz015.

There are also questions related to the implications of a widely used stablecoin for financial stability. If not managed effectively, liquidity, credit, market, or operational risks, alone or in combination, could trigger a loss of confidence and run-like behaviour. This could be exacerbated by the lack of clarity about the management of reserves and the rights and responsibilities of various market participants in the network. The risks and spillovers could be amplified by potential ambiguity surrounding the ability of official authorities to provide oversight and backstop liquidity and to collaborate across borders.

The precise risks would depend on the design of the cryptocurrency as well as the scale of adoption. The effect of a stablecoin on financial stability, for example, would be driven in part by how the stablecoin is tied to an asset (if at all) and the features of the asset itself. A stablecoin tied one-to-one to an individual currency would have different implications than one tied to a basket of currencies. A stablecoin that is built on a permissioned network would have different risk implications than a permissionless network, which may be more vulnerable to money laundering and terrorist financing risks. A stablecoin used solely by commercial banks would have a different risk profile than one for consumer use.

Similarly, there are potential implications for monetary policy. For smaller economies, there may be material effects on monetary policy from private sector digital currencies as well as foreign central bank digital currencies. In many respects, these effects may be similar to dollarisation aside from the fast pace and wide scope of adoption.

The work ahead

The emergence of cryptocurrencies – and particularly stablecoins – has raised important questions for central banks and other authorities, including on the appropriate regulatory framework. In the United States, the regulatory framework for cryptocurrencies is not straightforward. Our current framework is based largely on whether a cryptocurrency is deemed to be a security or has associated derivative financial products, and whether the participating institutions have a supervisory agency overseeing their activities. Unlike many other jurisdictions, regulators do not have plenary authority over retail payments in the United States. Moreover, the regulatory challenges are likely to be inherently cross-border in nature. Because stablecoins and other cryptocurrencies are unlikely to be bound by physical borders, regulatory actions in one jurisdiction are unlikely to be fully effective without coordinated action elsewhere.

The prospect of global stablecoin payment systems has intensified the interest in central bank digital currencies. Central bank digital currency typically refers to a new type of central bank liability that could be held directly by households and businesses without the involvement of a commercial bank intermediary.[36] Proponents argue that central bank digital currencies would be a safer alternative to privately issued stablecoins because they would be a direct liability of the central bank. A more relevant question may be whether some intermediate solutions may be able to offer the safety and benefits of real-time digital payments based on sovereign currencies without necessitating radical transformation of the financial system.

In the United States, there are important advantages associated with current arrangements. Physical cash in circulation for the US dollar continues to rise due to robust demand, and the dollar plays an important role as a reserve currency globally. Moreover, we have a robust and diverse banking system that provides important services along with a widely available and expanding variety of digital payment options that build on the existing institutional framework with its important safeguards.

Circumstances where the central bank issues digital currency directly to consumer accounts for general-purpose use would raise profound legal, policy and operational questions. That said, it is important to study whether we can do more to provide safer, less expensive, faster or otherwise more efficient payments. Some jurisdictions are likely to move in this direction faster than others, based on the particular attributes of their payments and currency systems. At the Federal Reserve, we look forward to collaborating with other jurisdictions as we continue to analyse the

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[36] The Federal Reserve System and other central banks currently provide money digitally in the form of central bank deposits in traditional reserve or settlement accounts.

potential benefits and costs of central bank digital currencies.

Most immediately, the Federal Reserve is actively working to introduce a faster payment system for the United States to improve the speed and lower the cost of consumer payments. In many countries, consumers are already able to make real-time payments at low cost. This summer, the Federal Reserve announced the first new payment service in more than 40 years – the FedNow Service – which will provide a platform for consumers and businesses to send and receive payments immediately and securely 24 hours a day, 365 days a year.

As the public and private sectors work to reduce payment frictions, one of the most important use cases is for cross-border payments, such as remittances. Current cross-border payments solutions are often slow, cumbersome, and opaque. Authorities in many jurisdictions, including the United States, recognise the importance of cooperating across borders with each other and the private sector to address these cross-border frictions.[37]

Technology will continue driving rapid change in the way we make payments and the concept of money. As central bankers, we recognise the power of technology and innovation to transform the financial system and reduce frictions and delays, as well as the importance of monetary policy transmission; guarding against illicit activity and cyber risks; and preserving financial stability, consumer protections, and data privacy and security. Given the stakes, any global payments network should be expected to meet a high threshold of legal and regulatory safeguards before launching operations. The work ahead is not easy – the policy issues are complex, the coordination challenges are significant, and there are likely to be few simple fixes. Because the road ahead is complicated and challenging, I am especially pleased that Benoît will continue to help us navigate these issues as the new Head of the BIS Innovation Hub.

[37] Similarly, the introduction of a central bank digital currency in one country could affect other jurisdictions.

“Monetary policy: lifting the veil of effectiveness”

by Benoît Cœuré[38]

In a few days, I will leave the ECB after eight years of unprecedented challenges for the integrity and stability of our single currency, the euro. Throughout these years, the ECB’s resolve and steadiness have been the cornerstone of Europe’s crisis response and economic recovery.

I feel grateful and humbled to have been given a chance to be part of this effort.

I would like to thank former President Mario Draghi, my Executive Board and Governing Council colleagues, and the staff of this great institution for their friendship and trust. And I would like to wish Isabel Schnabel and Fabio Panetta the best of luck.

The starting point for my remarks this morning is people’s sense of frustration and their criticism of central banks for failing to deliver inflation consistent with their aim.

This criticism has taken different forms in society.

Professional observers and financial market participants often criticise the inadequate size of our actions and question the effectiveness of our instruments.

Private citizens criticise the type of instruments we use – in particular asset purchases and negative interest rates – and the side effects they associate with them.

The use of these instruments has caused persistent mistrust. While three in four euro area citizens think the single currency is good for the European Union and two in three think it is good for their country, less than half of citizens trust the ECB.[39]

In my remarks this morning, I would like to make two points that speak to these concerns.

The first is that there is no contradiction between inflation being low and monetary policy being effective. Central banks have achieved great success in recent years. Their achievements, however, and this will be my second point, are of little avail if the public does not recognise or understand them.

I will argue that this “veil of effectiveness” creates enormous challenges for the credibility and acceptance of central banks – challenges which can only be overcome by revisiting the appropriateness of four key components at the heart of our current monetary policy frameworks: how we define price stability, how we measure inflation, how we evaluate the credibility of our

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[38] Member of the Executive Board of the European Central Bank (2012-2019). I would like to thank Tobias Blattner for his contribution to this speech and for his unwavering support, alongside my former counsellors, Lorenzo Cappiello and Roland Straub. As always, all opinions expressed here are mine, as are any mistakes.

[39] Source: European Commission, Standard Eurobarometer 91, fieldwork in June 2019, and Flash Eurobarometer 481, fieldwork in October 2019.

intentions and the range of counterparties through which we implement monetary policy.

Low inflation and the effectiveness of monetary policy

My first point – how to square low inflation with policy effectiveness – centres on two separate questions.
How should we, the central banking community, evaluate the effectiveness of our own actions? And why, despite years of extraordinary policy support, is inflation remaining stubbornly low?
Evaluating our own actions is surprisingly difficult.
There is no handbook, no checklist that we can use to consistently grade our actions. Ultimately, of course, there can only be one yardstick to measure central bank effectiveness: our track record in delivering inflation consistent with our aim.
But does inflation failing to converge to our aim mechanically imply that our actions have not been effective?
My answer is a clear "no".
Despite unprecedented challenges to monetary policy implementation, central banks have succeeded in delivering financial and monetary conditions that are exceptionally supportive of real economic activity.
Many euro area firms can currently borrow in financial markets at negative rates. Bank lending rates, also for small and medium-sized firms, are currently at, or close to, historical lows, with little dispersion across major economies.
Firms have responded to these incentives as economic theory would predict.
Over the past five years, real investment has expanded at a faster pace than in the five years preceding the global financial crisis. This is no small achievement considering the persistent uncertainty that has weighed on sentiment in recent years.
Investment, in turn, has boosted job creation. Employment is up by 7% compared with mid-2014. And in many euro area countries wages are growing at the fastest pace in many years.
All in all, ECB staff estimates show that, without our policy actions, euro area real GDP would have been up to 2.7 percentage points lower at the end of last year, and inflation would have been up to half a percentage point lower every year over the past four years.[40]

[40] See Hammermann et al. (2019), "Taking stock of the Eurosystem's asset purchase programme after the end of net asset purchases", in Economic Bulletin, ECB, March.

Explaining low inflation

Such counterfactuals – based on a wide range of models – are important proof that policy has been effective along the full chain of transmission – from financial market prices to economic activity and from the real side to the nominal side.

For everything we know about how policy propagates through the economy, inflation today would be significantly weaker in the absence of our actions, maybe even dangerously close to deflation.

But such counterfactuals are far too complex to lend true credibility to our actions outside of our narrow circle.

They still raise the question as to why policy support has failed to promote a more robust convergence of inflation to levels that would allow a normalisation of policy – that would allow graduating the instruments that have caused mistrust and concern.

There are two broad hypotheses for why this might be the case.

The first is that policy has been wrongly calibrated – that is, slack is larger than widely assumed, and policy should be even more accommodative.

True, the output gap is an elusive concept that should never have become a gauge for conducting public policy, and it may be larger than thought.[41]

And broader measures of unemployment that include, for example, involuntary part-time work remain well above headline unemployment.

But these measures are now no longer higher than they were before the crisis.

I would also dismiss the assertion that the relationship between output and inflation has broken down. A plethora of empirical studies prove that the Phillips curve is alive and well.[42]

The second, and in my view more plausible, explanation is that the Phillips curve has shifted inward over time – that is, inflation today may be lower at every level of the output gap.

Such shifts typically relate to persistent and slow-moving changes on the supply side of our economies, where monetary policy has less traction. As such, they are difficult to detect, and even more difficult to prove, in particular when they coincide with weak aggregate demand.

But collectively their impact on wage and price inflation is difficult to dismiss.[43]

Just consider the structural changes in global energy markets where the shale oil revolution has effectively put a ceiling on oil prices by increasing the responsiveness of oil supply to demand

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[41] See Cœuré, B. (2018), "Scars that never were? Potential output and slack after the crisis", speech at the CEPII 40th Anniversary Conference, Paris, 12 April.

[42] See, e.g., Ciccarelli, M. and Osbat, C. (eds.) (2017), "Low inflation in the euro area: Causes and consequences", Occasional Paper Series, No 181, ECB.

[43] Some of these shocks are likely to have shifted the wage Phillips curve rather the price Phillips curve. While theory is unclear about the strength of the pass-through from wage growth to price inflation in the short run, long run labour cost inflation and price inflation are closely interrelated. For the euro area, recent empirical evidence confirms a clear, stable and shock-dependent link between labour cost and price inflation. See Bobeica et al. (2019), "The link between labor cost and price inflation in the euro area", ECB Working Paper No 2235.

shocks.[44]

Think of the secular decline in wage bargaining power that contributed to a significant part of recent productivity gains no longer being distributed to labour, with adverse consequences for real disposable incomes, consumption growth and, ultimately, inflation.[45]

Or consider the salient impact of digitalisation on the pricing power of brick and mortar firms, which may have contributed, at least in part, to the recent decline in the pass-through of higher wage costs to consumer prices.[46]

Add to these shocks the effects of ageing, the rise of services and the broader effects of globalisation and it is hard not to conclude that the combination of these shocks is likely to have put a lid on inflation in recent years, and that these shocks are likely to constrain price pressure also in the near future.[47]

None of this is necessarily bad news.

Many of these shocks are in fact benign, in the sense that they have the potential to ultimately lift productivity and real wages and pave the way to a low-carbon economy. Central banks clearly need to step up their research and modelling capacities to understand their joint impact.[48]

But until this happens – and the pace will depend a lot on our broader economic policy framework, which I won't discuss this morning[49] – central banks are likely to have to navigate in a low-growth, low-inflation environment with the risk of repeatedly failing to deliver inflation in line with their aim.

Monetary policy in a low-inflation environment

What, then, can or should central banks do in this environment?

Let me propose four elements for future reflection: how we define price stability, how we treat inflation expectations, how we measure inflation and how we implement monetary policy.

Some proposals are more far-reaching than others.

But all share one aim: to bring monetary policy closer to the people – to dismantle the veil of effectiveness and to foster acceptance of policies and instruments that too often are used as scapegoats for shortcomings and deficiencies elsewhere in our public policy apparatus.

Rethinking the definition of price stability

Consider first the ECB's definition of price stability as inflation rates of "below, but close to, 2%".

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[44] See, for example, Ozimek, A. (2017), "Macroeconomic Benefits of the Shale Oil Revolution", Moody's Analytics. In addition, the transition to a low-carbon economy has initiated a process through which demand for fossil fuels will gradually decline. Along this trajectory, the marginal cost of harvesting renewable energy is likely to become considerably lower and more stable than in the current regime. See, for example, Bielen et al. (2017), "The Future of Power Markets in a Low Marginal Cost World", Resources for the Future Working Paper 17-26; and Archer, C. and Jacobson, M.Z. (2005), "Evaluation of global wind power", Journal of Geophysical Research, Vol. 110, pp. 1-20.

[45] In France, for example, the share of workers that are trade union members fell from 23% in 1975 to 9% today. In Germany, it fell from 35% to 17% over the same period. Partly as a result of this, over the past 25 years real aggregate productivity per hour in the euro area has increased by more than three times as much as real compensation per hour.

[46] See, for example, Cavallo, A. (2017), "Are Online and Offline Prices Similar? Evidence from Large Multi-channel Retailers." American Economic Review, 107 (1): 283-303. Cavallo finds that price levels on websites and physical stores are identical 72% of the time. Price changes are not synchronised but are similar in frequency and average size. More research is needed to understand the underlying factors. But what might be happening is that increased price transparency through the internet limits the ability of firms to increase prices in physical stores.

[47] See, for example, Cœuré, B. (2019), "The rise of services and the transmission of monetary policy", speech at the 21st Geneva Conference on the World Economy, 16 May.

[48] See, for example, Cœuré, B. (2018), "Monetary policy and climate change", speech at a conference on "Scaling up Green Finance: The Role of Central Banks", organised by the Network for Greening the Financial System, the Deutsche Bundesbank and the Council on Economic Policies, Berlin, 8 November.

[49] See Cœuré, B. (2014), "Structural reforms: learning the right lessons from the crisis", speech at the Economic conference, Latvijas Banka, Riga, 17 October; and Cœuré, B. (2019), "The single currency: an unfinished agenda", speech at the ECB Representative Office in Brussels, 3 December.

A simple answer to the current challenges would be to lower the inflation aim.

If my dissection of the current inflation drivers is vaguely on the right track, then it is clear that this strategy would be wrong on many levels.

It would misjudge the current low-inflation episode as permanent and thereby dismiss the lessons of history on the slow pace of diffusion of new technologies.[50] It would create perilous time-consistency challenges for central banks when inflation eventually transitions to the new steady state.

And it would shift a disproportionate share of the macroeconomic adjustment burden onto workers as, even more so than today, shocks to euro area economies would have to be accommodated by lowering nominal wages. Not the best way to foster support for Europe and its single currency!

Raising the aim is similarly misguided. Why raise an aim that you have failed to achieve in the first place?

I come at this debate from a different angle.

If we communicate that we aim to maintain inflation at, say, 1.9%, then we should not be surprised if the public expects us to control inflation up to the first decimal point.

It significantly raises the bar for maintaining the credibility of monetary policy, particularly given how little the public actually knows about inflation and monetary policy.[51]

We need to dismantle the absurd idea of an omnipotent central bank that can mechanically steer inflation.

The ECB should clarify that it aims to deliver inflation of 2% over the medium term.

And it could communicate the range of inflation outcomes that can be considered acceptable in normal times.

Such a tolerance band, which can be more or less precise, is not an invitation for inaction or complacency.

Research shows that central banks already have a strong incentive to respond to inflation deviations within the tolerance zone, rather than waiting until inflation has crossed the edges.[52]

And there is no convincing evidence that a tolerance band weakens the anchoring role of a midpoint.[53]

It rather recognises the large and inherent uncertainty surrounding price and wage decisions, conveys this uncertainty to the general public and its elected representatives and establishes consistency with the medium-term horizon of the ECB's strategy.

For this change to be effective, however, two elements are critical.

First, the ECB would need to do more to communicate the midpoint to the broader public. A recent survey in the United States showed that only a quarter of respondent households knew of the Federal Reserve's 2% inflation aim.[54]

And, second, the ECB would need to establish a clear track record that emphasises the centrality of the midpoint in the conduct of its policy. The 2% needs to remain the clear nominal anchor for coordinating both expectations and actions.

Which inflation expectations matter?

The second element we should review relates to how we should evaluate expected deviations

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[50] See Brynjolfsson et al. (2018), "Artificial Intelligence and the Modern Productivity Paradox: A Clash of Expectations and Statistics," NBER Chapters, in: The Economics of Artificial Intelligence: An Agenda, pp. 23-57, National Bureau of Economic Research, Inc.

[51] See, for example, Van der Cruijsen, C., Jansen, D.-J. and de Haan, J. (2015) "How much does the general public know about the ECB's monetary policy? Evidence from a survey of Dutch households", International Journal of Central Banking, December. See also Cœuré, B. (2019), "Inflation expectations and the conduct of monetary policy", speech at an event organised by the SAFE Policy Centre, Frankfurt am Main, 11 July.

[52] See Orphanides, A. and Wieland, V. (2000), "Inflation zone targeting", European Economic Review, Vol. 44(7), pp. 1351-1387.

[53] See, for example, Castelnuovo et al. (2003), "Definition of Price Stability, Range and Point Inflation Targets: The Anchoring of Long-Term Inflation Expectations", Working Paper Series, No. 273, ECB.

[54] See Coibion, O. et al. (2018), "Inflation Expectations as a Policy Tool?", NBER Working Paper No 24788.

from the midpoint target.[55]

Critics would dismiss the idea of tolerance bands around the inflation aim because they fear that, by signalling our comfort with a range of inflation rates below 2%, we would entrench expectations of low inflation and risk downplaying the nominal anchor.

I have two comments in response to these fears.

The first is that we can no longer ignore the fact that medium-term inflation expectations of both professional forecasters and financial market participants have persistently adjusted lower. Adaptive expectations are rational at times of deep structural change.[56]

My second comment is really more of a question: which expectations should central banks consider when evaluating risks to the inflation outlook?

Neither the academic community nor the central banking community have ever provided an answer to this question. I see a large gap between the role played by inflation expectations in our profession and the extent of central banks' actual knowledge about how expectations ultimately affect inflation outcomes and which expectations are concerned.

Market-based measures are convenient because they are readily available. But convenience may prove delusive.

Household inflation expectations, for example, have been found to be a better proxy of firms' pricing decisions than those of professional forecasters or financial market participants.[57]

But expectations by households have pointed in a very different direction in recent times, painting a much less dire picture regarding the inflation outlook. According to one survey, households believed that annual euro area inflation between 2004 and 2018 was close to 9%, when in fact it was 1.6%.[58]

Does the consumer price index need to be changed?

The third element relates to the way we measure inflation.

The Harmonised Index of Consumer Prices (HICP) has been a tremendous achievement in terms of providing a reliable, timely and comparable measure of consumer inflation across EU Member States.

But whether it adequately captures the cost of living should be subject to regular review. A well-known example is the cost of housing.

The HICP captures only marginally the largest single lifetime expenditure of households – their cost of housing. Housing costs currently enter the HICP mainly through actual rentals, with a weight of just 6.5%. The costs of owner-occupied housing, by contrast, are not included even though more than 65% of households in the euro area own their main residence.[59]

Careful reflection is warranted but allowing a wedge to persist between the inflation that households perceive and the rate we officially measure can undermine the validity of our actions.

Rethinking central banks' toolkit

Re-evaluating the appropriateness of these three elements – the inflation aim, the role of inflation expectations and inflation measurement – would probably go a long way towards revitalising

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[55] See Cœuré, B. (2019), "Inflation expectations and the conduct of monetary policy", speech at an event organised by the SAFE Policy Centre, Frankfurt am Main, 11 July.

[56] See Shepard, B. (2012), "When are adaptive expectations rational? A generalization", Economics Letters, 115 (2012) pp. 4–6.

[57] See, for example, Coibion, O. and Gorodnichenko, Y. (2015), "Is the Phillips curve alive and well after all? Inflation expectations and the missing disinflation", American Economic Journal: Macroeconomics, Vol. 7(1), pp. 197-232; and Coibion, O., Gorodnichenko, Y. and Kumar, S. (2018), "How Do Firms Form Their Expectations? New Survey Evidence", American Economic Review, 108 (9), pp. 2671-2713.

[58] See Arioli, R., et al. (2017), "EU consumers' quantitative inflation perceptions and expectations: an evaluation", Occasional Paper Series, No 186, ECB.

[59] Source: The European Union Statistics on Income and Living Conditions, 2018. In the United States, such costs are included by using imputed rents, with a weight of around 23% in the CPI. As such, housing has contributed measurably to inflation in the United States in recent years. Imputed rent has a smaller weight of 11.5% in the Personal Consumption Expenditures (PCE) price index.

policy in line with the current challenges.
But it may not be enough.
If the current environment of persistently low underlying inflation and elevated uncertainty were to persist well into the future – and there is a risk that it may – then the odds are large that firms and social partners will increasingly start adjusting prices and wages accordingly.
In this case, more forceful policy action would be needed.
One option would then be to do more of the same.
I have no doubt that the ECB can further ease financing conditions by deploying its current instruments.
But one may doubt whether this approach would be more effective in bringing inflation closer to the aim than it has been so far. And one may wonder how far the depth of our shallow capital markets can be sounded, and whether the side effects of our measures would not outweigh the benefits at some point in the future.
A second possible, and complementary, option is to coordinate economic policies more closely.
The combination of limited fiscal policy space in many euro area countries, political fixation on large fiscal surpluses in some, and the persistent opposition to a common fiscal capacity makes this option less credible, however.
Coordination with fiscal authorities cannot be a fig leaf for central bank inaction or inability to act. And it can easily degenerate into a threat to central bank independence.
But central banks have one key strength, and that is their agility.
They have always been able to reinvent themselves, to innovate and overcome even severe impediments to transmission.
And if transmission through financial markets and banks hits a wall – if the third stage of transmission remains anaemic – then central banks have the obvious choice of considering whether to broaden the set of counterparties through which they implement monetary policy.
The discussion about central bank digital currencies is a case in point.
At the heart of this discussion is the question of whether central banks should grant the general public direct access to their balance sheets. This question comes with many thorny technological choices and policy challenges, in particular with regard to financial stability and the future of credit intermediation, as we know.[60]
But assuming that these challenges can be overcome, there are few reasons why central banks, within their mandate, should not apply the same set of instruments to accounts of private individuals that they currently apply to banks – that is, charge interest rates on central bank digital money.[61]
By going to the heart of consumer choices, this approach would likely be more effective and faster in stimulating demand and inflation, and it could have fewer negative side effects. Rather than addressing the symptoms of low inflation, this would amount to precision surgery on the Euler equation.
None of this is to say that it would be trivial.
Ultimately, central banks would need to weigh the costs against the benefits – just like we did for other unconventional policy measures. What we should avoid, however, is restricting our toolkit for dogmatic reasons or intellectual convenience, and giving up on our ability to deliver on our mandate.
If monetary policy remains a conversation between central banks and financial markets, we shouldn't be surprised if people don't trust us. Too many see us as part of a financial system which has failed to deliver growth and fairness. And this also curtails our policy options.

Conclusion

Let me conclude.

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[60] See Bech, M. and R. Garratt (2017), "Central bank cryptocurrencies", BIS Quarterly Review, September, pp. 55-70.
[61] See also Cœuré, B. (2018), "The future of central bank money", speech at the International Center for Monetary and Banking Studies, Geneva, 14 May.

Technological progress will continue to transform monetary policy in the future. To what extent and in what ways will depend both on the preferences of society and the risks that a very protracted period of low inflation poses to macroeconomic and financial stability.

There will be evolutionary changes that will ensure that current and tested policy frameworks remain fit for purpose. These changes may include progress on how we measure inflation and the evolving consensus on how we define price stability.

And there will be revolutionary changes, similar in scale and scope to the shift from banknotes to bank deposits a few centuries ago or the recent adoption of negative interest rates. Technology will create new policy choices and options enabling central banks to continue acting within their mandates. As Mario Draghi said at his last press conference, "Never give up!"

I wish Christine Lagarde and her team the best of luck and I fully trust that they will find the wisdom and courage to act in the face of ever-changing conditions, as the ECB has always done in its history.

Thank you.

“Institutional and economic challenges for central banking”

by Jean Tirole[62]

Thank you for the invitation and honour. I am truly delighted to speak at a conference honouring our common friend, Benoît Cœuré. I will share with you a few thoughts about four challenges for central banking: two policy-related ones, and two more institutional ones, on which I will put greater emphasis.

Challenges for traditional central banking

I will be brief on the first challenge, as many in this room, including myself, have rehashed the various questions that confront (to varying degrees) central banks. In a non-exhaustive way, let me mention:

- the need to resist the sirens' call for banking deregulation when the situation calms down;
- the need to undo doom loops, which logically developed in the wake of the European crisis and have been tolerated since; and on a related note, the insufficient risk sharing in the Eurozone and the disconnect between a single monetary policy and banks that are still largely national;
- the challenge posed by shadow banking, which naturally benefits from the migration of activity as supervisors tighten regulatory constraints on commercial banking;
- the need for a greater international collaboration in supervision and resolution at a time at which multilateralism no longer flies high;
- the completion of the Banking Union;
- the exit from low interest rates.

On the latter point, let me note that central banks had no choice but run unconventional monetary policies. Yet, these have well-known costs. Low interest rates are conducive to the emergence of

[62] Honorary Chairman of the Jean-Jacques Laffont – Toulouse School of Economics Foundation and laureate of the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel.

bubbles, as well as to risk taking through a search for yield. They imply a massive transfer from savers to borrowers and contribute to inequality by making asset owners richer. They are an addictive drug for governments, which can painlessly expand their balance sheet – at least in the short run. Finally, they have their own limitation as they hit the zero lower bound when the natural rate of interest lies below zero.

Digital money

It is hard to speak at an event honouring Benoît Cœuré without mentioning digital money. Many central banks, including the ECB, have correctly pointed out the high potential of new technologies such as blockchain (provided one departs from energy-intensive proof of work, perhaps by finding viable proof-of-stake approaches) and insisted on the many drawbacks of cryptocurrencies.
Pushing at open doors, I will just remind you of these shortcomings:

- the facilitation of illicit activities (money laundering, crime, and tax evasion);
- the waste or privatisation of seigniorage;
- the challenges cryptocurrencies pose for capital controls, the handling of runs on a traditional currency, and the conduct of countercyclical policy;
- the possible blaming of authorities as small investors are exposed to hacking on cryptocurrency exchanges, forking, burst of the cryptocurrency bubble, and finally – in the case of stablecoins – misrepresentations about the backing.

On the last point, Tether is a salutary reminder that stablecoins like Libra may lack collateral in safe assets; it more generally raises the question of who will prudentially supervise and act as lender of last resort for such global currencies.
As Benoît has emphasised, cryptocurrencies and stablecoins offer a wake-up call to central banks, which have been somewhat outpaced. Economic agents are looking for cheap and fast payment methods. The question still remains as to whether central bank digital currencies will offer narrow or broad access. The latter option – in which access is granted to wholesale and retail depositors and not just financial institutions – creates a risk of disintermediation of the banking system. It would seem to go against the standard precept that not all deposits are meant to be safe (protected from "bail-in-ability") and short term (demandable); it also runs counter to the observation that banks perform a transformation-cum-delegated monitoring function that the central bank does not have the expertise to duplicate.
The People's Bank of China seems to have opted for narrow access, with its chair stating that "the new digital currency is not meant to replace deposits held in bank accounts and balances held by payment apps such as Alipay and WeChat". What option will be selected in the rest of the world? I don't know, but with Benoît's BIS appointment, this dossier is in the best possible hands.
Next, I would like to share with you some concerns about two institutional challenges for central banks: the loss of independence and a possible mission creep. These apparently opposite concerns may actually be related if the latter is a strategy to avert the former.

Standing for agencies' independence in the age of populism

A new defiance towards independence…

It is trendy to reaffirm the primacy of politics in public decision-making. Officials in India, the US, Italy and Turkey, among other countries, have expressed strong misgivings about their central banks' monetary policy and questioned their independence. While the thin line between fiscal policy (traditionally a political prerogative) and monetary policy since the financial and European crises has been a trigger factor, this revisionism is a deep-set trend; it goes hand in hand with the current questioning of elites and politics.
In the industrial realm, some proposals would put competition authorities on a tight leash by conferring on politicians the ability to overturn competition authorities' decisions. There are also calls for excluding certain industries or firms from the scope of competition policy, as well as political demands to grant broader missions to competition authorities, for example stakeholder protection (employment, environment) and industrial policy. For instance, the EU Competition Commissioner's mandate now includes industrial policy objectives; while this dual mandate may avoid a turf war and no one knows how it will play out, the temporal proximity of this change in mandate with the Franco-German rejection of the Commission's Alstom-Siemens decision raises the concern that competition policy in Europe will be weakened in the process.

… that is part of a broader context

The broader context is the population's and politicians' disarray. The populists' narratives exploit our frustrations (the financial and Eurozone crises, unemployment, slowdown in economic growth, declining social status, inequality, etc.) and our fears about the future (rising debt and unfunded pensions, job-destroying technological progress, climate change and so forth).
People dismiss experts, want change, look for someone who "has a plan". Lo and behold, the political "market" responds to this demand. The politicians' response is not always enticing:

- They may pass the buck, asking corporations to substitute for government. Of course, there is nothing wrong with socially responsible investment (SRI), but SRI by definition follows a decentralised approach. In particular, I can't help noting the incongruity that arises when governments do not dare to price carbon, yet ask business to behave "as if".
- Governments may also pretend to act when not acting, as when they engage in "window-dressing" or "greenwashing". The acclaimed Paris Agreement embodied only vague promises (and a collective one for the green fund), following a deliberate strategy

to build a consensus among 196 countries on the least-common denominator. Of course, politicians cannot claim a monopoly on the issuance of vague and collective promises: a private counterpart to the Paris Agreement is the US Business Roundtable 2019 statement, which does not offer much in terms of concrete actions.

- Finally, when acting, governments often favour administered approaches and labyrinthine systems which give the impression they know what they are doing and are in control: I here have in mind command-and-control approaches to environmental regulation, ill-guided industrial policies that do not obey best practice, administrative layoff controls, etc. What all these targeted policies have in common is that they require information that officials do not have. Good government must be humble.

Why we should resist this trend

Agency independence is no panacea; independent agencies are only as smart and honest as their leaders are, making the confirmation process a key procedural step. Independence is also relative, as it should be; the setting of agencies' missions and the conduct of periodic reviews belong to the political realm.

We should nonetheless remind ourselves of why we set up independent agencies in the first place. The rise of independent agencies historically grew out of a discontent with the political process. Politics are subject to heavy lobbying, capture and electioneering.

For instance, central banks were made independent to tame inflation and, later to avoid lax prudential supervision. Politicians' eagerness to be re-elected generated credit booms and subsequent crashes, their cronyism with the banking sector or their desire to lend to their favourite firms or activities led them to turn a blind eye to bank risk taking.

Similarly, independent regulatory authorities set up to oversee the telecoms, electricity and other network industries and the judicial review applied since the early 20th century to US public utilities (which are private companies) were meant to protect private investors in those utilities from an expropriation through low prices, or conversely to protect consumers from abusive tariffs or a lack of competition in non-natural-monopoly segments.

A corollary to independence is greater acceptance of evidence-based public decision-making. Consequently, independent agencies are often populated with high-expertise staff (for example, PhDs and the like).

Agency independence is not appropriate for broad societal choices, for which the people or its representatives should be sovereign. In contrast, it reinforces the quality and credibility of public decision-making in topics that require complex expertise (monetary and prudential policy, competition policy, scientific matters, etc.). Let's not forget history.

Beware of mission creep

Broadening the mandate

Thirty years ago, political scientist James Q. Wilson, in his book *Bureaucracy*, stressed the necessity for government agencies to develop a sense of "mission", to eschew "vague objectives" and to define a set of "critical tasks" or "operational goals". Today, agencies are at risk of losing their sense of mission. Politicians, public intellectuals and commentators want them to include all kinds of considerations in their decision-making; agencies themselves sometimes take the lead by voluntarily taking on missions that go beyond their mandate.

Why not, all the more so as these extra considerations – such as global warming, unemployment or inequality – refer to key societal problems of our times? Not such a good idea, I would argue.

We must resist this trend of governmental agencies becoming jacks of all trades and masters of none.

A bit of background

Governments are the ultimate stakeholder society; their mission is multifaceted, and possibly fuzzy (what objective function are they trying to optimise?). This is unavoidable and they should not be assigned blame for it. Yet, this complex mission, together with limited voter understanding and information, makes it difficult for the electoral process to hold officials accountable for their performance.
Agencies, by contrast, have the ability to develop a sense of mission. And professionals and narrow specialists are instrumental in sustaining this sense of mission (internally) and providing intertemporal consistency and legal certainty (externally). As agency theory shows, clear missions and advocacy create focus and accountability. They also reduce the likelihood of challenge to the agency's independence.
Bu contrast, conglomerate agencies are like governments – their objective is multiple and fuzzy; almost any decision can be justified by an appeal to one of their multiple missions. Accordingly, well-managed agencies may resist being granted new tasks.

Use the proper instrument

To be certain, missions cannot be too narrow. While central banks' primary mandate is to achieve price stability (say, an inflation target of 2%), they also look at how their monetary policy affects unemployment, financial stability, or exchange rates; these broader concerns of course generate some tensions (for instance, there can be episodes where monetary considerations would suggest raising interest rates and financial stability calls for keeping them low). There accordingly may be some difficult judgement calls when defining a precise mission for an agency. But consider this:
inequality, a crucial challenge for our time, is best addressed through fiscal redistribution, better education, universal health care coverage and so forth. The idea of carbon pricing – by far the best-known instrument to address global warming – or tobacco taxation should not be abandoned on the grounds that they may hurt the poor. All the more so in order that compensation, for instance an energy check in the case of a carbon tax, can be designed so as to address the distributional concern; not to mention the fact that many popular climate micro-policies are probably more regressive than a carbon price (solar panels can be installed only if you are a homeowner; electric cars are not purchased by the poor, etc.)
Similarly, unemployment should be dealt with through incentives (such as experience rating) and worker protection, rather than by adding job protection considerations in each and every public policy (labour market policies, bankruptcy laws, competition policy, etc.). Trade distortions should in principle be addressed by making the World Trade Organisation more agile – an admittedly complex task – rather than through foregoing the benefits of competition policy and free trade.
In summary, an agency's sense of mission should not be tainted by each and every consideration. It should not be "polluted" through considerations that can be dealt with other, proper instruments.

Should central banks be green?

Asked this way, the answer to this question seems a complete no-brainer. And indeed, there recently have been many calls to make the ECB greener. Well, let's dig just a bit deeper.

Let me start with the uncontroversial part, which already lies within the mandate of central banks: climate change should be embedded in our economic forecasts, our stress tests, and our assessments of collateral accepted by central banks. Climate change will create macro shocks (damages, properties underwater, energy transition, high carbon prices and stranded industrial assets), whose likely size grows everyday as we keep substituting green posturing for actual action. It is useful to consider, as the Banque de France does, various scenarios in order to predict banking and insurance liabilities as the fight against global warming unfolds.

On the darker side, let us set aside the environmental version of modern monetary theory (EMMT), which would have the centrals banks print money to finance the fight against climate change. The policy gives the impression that nobody would have to pay – this feature contributes to the popularity of the narrative, as many still refuse to pay for the environment. EMMT may even have moral overtones ("the ECB gave €2,500 billion to banks," as one might read – when it actually made a profit from lending to them, and this profit was redeemed to taxpayers!).

A hard-line Keynesian might offer a potential defence for the argument: central banks' expansionary monetary policies, despite the substantial recent creation of liquidity, may not yet have reached their full potential. Yet, regardless of how one feels about the validity of this claim, it does not come to the rescue of EMMT: if a cheap source of income is available, then it is broadly available for any government action, be it education, health or climate change mitigation. At the very least there is an opportunity cost; EMMT implies that the central bank not only would set an environmental policy that differs from that of elected governments (Germany has just decided to exit coal by 2038), but it would also choose to allocate a "budget" in favour of the environment over education, health or other uses, an allocation that traditionally is the prerogative of European parliaments.

More relevant are proposals to alleviate the capital requirements imposed on banks' climate-friendly lending. These proposals are well-meaning but seem misguided for several reasons:

- The first is the obvious point that Europe can avail itself of a much more efficient instrument – a high-enough carbon price – and refuses to employ that instrument at a sufficient level and scope of application; I think that European policy in this respect is wrong, but one may feel uneasy about the central bank's use of an inferior instrument and taking charge of a policy – climate change mitigation – to which European politicians only pay lip service.
- Second, green projects are individually risky and, especially, subject to substantial macro risk. One cannot help being concerned about such a policy creating a banking crisis. Green finance should not be the new subprime.
- Third, the current problem with green projects is not the availability of financing, but the lack of income prospects associated with our failure to give a proper price to carbon emissions.
- Fourth, it is important to identify what is "green" and what is not, a topic I will shortly return to.

In the grey zone stand calls for the central banks to commit to gradually eliminating carbon-intensive assets from their portfolios, starting with immediate divestment from coal-related assets. Such calls remind the central banks of their social responsibility in front of the twin market and political failure in environmental matters.

Some will object to this position for one of the reasons I used to criticise the relaxation of prudential standards for green lending: the central bank takes over prerogatives that traditionally belong to the political realm. Well-taken, but it is hard to disagree with policies that stigmatise coal.

Regardless of how we see it, we should remember that our moral duty is to eliminate coal, not to pretend we do. While a modest carbon price of €40 per tonne of CO_2 would by itself imply the

disappearance of much European coal (admittedly replaced by gas, but the latter emits "only" half as much), we must acknowledge that, while divestment has expressive content, its efficacy is limited by the leakage problem: it has little impact if other investors jump at the opportunity of undervalued fossil fuel stocks and bonds (this was expressed – albeit in too extreme a form – by Bill Gates, who argued that campaigns to ditch fossil fuel stocks are "a total waste of time"). It also has no impact if the plants already exist, as they do not need financing. In such cases only a carbon price will have an impact on emissions.

Another issue is that we need to develop a better understanding of the "exclusion vs best in class" choice. Gas is dirty, but could it not make sense in the transition process, in particular in countries where there are few alternatives to fossil fuels? What about nuclear power, whose decommissioning worries even its opponents, as it would seriously increase CO_2 emissions? And shall we totally exclude oil companies from the list of socially responsible companies, or should we instead encourage those which substantially reduce their emissions during extraction and refining? Pushing the reasoning in another direction, should the ECB refrain from purchasing German bonds on the ground that emissions of CO_2 per inhabitant are 60% higher in Germany than in France?

I do not have answers to these questions. Neither do I think that the answers will be invariant in relation to the overall policy mix; that is, the answers to these questions probably cannot result just from careful thinking about the questions in isolation, and are contingent on the other policies that are being contemplated. Consider my provocative question about oil: severance from oil is a consistent approach; by contrast, it would be inconsistent to keep gasoline and heating oil prices low on the one hand (and thereby encourage the continued use of this fossil fuel by the population and firms) and, on the other hand, not to encourage oil companies to reduce their emissions. People may legitimately disagree about policies, but they cannot challenge the idea that in the end it is impact that counts.

Posture and moral compass

This brings me to my final, broader point: ethical-looking investments are still too often unrelated to impact. As an economist, I feel that ethical actions are those which make a difference; posture should not be part of our moral compass. The predictable discovery that likeable private policies such as carbon offsets and public ones such as the Kyoto Clean Development Mechanism (despite its emphasis on additionality) often failed to reduce carbon emissions is a salutary reminder of this. Such policies too often create a windfall gain for projects that would have taken place anyway or whose direct impact is nullified by carbon leakage. They assuage our conscience but do little to protect future generations.

A big challenge awaits governments, central banks, the finance sector and academics: we need to define environmental, social, and governance criteria that reflect actual impact and not just narratives. In the end, our greatest social responsibility is perhaps to educate populations and to put pressure on governments to start behaving in a responsible manner.