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LITTLE HAS CHANGED SINCE 2008. MERVYN KING BELIEVES THAT THE GLOBAL ECONOMY NEEDS TO REFORM

EUROPE'S RESPONSE TO TODAY'S CHALLENGES WILL BE A GAME CHANGER, ARGUES CHRISTINE LAGARDE

LAEL BRAINARD LOOKS AT THE NEXT CHAPTER IN THE EVOLVING PAYMENTS LANDSCAPE

THE GLOBAL TRADE PLATFORM

Foreword

Welcome to the latest *WCR* Finance ePub. This publication has been prepared in response to readership demand for an overview of the financial sector in these turbulent and unique times.

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

CONTENTS

CONTENTS

CONTENTS

CONTENTS

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The world turned upside down

Little has changed since the 2008 financial crisis. Mervyn King considers economic policy in turbulent times, and argues that the global economy needs to reform

Introduction

In the early years of the Bank for International Settlements, Per Jacobsson wrote its annual report, establishing a tradition of intellectual rigour and policy relevance to that report which continues to the present. As Managing Director of the IMF, he personified its true role as 'trusted advisor' to governments. So I want to offer a little advice of my own to those entrusted with economic policy in turbulent times.

This year we celebrated the 75th anniversary of the founding of the Bretton Woods institutions. But it is no time to celebrate. A decade ago, we thought the banking crisis was over – with the recapitalisation of the largest global banks – and that the recovery already visible in emerging economies would soon spread to the industrialised world. That recovery has proved frustratingly slow, and no sooner do we think we are on track to 'normalise' than new obstacles appear. The IMF has revised down its estimate of world growth both this year and next. And every data release seems to bring gloomy news.

Before the financial crisis, the world economy grew at over 4% a year almost one year in two. Since the immediate bounce back from the Great Recession of 2008-09, there has not been a single year in which the world economy has grown by more than 4%. Relative to GDP, global debt is higher today than in 2007. If the problem before the crisis was too much borrowing and too much spending, then the problem today is too much borrowing and too little spending. The world economy is stuck in a low growth trap.

Following the Great Depression, there was a period of intellectual and political upheaval. First, Keynesian and then rational expectations revolutions altered our views on economic policy. No-one can doubt that we are once more living through a period of political turmoil. But there has been no comparable questioning of the basic ideas underpinning economic policy. That needs to change.

The economic and political climate has rarely been so fraught. Ripples on the surface of our politics have become breaking waves as the winds of change have gained force. Trade disputes between the US and China, riots in Hong Kong, the fall from grace of several important emerging economies in Turkey, Argentina and Brazil – not to mention the complete collapse of Venezuela – all remind us of the fragile nature of our world today.

The European election results in May and growing tensions between France and Germany over the future direction of the euro area should shake the complacency among European elites.

... key features of standard models are unhelpful in two important areas of economic policy, namely getting the world economy out of its low growth trap, and preparing for the next financial crisis

In addition, politicians in the United States have been turning inwards in an increasingly divisive political conflict, just as the *Pax Americana*, the mainstay of the post-war world, is slowly disappearing.

Earlier this year, a new sculpture entitled *The World Turned Upside Down* was unveiled outside the London School of Economics[1]. It is a large globe which has been inverted so that one can immediately see, as one cannot from the conventional Mercator's projection in two dimensions, the true size of Africa and Latin America, and the vastness of the oceans. This sculpture serves as a metaphor for my theme today – namely, that the conventional way of looking at things has misled us in both the diagnosis of, and the prescription for, our current economic problems.

Central banks, and the economics profession more widely, see their models as descriptions of the world. But this exaggerates the extent of our knowledge, especially in a world of radical uncertainty where we simply do not know what might happen next. Models are neither right nor wrong, but helpful or unhelpful.

In present circumstances, I am going to argue that key features of standard models are unhelpful in two important areas of economic policy, namely getting the world economy out of its low growth trap, and preparing for the next financial crisis.

Interest rates and global recovery

Following the global financial crisis, we drew comfort from the fact that in the industrialised world, apart from southern Europe, unemployment never reached the levels experienced during the Great Depression when unemployment in the United States was over 14% for an entire decade, reaching a peak of 25%. By contrast, during the Great Recession US unemployment peaked at 10% in 2009 before steadily falling back to 3½%, the lowest rate for fifty years. For this reason, we can claim that a repetition of the Great Depression was averted.

But there is another way of looking at the economic performance of the past decade. Imagine that in 1930, an observer looked back at the growth of the US economy since the turn of the twentieth century and noted that output per head had grown at an average rate of around 2% a year. They might then have projected forward GDP per head to 1950.

Within a few years that benchmark would have looked unattainable as output fell by 30% in the early 1930s. Yet by 1951, GDP per head had recovered to the level that would have been projected 20 years earlier. Although significant resources had been lost in the interim, output was now back on its previous trend path.

Now consider what has happened since 2008. Using the IMF WEO projection for the US through 2024, we might ask at what rate GDP per head in the US would have to grow from 2024 in order to regain its previous trend path by 2028? The answer is 5½% a year[2].

That is a tall order, and without growth at that improbable rate we will be worse off relative to pre-crisis expectations than was the case twenty years after the Great Depression. Following the Great Inflation, the Great Stability and the Great Recession, we have entered the Great Stagnation.

Six years ago, at the IMF, Larry Summers re-introduced the concept of secular stagnation to economic debate[3]. It is surely now time to admit that we are experiencing it.

In terms of the failure to meet reasonable expectations, it does not really matter whether the source of this secular stagnation stems from supply or demand. But if we are to escape the low growth trap, the diagnosis of the phenomenon is relevant.

Conventional wisdom attributes the stagnation largely to supply factors as the underlying growth rate of productivity appears to have fallen. But data can be interpreted only within a theory or model. And it is surprising that there has been so much resistance to the hypothesis that, not just the United States, but the world as a whole is suffering from demand-led secular stagnation.

That resistance stems, I believe, from adherence to a particular model of how monetary policy operates. In this model, the economy grows at some exogenous rate on which is superimposed random shocks – 'headwinds' or 'tailwinds' – which are also exogenous and unobservable. Weakness of growth reflects either a fall in underlying growth potential or an unusually persistent negative shock. The return to an equilibrium path is hindered by frictions of various kinds, and the role of monetary and fiscal policy is to accelerate that return.

But this model – ubiquitous in the analysis of stabilisation policy – is not helpful in today's circumstances[4]. Why not? Because we entered and departed the global financial crisis with a distorted pattern of demand and hence output. National saving ratios were too low in some countries and too high in others.

Normally, we might expect changes in prices and interest and exchange rates to correct this disequilibrium. But this is where expectations enter the picture.

The investment required to stimulate production in those sectors that could support sustainable growth is held back by extreme uncertainty about future prices. Producers cannot meet future consumers in the marketplace, separated as they are by time and space.

In the language of economic theory, a world of incomplete Arrow-Debreu contingent futures markets means that there is no mechanism for supply and demand to interact in order to make expectations of future prices and

production consistent with steady growth. With extreme uncertainty, expectations are a dragging anchor on spending[5]. The notion that a market economy is self-stabilising is misleading.

This is a story of a demand-led secular stagnation driven by uncertainty and incomplete markets. And who can deny that uncertainty is at unusually high levels? Political turbulence, disputes over trade that could last for years, the disagreement within Europe over the basic structure of a monetary union, all these have contributed to uncertainty that may not be resolved quickly.

The new IMF index of trade uncertainty has risen very sharply over the past year after twenty years of broad stability at low levels; the index of global economic policy uncertainty produced by Baker, Bloom and Davis has reached record levels, and is higher today than during the financial crisis; and the BlackRock geopolitical dashboard shows that policy risks are the highest for years and greater than at the peak of the Eurozone crisis[6]. In such an environment we would expect that a secular stagnation of investment spending would persist, and that is exactly what has been happening.

Escaping from this low growth trap is a different proposition than climbing out of a Keynesian downturn. And requires different remedies. In a Keynesian downturn during a conventional business cycle, the aim is to boost aggregate demand. Temporary monetary or fiscal stimulus restores demand to its trend path and can then be removed. We are not overly worried about which components of demand respond to the stimulus.

But to escape permanently from a low growth trap involves a reallocation of resources from one component of demand to another, from one sector to another, and from one firm to another. There has been excess investment in some parts of the economy – the export sector in China and Germany and commercial property in other advanced economies, for example – and insufficient in others – infrastructure investment in many western countries.

To bring about such a shift of resources – both capital and labour – will require a much broader set of policies than simply monetary stimulus. And where there is excess capacity, it will also imply writing down asset values on the balance sheets of both industrial and financial companies to more realistic levels. That will require, given today's high debt levels, the recapitalisation of some financial intermediaries in some countries.

It is the failure to face up to the need for action on many policy fronts that has led to the demand stagnation of the past decade. And without action to deal with the structural weaknesses of the global economy, there is a risk of another financial crisis, emanating this time not from the US banking system but from weak financial systems elsewhere.

Much current debate is focussed on whether monetary policy has sufficient room and sufficient power to counter a new economic downturn. Among many politicians, there is an ingrained belief that 'monetary activism' is the answer to sluggish economic growth[7]. There are times, such as 2008-10, when activism is indeed appropriate.

But far more urgent is the question of which set of policies will support the reallocation of resources necessary to escape today's low growth trap. The answer goes well beyond monetary and fiscal policies to include exchange rates, supply-side reforms and measures to correct unsustainable national saving rates.

Take Europe as one example. Further monetary easing, and a weaker euro, may be supportive of a recovery in the south but it will further distort the structure of economies in the north. Until France and Germany can resolve their differences over structural reforms to the monetary union, monetary stimulus on an even larger scale is not just papering over the cracks but widening those cracks. I am tempted to say that the only advice one could give a new President of the ECB is to stay in Washington!

Certainly, the IMF has a potentially important role to encourage global cooperation – not formal coordination, but a common move towards an escape from the low growth trap through the adoption of country-specific policies to reallocate resources and joint agreements on ways of coping with debt reductions to forestall a financial crisis. Most important of all, the Fund could help foster a private but challenging debate among policymakers about the merits of today's conventional wisdom.

Firefighting and access to central bank liquidity

Let me turn now to how we might deal with another financial crisis, and make a case for new thinking here too.

The last financial crisis led to the Great Stagnation and was obviously costly in terms of lost output. But it was also expensive in financial terms. A recent IMF study found that the cost of interventions, including guarantees, to support financial institutions between 2007 and 2017 in 37 countries amounted to $3.5 trillion)[8].

It is hardly surprising, therefore, that such interventions have proved highly unpopular. Yet without them the financial system and the wider economy would have collapsed.

It is no accident that the recent book by Ben Bernanke, Tim Geithner and Hank Paulson – the three musketeers responsible for saving the American banking system – is titled *Firefighting*. Confronted with a conflagration of extraordinary proportions, they hosed the financial fire with unprecedented injections of liquidity to prevent it spreading. And the use of overwhelming force became a guiding principle of crisis management.

But if that principle means that in a crisis all debt issued by the financial sector must be guaranteed by the government, ie. by the rest of us, then it is not enough to worry that in future the Fed or other central banks will be limited in their ability to provide such guarantees.

Instead we must construct a political settlement under which we accept that in a crisis liquidity is created to douse the fire in return for some limit on the extent of maturity transformation that is created by the private sector. In essence, I am arguing for a tax on maturity transformation.

My concern today is not the mechanism of such a scheme – I have written on that in my book *The End of Alchemy* where I argue for a scheme of pre-positioned collateral related to the maturity transformation of the individual financial institution[9]. Rather, it is the imperative of putting in place an ex ante framework for the provision of central bank liquidity to douse a fire. I say this for two reasons.

First it is impossible to know when a small fire that should be allowed to burn and extinguish one or more institutions turns into a conflagration that threatens the entire system. That judgement was a problem during the crisis for all of us - even the three musketeers who initially said no to firms that asked for help[10]. They did not provide assistance to Countrywide, the US equivalent of the British bank Northern Rock. And they faced major problems in saving Lehman Brothers because lending against inadequate collateral makes no sense. If an agreed ex ante framework with pre-positioned collateral had been in place, the problem would not have arisen.

Second, in a crisis it is too late to create political legitimacy for the necessary emergency responses. Congress has placed fetters on the ability of the Treasury and the Fed to fight the next crisis – the wheels of some of the fire engines have been dismantled. We should not be surprised that it has done so because the actions taken during the crisis were not part of an armoury agreed with Congress beforehand.

As former Fed and other officials have said these restrictions on the Fed are undesirable. But they will be removed only in the context of a clear ex ante framework that makes banks, and other institutions that engage in maturity transformation, part of an insurance scheme that is accepted as fair.

Insurance pay-outs are more likely to be acceptable than bailouts. The political economy of 'bailing out' banks would be much improved if we could show that banks had subscribed in good times to an insurance scheme which entitled them to borrow in bad times. Without an agreed framework, in the next crisis Hank Paulson's successor will once again be kneeling in front of Nancy Pelosi – I assume she will still be there – asking Congress to rescind the legislation that has restricted the Fed's powers.

As all financial firefighters discovered, only a solvent government, through its central bank, can create the liquidity demanded in a crisis. It follows that it is impossible to design a regime for liquidity regulation without its being properly integrated into the design of central bank liquidity provision.

Radical uncertainty means that we cannot be confident that particular assets will prove to be liquid in some future crisis. Better to replace that regulation by an insurance scheme that ensures that all runnable liabilities are covered.

Unfortunately, the response to the crisis has been a combination of excessively detailed regulation, on the one hand, and a plea for greater freedoms for firefighters, on the other.

Complex regulation imposes unnecessary costs of compliance and gives a false impression of the security of the banking system. And the absence of an agreed ex ante framework for firefighting requires a commitment to use almost unlimited resources without political authority for the necessary actions.

Now is the time for the Federal Reserve, and other central banks to begin behind closed doors discussions with legislators to make the latter realise how vulnerable they will be in the event of a future crisis. Congress would be confronted with a choice between financial Armageddon and a suspension of some of the rules that were

introduced after the last crisis to limit the ability of the Fed to lend. It is time for some new thinking about the lender of last resort function.

Conclusions

Through the twin issues of current economic stagnation and the search for a framework to deal with banking crises run two common themes. First, radical uncertainty means we should not place excessive reliance on models that assume knowledge we cannot possess, whether of the response of the economy to changes in economic policy or the numerical calibration of risk weights. As John Kay and I argue in our forthcoming book *Radical Uncertainty*, the focus of policy design should be on robustness and resilience[11].

Second, democratic legitimacy of policy actions derives from careful institutional design of ex ante mechanisms. Central bank independence was granted by legislatures to achieve certain objectives. The same principle should apply to policies for dealing with financial crises.

In 2005, at the annual Jackson Hole Symposium, I extended the traditional definition of price stability when I said that, *"economic policy stability is best thought of as an environment in which the decisions of households and firms are not materially affected by the need to insure against future arbitrary or mischievous changes in government policy."*

Today, the world has been turned upside down, and is a turbulent place. A market economy cannot flourish if policymakers behave in ways that lead private-sector agents to expect future economic policies to be subject to arbitrary or capricious changes.

In turbulent times, expectations really matter. Radical uncertainty is weighing on investment and growth across the world, and there is simply no way of knowing from where the next financial crisis will come. Radical uncertainty

pervades the outlook for world trade, the future structure of European monetary union, the rewriting of Britain's unwritten constitution, the rebalancing of the Chinese economy, economic policies across Latin America, the potential population explosion in Africa, and that is not even to mention the Middle East.

To whichever parts of the world a firm exports, and from whichever part of the world it imports, there is no market in which to lay off the risks that result from such uncertainties. The price signals that might encourage productive and sustainable investments are invisible when markets contingent on all these possible outcomes do not, and could not, exist.

That is why a market economy, although by far the best means we have discovered for promoting prosperity, does not have self-stabilising properties. And when the world economy is stuck, as I believe it is, in a low growth trap then even national policies may struggle to restore the profitability of private investment.

Those were the conditions in which the Bretton Woods institutions were set up, and they are the conditions in which multilateral institutions are needed today to encourage cooperation among nations to find a way back to a path of sustainable growth that meets the aspirations of so many who today feel left out. That task will require intellectual imagination and ingenuity.

The failure of conventional models to capture the reasons for weak growth of the world economy, and the failure to establish a proper ex ante framework for the provision of central bank liquidity in a crisis, reflect an intellectual and political unwillingness to challenge the conventional wisdom.

75 years ago, the IMF was borne out of a commitment to radical reforms to the international financial system. At Bretton Woods, half a century of global conflict was a powerful incentive to contemplate something new. Is not a

global financial crisis followed by more than a decade of secular stagnation sufficient to persuade economists and politicians to be equally radical?

Another economic and financial crisis would be devastating to the legitimacy of a democratic market system. By sticking to the new orthodoxy of monetary policy and pretending that we have made the banking system safe we are sleep-walking towards that crisis.

According to his biography, Per Jacobsson *"believed firmly that intelligent, practical people, if they are well and fully informed, will take the right decision."*[12] But there are times, and perhaps we are living through them, when it is more important to challenge the conventional wisdom.

The World Turned Upside Down was an English ballad published in 1646 as a protest against the attempt by Parliament to impose on the people an austere and unpopular version of Christmas. Successful elites, even Parliaments, not only listen to popular concerns; they are open to new ways of thinking about problems. Let me leave you with these words of John Maynard Keynes (from the Preface to *The General Theory*):

"The difficulty lies, not in the new ideas, but in escaping from the old ones."

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Endnotes

1. http://www.lse.ac.uk/News/Latest-news-from-LSE/2019/03-Mar-19/LSE-unveils-new-sculpture-by-Mark-Wallinger

2. Using data on GDP per head at constant prices from IMF WEO Database April 2019. The updated Database for October 2019 would if anything raise the required growth rate from 2024 through 2028.

3. Larry Summers (2013), http://larrysummers.com/imf-fourteenth-annual-research-conference-in-honor-of-stanley-fischer/. See also Hans-Werner Sinn (2009), https://www.project-syndicate.org/commentary/forget-inflation. For a more technical analysis of secular stagnation in a New Keynesian rather than an expectations- driven model see Eggertson, GB, NR Mehrotra and JA Robbins (2017), "A Model of Secular Stagnation: Theory and Quantitative Evaluation", NBER Working Paper 23093. Closer in spirit to the interpretation in this lecture is Rachel, L and LH Summers (2019), "On Secular Stagnation in the Industrialized World" NBER Working Paper 26198.

4. See the discussion of a "narrative revision downturn" in chapter 8, King The End of Alchemy (2016), WW Norton (US) and Little, Brown (UK).

5. The assumption of incomplete Arrow-Debreu contingent commodity markets is at the heart of the Keynesian proposition that low demand can be a persistent phenomenon. Rational expectations cannot help us here.
The concept of rational expectations is a sensible approach to modelling in order to avoid conclusions from being drawn from arbitrary assumptions. But rational expectations is helpful only insofar as the model itself is relevant. The standard model of monetary policy misses the essence of how secular stagnation can persist.

6. The IMF index is at https://blogs.imf.org/2019/09/09/new-index-tracks-trade-uncertainty-across-the-globe/. The Baker, Bloom and Davis index is at https://www.policyuncertainty.com/. And the BlackRock geopolitical risk dashboard is at https://www.blackrock.com/corporate/insights/blackrock-investment-institute/interactive-charts/geopolitical-risk-dashboard

7. The phrase "monetary activism" does not appear in any central bank mandate and often means that politicians would like central banks to undertake quasi-fiscal actions for which they, and not politicians, would be held accountable. This view shows a disregard for the nature of institutions and their legislative mandate.

8. "The Long Shadow of the Global Financial Crisis: Public Interventions in the Financial Sector", IMF Working Paper WP/19/164, prepared by Deniz Igan, Hala Moussawi, Alexander F Tieman, Aleksandra Zdzienicka, Giovanni Dell'Ariccia,

and Paolo Mauro, July 2019.
9. The role of the central bank as Pawnbroker For All Seasons is described in chapter 7 of King, MA (2016), The End of Alchemy, WW Norton (US) and Little, Brown (UK). See also related ideas in Kent, C, "The Committed Liquidity Facility" Address to Bloomberg 23 July 2019 which describes the Australian alternative to liquidity regulation, and the proposals by William Nelson of the Bank Policy Institute for commercial bank access to a standing Fed facility.
10. Bernanke, BS, TF Geithner, and HM Paulson Jr. (2019), Firefighting: The Financial Crisis and its Lessons, Penguin Books, New York, pps.33 and 39.
11. Kay, JA and MA King (2020), Radical Uncertainty, WW Norton (US) and Little, Brown (UK).
12. http://www.perjacobsson.org/bio.htm

This article is based on a speech delivered at the Per Jacobsson Lecture 2019, at the IMF Annual Meetings, 19 October 2019

The FSB at 10 years—looking back and looking ahead

Randal Quarles considers the success of the FSB and looks ahead to the new challenges, such as fintech, shifts in financial globalization and integration, and increasing nonbank financial intermediation

This year, 2019, is the 10th anniversary of the founding of the Financial Stability Board (FSB), which means it has also been 10 years since some of the darker days of the global financial crisis. The FSB was not born on a sunny day; it was born of necessity, with storm clouds still looming.

An anniversary—particularly a 10th anniversary—is a good opportunity for reflection. Not far from here, in Antwerp, the artist Peter Paul Rubens painted the 'Temple of Janus'. Janus was a Roman god who could look both backward and forward in time, and when Rubens painted the work, citizens of Antwerp were at a turning point and were wondering what the future held for them.

I would like to take on the role of Janus. I would like to look back on the experiences of the past 10 years, what the FSB has accomplished, and also offer some perspective on just how it contributed to the construction of the post-crisis global financial architecture. As you would expect, I believe the FSB has and will continue to play an important role in our global financial system.

I will discuss why that is. I would then like to look ahead to the new challenges facing the global regulatory community, such as innovations in financial technology, shifts in financial globalization and integration, and increasing nonbank financial intermediation.

Ten years ago, after the events of the fall of 2008, the G20 nations recognized that the response to the crisis had to be urgent, it had to be credible, and it had to be global. The regulatory community knew it must work to regain the confidence of financial institutions, market participants, and the broader public. They knew that then-existing arrangements for international cooperation were not up to that task.

The Financial Stability Forum (FSF), the predecessor of the FSB, had been founded by the G7 countries in 1999 after a series of financial crises in the latter part of the 1990s. The group was intended to enhance cooperation among various national and international supervisory bodies and multilateral financial institutions in order to promote stability in the international financial system. Membership was relatively narrow, with only 12 countries and few emerging markets represented.

We now find ourselves with increasingly focused energy on looking forward, with both a strong organization that has been tested through an intense period of policy formulation and implementation and a strong global financial system resulting from those efforts

While the group discussed matters related to financial stability, the areas it was asked to study were relatively narrow, and combined with its limited membership, it had relatively little scope to promote regulatory reform. The looseness of this arrangement represented the prevailing view in advanced nations at the time that national regulators and finance ministries were capable of monitoring and dealing with risks to global financial stability.

On the one hand, these nations had long recognized that effective capital regulation of banks with a global footprint was only possible with coordination on minimal capital standards—the Basel Committee process. But there was no such consensus about financial stability, perhaps rooted in a belief, rarely expressed but widespread, that a severe global financial crisis was highly unlikely, and that traditional prudential supervision would be enough to prevent it.

Major banks in Europe, Japan, and the United States had been affected by debt crises in developing countries in the 1980s and 1990s, but these crises had never seriously threatened advanced economies.

In the fall of 2008, G20 leaders recognized that the severity of the emerging global financial crisis required a response that was beyond the capabilities of the FSF. Like that Long Island police chief in the movie 'Jaws', ministers and leaders saw what was racing toward them and decided that they were going to need a bigger boat.

Specifically, they recognized there was a major deficiency in the FSF that prevented it from being very effective in establishing international financial regulatory standards. The FSF was narrow—geographically, in the number of governments, and substantively, in the range of ministries, central banks, and important regulatory agencies that were not members.

Some of the world's largest economies and financial markets were not represented, in particular emerging markets like China, India, Brazil, Mexico, and South Africa. As of 2009, only 58 percent of global gross domestic product (GDP) was represented, compared to 83 percent of GDP under the FSB today. The issue of representation was crucial, because the financial crisis required a fully global response.

As a result, in April of 2009 at the G20 summit in London, the heads of state and government called for an organization *"with a stronger institutional basis and enhanced capacity"* that would allow them to achieve *"much greater consistency and systematic cooperation between countries…that a global financial system requires."*

Behind those simple words was a sea change in the willingness of advanced nations to tackle significant coordination on financial regulation. The crisis that had been raging at that point for over a year made the need for such a commitment inescapable.

With the creation of the FSB, the G20 designed a new regulatory organization with global reach dedicated to advancing and coordinating a newly embraced priority for the global economy—far-reaching reform of financial regulation and supervision. The FSB membership spans central banks, ministries of finance, supervisors of financial institutions, international financial organizations, and market regulators.

It has a broad mandate centered on financial stability and coordination of responses for those most challenging issues that cut across the traditional mandates of other global standard-setting bodies. In addition, one of the FSB's chief responsibilities is scanning the horizon for financial vulnerabilities, making it an inherently forward-looking body.

The exigency of the crisis helped overcome longstanding deficiencies in the structure of the FSF, rooted in differences between the members or ambivalence about international standard setting itself, related to financial stability. The crisis helped bridge differences and reach consensus, so that quick initial progress was made on matters that required urgent action.

In addition to those actions, the members also recognized that work must begin immediately to develop new regulatory standards for capital and liquidity, derivatives reform, and issues stemming from the nonbanking sector which would require some time for data gathering and extensive public consultation.

Creation of the FSB was one of a number of steps taken at the international level in the spring of 2009 that over the subsequent months helped restore confidence in the banking system and begin the process of recovery.

Since the FSB was born with the global economy and financial markets still in turmoil, immediate attention was needed in a number of core areas: over-the-counter (OTC) derivatives, prudential bank standards, resolution, and nonbank finance.

Much of the FSB's first 10 years has been focused on these issues, and a great deal has been accomplished, resulting in a significantly strengthened and more resilient global financial system. So let me quickly review our work in these areas.

Over-the-counter derivatives

The elements of the FSB's agenda for OTC derivatives fall into four categories: 1) central clearing of standardized OTC derivatives, where appropriate, 2) exchange or electronic platform trading of standardized OTC derivatives, 3) reporting to trade repositories, and 4) higher capital and margin requirements for non-centrally cleared derivatives.

The most recent report on implementation progress finds that in the jurisdictions with the largest OTC derivatives markets, there is almost complete implementation of the necessary reforms. That means that today, OTC derivatives markets, which are crucial for the functioning of our financial system, are simpler, more transparent, and generally more resilient.

Prudential bank standards

The FSB has endorsed the work of the Basel Committee that is aimed at enhanced prudential standards for internationally active banking organizations, a process known as Basel III. The main elements of Basel III are: a stronger risk-based capital adequacy framework; a leverage ratio requirement; a capital surcharge for global systemically important banks; a liquidity coverage ratio liquidity requirement; a net stable funding ratio liquidity requirement; and a large exposures framework.

All 24 member jurisdictions of the FSB have the core elements of Basel III risk-based capital and liquidity measures in place. However, there has been uneven progress on some of the other elements. Some jurisdictions have not yet fully implemented the large exposures framework, the leverage ratio, and the net stable funding ratio.

And most jurisdictions are just starting to implement the Basel III 'end game' reforms agreed in December 2017. We have some work left to do but I am confident that it will be completed, and the FSB will continue to push all of its members for full completion of these important measures.

Resolution

One of the most important issues the world faced during the financial crisis was the 'too-big-to-fail' dilemma. The large and unpopular bailouts that were deployed to help stem the crisis made it clear that an alternative was needed to deal with 'too big to fail'.

In response, the FSB established the 'Key Attributes for Effective Resolution', which identify the responsibilities, instruments, and powers that national resolution regimes should follow if they have to resolve a failing systemically important financial institution or SIFI. The FSB's resolution work also included a new total loss absorbing capacity requirement to help ensure that authorities are able to conduct a bail-in recapitalization of a failed SIFI.

Too big to fail was a defining issue of the crisis, and recognizing the importance of the work that has been done to end it, this year the FSB kicked off an evaluation of the effects of the reforms that have been put in place around the world to deal with the issue. By next year, I hope we will be able to discuss the results of that work.

Nonbank financial intermediation

During the crisis, 'shadow banking' became the term for any type of financial activity that occurred outside banks that resembled what banks did and that often wasn't completely understood. Within the FSB, we refer to those activities as nonbank financial intermediation, or NBFI.

Regardless of its name, a lot of blame for the problems that arose in the global financial crisis centered on risks that emerged from some activities in parts of this sector, and one of the FSB's first jobs was to try to look into these activities to better understand their growing role in financial markets.

Among the important steps we took was a global monitoring exercise that results in an annual report on the size of NBFI in the global economy. That work actually goes beyond the membership of the FSB, since a number of important international financial centres also report information to us.

With all of that information, we are able to track the overall size of nonbank financial intermediation, which in 2017 grew to $184 trillion, representing nearly half of financial activity in 21 countries plus the euro area.

More important, we are now able to more carefully categorize activities in the nonbank sector in order to analyze potential vulnerabilities.

In addition to monitoring, we have made a number of other recommendations and are working with fellow global standard setters to implement them. For example, we are working with the International Association of Insurance Supervisors on capital standards for global insurers, and we are working with the International Organization of Securities Commissions (IOSCO) on liquidity and leverage in the funds industry. The funds sector continues to evolve, so we will focus particular attention here as we move forward.

Status of post-crisis reform

The result of 10 years of policy development by the FSB and implementation at the national level has been a stronger, more resilient global financial system. Large banks are better capitalized, less levered, and more liquid. Too-big-to-fail reforms are well-advanced, particularly with the formation of effective resolution regimes for banks. OTC derivatives markets are simpler and more transparent. Nonbank financial intermediation risks are better understood, and steps are being taken to reduce and contain them. While shocks to the system, especially from unanticipated directions, can never be ruled out, these reforms go a long way to reducing the likelihood and severity of future crises.

Consequently, the FSB has started to pivot from policy development to evaluating the effectiveness of the reforms it has advocated. I just mentioned that this year the FSB began a two-year evaluation of its too-big-to-fail reform package.

We are also completing an evaluation of the effects that reforms have had on infrastructure finance and lending to small- and medium-sized enterprises. Going forward, these evaluations will be critical for assessing where more work needs to be done.

Casting my gaze backward, there is much to be proud of in the last decade, success that is reflected in the strength and stability of the global financial system. So now I would like to leave the past behind and turn to the future. But while Janus was the god of beginnings, he was also the god of endings, and as such was able to look both backwards and forwards at the same time.

Assessing financial vulnerabilities is a critical part of the FSB mandate, and that is inherently a forward-looking job. The global financial system is constantly evolving, influenced in part by past experience, and by regulation.

As I look ahead, I think we must consider whether the ways in which we responded to the financial crisis may not be the most appropriate ones to address the challenges and ongoing changes in the financial system that we currently face.

This year the FSB has embarked on an important project to review and update its financial stability surveillance framework. While much of the attention of the FSB in its early years was on post-crisis reforms, members also spent time thinking about new vulnerabilities to the system. As we reach our 10th anniversary, it is a good time to review the ways we monitor the ever-changing financial system.

The aim of this review is to ensure that we have a framework that is comprehensive, consistent over time, and effective at identifying relevant vulnerabilities. If we are not at the cutting edge in our ability to assess the state of

the financial system, we do a disservice to the public we serve, which relies on a smoothly functioning financial system.

In addition, we are looking at how we communicate our understanding of the state of the financial system to the G20 and to the world. We want to be more open about our assessment, but great care has to be taken to avoid a situation where revelations about emerging concerns lead to acceleration of those concerns and becomes a self-fulfilling prophecy.

As I look forward and ponder the forces that are shaping the evolution of the global financial system, the FSB is currently grappling with two issues—financial innovation and market fragmentation—that have the potential to profoundly affect financial stability, so let me start there.

Owing to our forward-looking orientation, the FSB has been actively engaged in monitoring financial innovation for some time. Starting a little over five years ago, there was an explosion of financial innovation that had a technological component, which we now call fintech. This encompasses peer-to-peer lending, cryptocurrencies like Bitcoin, and the use of new techniques like artificial intelligence and machine learning.

In 2017, the FSB issued a report on the implications of fintech for financial stability. The report was careful to note the potential benefits of many of these innovations, including the possibility of greater financial inclusion and increased speed of financial transactions.

However, the report also drew attention to several supervisory and regulatory issues, including three priorities where international collaboration is critical: managing operational risk from third-party service providers, mitigating cyber risks, and monitoring macrofinancial risks that could emerge as fintech activities increase[1].

More recently, one particular area of fintech has received a lot of attention—stablecoins. These are a type of crypto-asset that attempts to address the volatility of some crypto-assets by tying their value to conventional assets, such as the value of the US dollar or a basket of currencies. While it hasn't been created yet, it is Facebook's proposal for a new stablecoin that significantly increased the public's attention to stablecoins.

At the FSB, we undertake regular monitoring of the financial stability implications of crypto-assets, and we have had discussions about the regulatory and supervisory approaches to crypto-assets and potential gaps in regulation. The introduction of stablecoins, however, brings a potentially new scale and scope that the financial regulatory community must carefully consider.

Although there is a small risk to financial stability today, there is no doubt the potential scale of stablecoins and other crypto-assets yet to emerge may pose regulatory challenges. At present, the G7 is finishing a preliminary assessment of stablecoins, and the G20 has asked the FSB to lead the work going forward, which we are actively undertaking. This is an issue that can potentially affect every country in the world.

We have already begun work to identify which regulations exist that apply to stablecoins in our jurisdictions, and once that assessment is complete, we will report to the G20 on any appropriate actions that need to be taken to ensure that financial stability is not negatively affected by their introduction.

The FSB is grappling with other challenges beyond fintech. As time has passed since the financial crisis, there is concern about fragmentation of financial markets—a sense that globalization of financial markets may be slowing and differences in the regulatory requirements at the national level may be on the rise.

Some forms of market fragmentation may have financial stability benefits, such as reasonable loss absorbency requirements imposed on subsidiaries of global banks, but market fragmentation may also bring about unintended negative consequences, such as increased opportunities for regulatory arbitrage and cumulatively higher regulatory burdens for firms.

Over the past year, at the request of the G20, the FSB has been examining the different forms in which market fragmentation is manifest. Following up on that, we recently held a workshop where FSB members met with representatives from the private sector and from academia to discuss the internal allocation of capital and liquidity by global financial institutions[2].

We are also following up in other areas, such as working with IOSCO on issues related to deference and examining improved ways for regulatory and supervisory information sharing. Market fragmentation is an issue that will never disappear, and we will remain vigilant to ensure that it does not pose a threat to financial stability.

At the outset I said I was going to take the mantle of Janus, who could look backward and forward in time. Janus was also the god of transitions, which makes him doubly appropriate for the FSB at this time, because we find ourselves in transition from a time when we were largely focused on addressing the effects and the lessons of the financial crisis.

We now find ourselves with increasingly focused energy on looking forward, with both a strong organization that has been tested through an intense period of policy formulation and implementation and a strong global financial system resulting from those efforts.

I hope that 10 years from now, a successor of mine as FSB Chair can point to 10 more years of success in flexibly and adeptly responding to all that the global financial system throws at us. Speaking on behalf of the members of the FSB, we stand ready. ■

Randal K Quarles is Vice Chair for Supervision and Chair of the Financial Stability Board

Endnotes

1. Consumer protection is a major concern in relation to fintech and cyber risk, but it is outside the FSB's mandate and is being handled by member governments.

2. Randal K Quarles, "Government of Union: Achieving Certainty in Cross-Border Finance" (speech at the Financial Stability Board Workshop, Philadelphia, PA, September 26, 2019).

This article is based on a speech delivered at the European Banking Federation's European Banking Summit, Brussels, Belgium, October 03, 2019

Monetary policy and open questions in international macroeconomics

Silvana Tenreyro considers some long-term issues in the global economy, focusing on three ideas that have dominated the policy and academic debate in the years since the 2008 financial crisis

There is a lot going on at the moment, in economics and in politics. But I would like to take a longer-term view instead of looking at the events on the foreground, dramatic and important as they are, and consider some open questions in international macroeconomics. These questions, though slow-burn and global in nature, will also have some bearing on the UK outlook and will, directly or indirectly, have implications for living standards in the United Kingdom.

I will focus on three ideas that have dominated the policy and academic debate in the years since the crisis. These are a) the role of the dollar in international trade; b) the effect of trade barriers on the economy and c) the so-called 'Doom Loop' connecting sovereign and bank risk – which has been the source of much concern in the euro area.

These topics are not entirely new ground. Indeed, John Fleming's first and final issues as editor of the *Economic Journal* both contained articles on the effect of changes in tariffs. One difference is that in those days, the tariff changes in question were reductions rather than increases[1]. Many of the effects of the use of the dollar as invoice currency in international trade transactions have also been discussed before in the context of local currency pricing. And John Flemming himself contributed greatly to the debate on the early successes and failures of the euro[2].

Our nascent understanding of these issues has led to a number of policy proposals. I want to argue that the ideas behind these proposals may only capture part of the picture. In doing so I will draw on some recent research of my own[3]. What links my arguments is the importance of considering general equilibrium effects. And in particular, of considering the role of monetary policy in influencing what we observe in the data. On each idea, current thinking needs to evolve before we can conclude that these issues are settled.

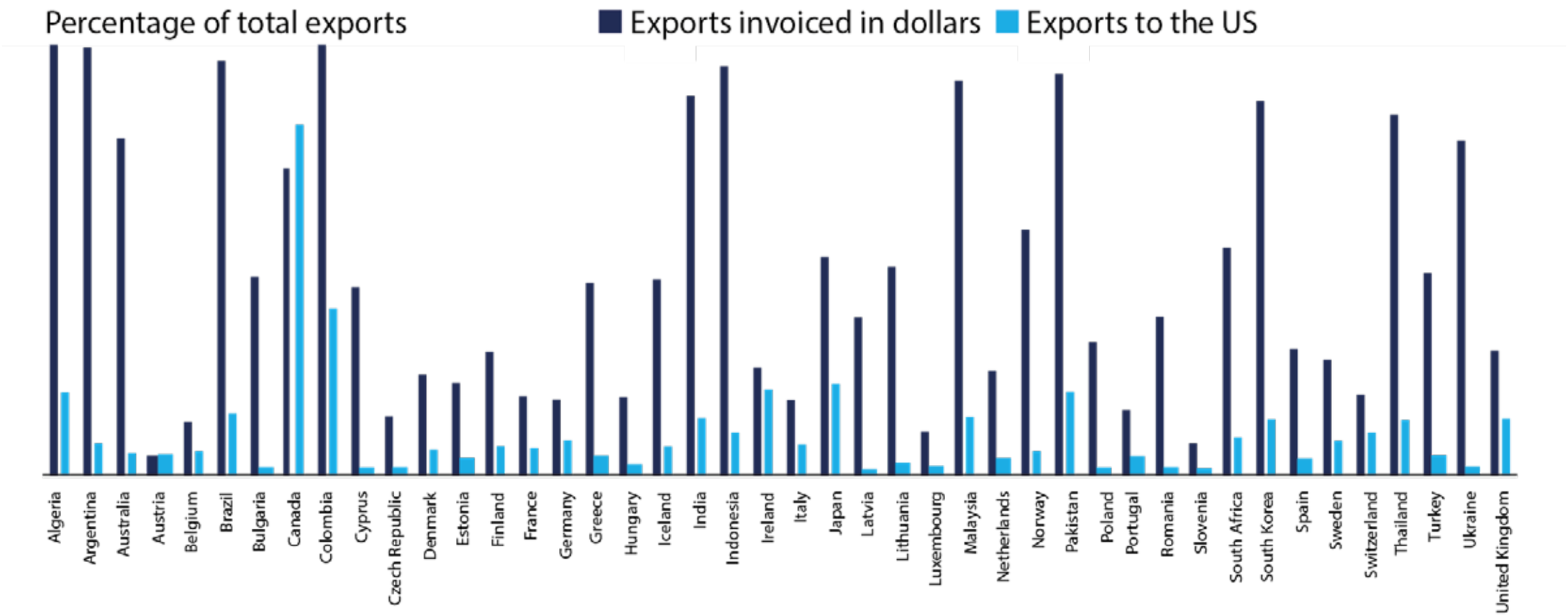
Trade with dollar invoicing

Trade is currently the key topic on the international policy agenda. And for the past 50 years, exchange rates have

been seen as key determinants of trade flows, at least in the short term. It is no surprise therefore that debates over trade policy often bleed into arguments over the appropriate exchange rate. But recently, the conventional view that exchange rate movements affect trade flows has been called into question by a number of academics and by policy institutions such as the IMF[4].

... the dollar now plays a vastly outsized role in international trade. While the US accounts for only 10% of global trade and 15% of world GDP, around half of global trade is invoiced in US dollars

Figure 1. Shares of exports traded with the US and invoiced in dollars, by country



Source: Gopinath (2016) and IMF Direction of Trade Statistics.

The idea driving this change of view, is the recognition that the dollar now plays a vastly outsized role in international trade. While the US accounts for only 10% of global trade and 15% of world GDP, around half of global trade is invoiced in US dollars. Figure 1 shows that in many countries the dollar is even more important, being used as the invoice currency for even larger shares of non-US exports. Others have discussed the various trends, such as the lengthening of global value chains, which have driven this feature of international trade[5].

The suggested upshot of dollar invoicing is that exchange-rate movements have only small effects on a country's export volumes, at least in the short term[6]. In the standard sticky price (New Keynesian) model, it is true that this is an implication of dollar pricing. If monopolistic prices are sticky in dollars, the argument goes, a depreciation by any (non-US) country does not change the export price. If the dollar prices of exported goods do not change, then there may be no incentive for foreign consumers to purchase more of them. In the jargon of the literature, there is no expenditure switching towards that country's exports.

To give a concrete example, suppose there is a fall in the value of the Chilean peso. The majority of Chilean exports are priced in dollars, so if their prices are sticky (as assumed in the model), the depreciation has no effect on the dollar price. For a country which imports Chilean products, such as Brazil, the price of these imports in Brazilian real only changes if the real-dollar exchange rate has changed. If prices are sticky, there may be little direct effect. By contrast, in the UK, around half of exports are invoiced in sterling. When the pound falls, these goods automatically become cheaper for foreign buyers. UK export demand is likely to increase on impact.

This idea has led to policy recommendations on the desirability of fully floating exchange rates. Gopinath (2017a, 2017b) argues that there are severe limitations on the ability of exchange rates to close output gaps and achieve full employment. She suggests that less flexible exchange-rate regimes, such as managed floats, may therefore be the best framework for most countries. Following on from this view, in their 2019 *External Sector Report*, the IMF

warned that exchange-rate flexibility may need to be supported by other policies. IMF modelling even suggests that countries with a high degree of dollar pricing may require larger capital controls[7].

The debate also has important implications for the UK and for monetary policy. As a highly open economy, the export response to movements in sterling is a crucial margin of adjustment to various shocks hitting the UK. And the response of net trade to the exchange rate is also a significant part of the monetary transmission mechanism.

Without it the transmission mechanism would be weakened, ie. the response of the economy to changes in interest rates would be smaller, compared to a situation where all goods were priced in sterling. The share of UK exports priced in dollars may also grow over time, given the network effects associated with invoice currency choice, as well as the likelihood that after Brexit, a higher proportion of UK trade will be with countries where dollar invoicing is more prevalent.

Why depreciations still benefit exporters

I would argue that exchange-rate movements do affect exports, in a variety of ways. Dollar invoicing may affect the pricing decisions of some export goods on some occasions, but focusing too narrowly on these decisions misses several important channels. While the textbook New Keynesian model is a useful and tractable abstraction, we should be careful not to treat it too literally. As I set out in some forthcoming research, there are at least three important reasons why a depreciation will still expand exports, even if current exporters' prices are invoiced in dollars[8].

First, a depreciation increases exports' profitability, as export prices increase relative to labour costs[9]. (Imported inputs mitigate the increase in profitability, but to the extent that labour costs adjust more slowly, profitability will rise). The increased profitability opens a number of potential entry margins at different levels, many of which can

take place quickly. Exports expand at the extensive margin since none of these new margins are bound by the stylised sticky-price contract signed in our models.

In particular, many products and services that were not exported before are now competitive in international markets; new market destinations become profitable[10]. These margins can be filled by incumbent exporters, who are typically large and multi-product firms that are able to respond rapidly[11]. There can also be entry of new potential export firms, which now find it profitable to sell abroad either directly or indirectly, by piggy-back exporting on existing exporters and intermediaries[12, 13].

To return to my earlier example, even if exporters of a particular Chilean wine brand, for instance, were unable to change dollar prices charged in Brazil, competitor wine producers would find it profitable to enter the market and undercut the incumbent. And producers of other products that were not previously exported, may also find it profitable to export at a given dollar price, since this would translate into higher peso revenues. Anecdotally, the effects on profits and production explain why it is easy to find examples of export firms (actual or potential) welcoming currency depreciations, even when dollar export pricing is widespread[14].

Second, while we have a wealth of evidence that goods are invoiced in dollars, this is not necessarily the same thing as stickiness in dollars or dollar pricing. Goods may be invoiced in dollars as this is the most convenient currency for financial transactions, but exporters may still translate into local currency terms when making pricing decisions and may still adjust their prices in the event of a depreciation. Especially for large movements in the exchange rate, exporters are more likely to change prices than assumed in the simple (Calvo) pricing framework we use in our models, which prevents some firms from changing their prices no matter how large is the shock[15].

The final reason concerns many countries covered by IMF programmes: several are commodity exporters that are price takers on global markets, facing perfectly flexible prices. As a result, the arguments on stickiness and monopolistic power above do not apply; when the Chilean peso depreciates, it becomes profitable to expand copper production at the unchanged dollar price. This is especially the case as the cost of the main input, labour, tends to be sticky in domestic prices[16]. The constraints on exports' expansion in this case are on supply capacity, not on the demand side (as in the New Keynesian model)[17].

I discuss these mechanisms in some of my recent research, which also shows the advantages of flexible exchange rates for small commodity exporters[18].

Even for goods other than commodities, demand is often highly elastic on international markets. If so, it will be highly profitable to cut prices and boost market share following a depreciation. A small cut in export prices might be enough to expand sales when the demand elasticity is high. Even if we see low exchange-rate pass-through in the data, this is exactly what we should expect with price-elastic demand and highly responsive export volumes, and not necessarily a sign that exports are unaffected by the exchange rate.

If the answer is not so clear-cut from the models, what do the data tell us?

Proponents of the idea that exchange-rates do not affect exports have presented some empirical evidence that, on the face of it, might support that view. Papers by Boz *et al* (2018) and IMF (2019) find weak correlations between movements in bilateral (non-US) exchange rates and subsequent changes in bilateral trade volumes. They report higher correlations between trade volumes and US dollar exchange rates.

But just as we know that correlation does not imply causation, nor does a lack of correlation refute a strong causal link[19]. The correlation instead represents the combination of any number of causal links going in both directions between exports and the exchange rate.

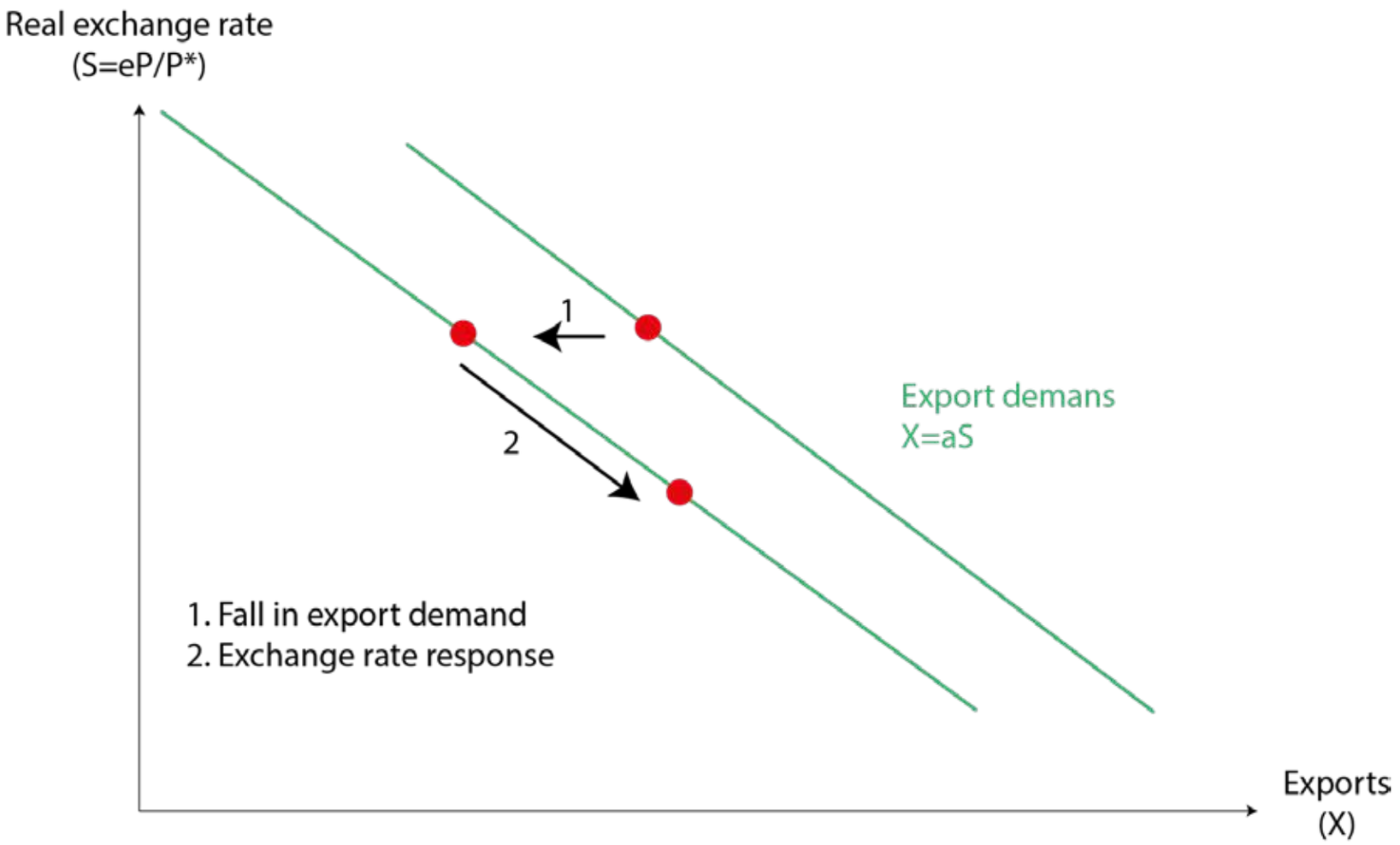
The key point, as previously emphasised by Broadbent (2017), is that depreciations do not come from nowhere. They are usually caused by bad news somewhere else in the economy, which would typically also be associated with a fall in exports. This negative correlation blurs any underlying positive relationship between depreciations and export volumes. A crucial example of such a mechanism, which I have discussed in other contexts before, is the response of monetary policy[20].

This is illustrated in Figure 2, which shows a standard export demand relation, where exports increase as their price falls (the real exchange rate depreciates). All else equal, a fall in export demand would shift the curve to the left. But this would also open up a negative output gap.

A monetary policymaker who cares about output volatility and the resulting fall in inflation should respond by loosening policy to stimulate the economy. One way in which looser policy boosts aggregate demand is via a depreciation in the currency. This increases the quantity of exports, shifting back to the right along the same export demand curve. But although the depreciation itself boosts exports, in equilibrium, this is masked by the initial fall in export demand. The reduced-form correlation will mix the shifts of the demand curve with the shifts along it, and the export increase will not be clearly visible in the raw data.

Monetary policy is one example, but there are also lots of other mechanisms which may blur the underlying relationship between the exchange rate and exports. Market expectations of future monetary policy, news about

Figure 2. Illustration of export demand



future productivity of tradeable goods relative to non-tradeable ones, or changes in relative demand, will all have impacts both on current export demand, but also on the current level of the exchange rate.

A recent example in the UK highlights these difficulties with teasing out cause and effect. During the 2007-08 financial crisis and its aftermath the pound fell by over 25%. A naïve economist would perhaps have anticipated an extremely large boost in export volumes. But the depreciation itself was partly caused by a fall in demand for key UK exports such as financial services, as well as a rapidly deteriorating aggregate demand outlook, which necessitated an aggressive monetary policy response. Looking solely at the muted response of exports following the depreciation conflates the actual response with the negative effects of the initial fall in demand for products in which the UK specialises.

To summarise, the dominance of the dollar in international trade is an important phenomenon. But unlike in some of our stylised models, I think that the exchange rate continues to have important effects on export volumes. And as a result, even in countries where dollar invoicing is widespread among exporters, I do not see a strong case for moving away from the well-established benefits of flexible exchange-rates.

The effect of trade barriers

I have argued that the evidence remains consistent with the idea that exchange rate movements are a crucial determinant of changes in trade flows. Over longer horizons, trade is also determined by other factors, including comparative advantage and barriers to trade.

Perhaps even more so than exchange-rates, the role of trade policy and the impact of heightened trade tensions have been the most important policy topics in international economics over the past couple of years.

That has been primarily due to the escalating trade war between the US and China. Successive rounds of tariffs levied by the US and retaliation from China mean that bilateral tariffs between the two countries are expected to have increased by around 20 percentage points over the past two years. And there have been signs that these trade tensions may spread. Trade arrangements have also been a key issue to consider during my two years on the MPC, which have involved assessing how the UK's 2016 vote to leave the EU is likely to affect the economic outlook.

There is broad agreement among economists that trade barriers are negative for global growth. Tariffs lower the gains from trade, although there can be winners and losers. Countries subject to trade barriers are likely to see negative effects on activity – as we are starting to see in China and perhaps soon in the US. And so too will countries that make up part of their supply chain – Germany appears to have been a casualty of lower demand for Chinese exports, which has in turn reduced China's demand for capital goods imported from Germany. But there may also be benefits to some countries, due to trade diversion effects (and within some countries, there may of course be winners and losers).

As well as these level effects, trade also has important effects on the volatility of output. Higher trade barriers lower the scope for diversification of suppliers and buyers in the event of a domestic shock[21]. The pool of trading partners can also affect volatility. Trading with countries that are subject to large or frequent shocks can lead to higher volatility than trading with a more stable group.

Where the evidence is less clear cut, is on how large the effects of trade barriers are. On the one hand, recent macroeconomic evidence for the US economy suggests that the effects are relatively small. World Bank Chief Economist Penny Goldberg and her co-authors estimate trade elasticities using macroeconomic data and find that the 2018 tariffs would have only a very small aggregate effect on the US economy, reducing GDP by only 0.04%[22].

Similarly, large macroeconomic models, such as that used by the IMF, typically find small direct effects of tariffs. In part, these results are likely to reflect the standard trade theory prediction that barriers have smaller effects on large countries such as the US.

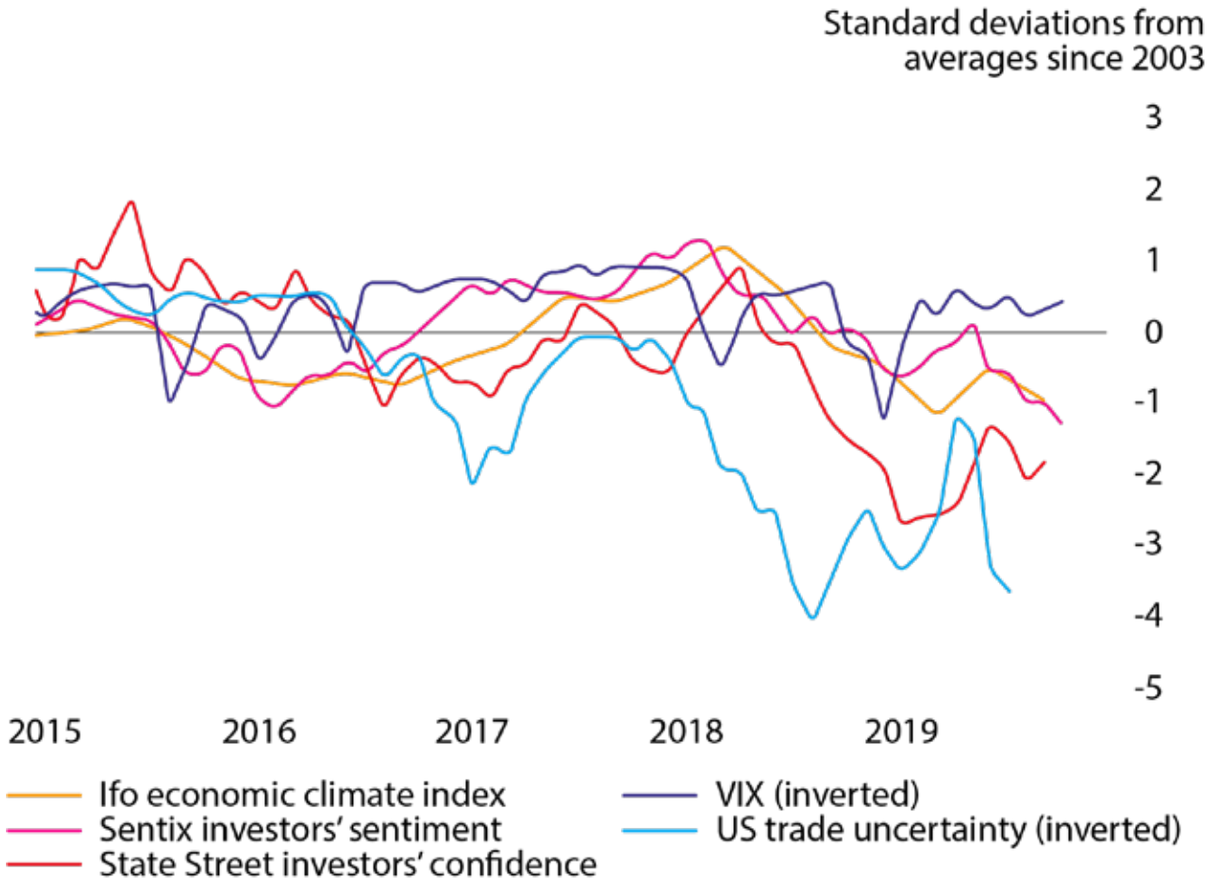
On the other hand, some evidence from microeconomic data suggest larger effects on trade and output in the US. The Goldberg study finds that imports of specific product varieties fell by nearly one-third. A study by Flaaen *et al* (2019) examines the effect of US trade barriers on a specific product: washing machines.

They find that when tariff barriers were applied to individual countries, although imports were sourced from different locations, aggregate imports were little changed. When barriers were applied to all imports, washing machine production switched to the US. These findings are consistent with significant export demand responses for individual products.

Moreover, trade tensions have also led to large decreases in measures of confidence and higher uncertainty across the world. Figure 3 shows that there have been sharp movements in measures of market uncertainty, policy uncertainty and business confidence since the US began implementing new tariffs on China in 2018.

These increases in uncertainty and associated confidence and financial channels have likely served to amplify any direct effects on output. On the face of it, this suggests a puzzle – if the macroeconomic estimates are correct, why has uncertainty increased so much? The effect of uncertainty about small effects should be similarly small. One reason is that small aggregate effects may mask larger effects for individual firms. Uncertainty may be high even among firms who have not yet been impacted by tariffs, given the risk of further escalation[23].

Figure 3. Measures of uncertainty and confidence



Sources: Thomson Reuters Datastream and Baker, Bloom and Davis (2016) at www.policyuncertainty.com.
Note: US trade uncertainty series is a quarterly average of monthly index.

How to reconcile the different estimates is a key question for trade policy, as well as for monetary policymakers who must react to the effects of trade barriers. If the macroeconomic effects were small, then the imposition of new trade barriers would be less costly in economic terms. For monetary policy, the direction of appropriate response is likely to depend on the balance of the effects of trade barriers on supply and demand[24]. But if the effects were small, so too would be the required policy response. I will argue that we can square the estimates by considering the response of other macroeconomic policies to tariffs.

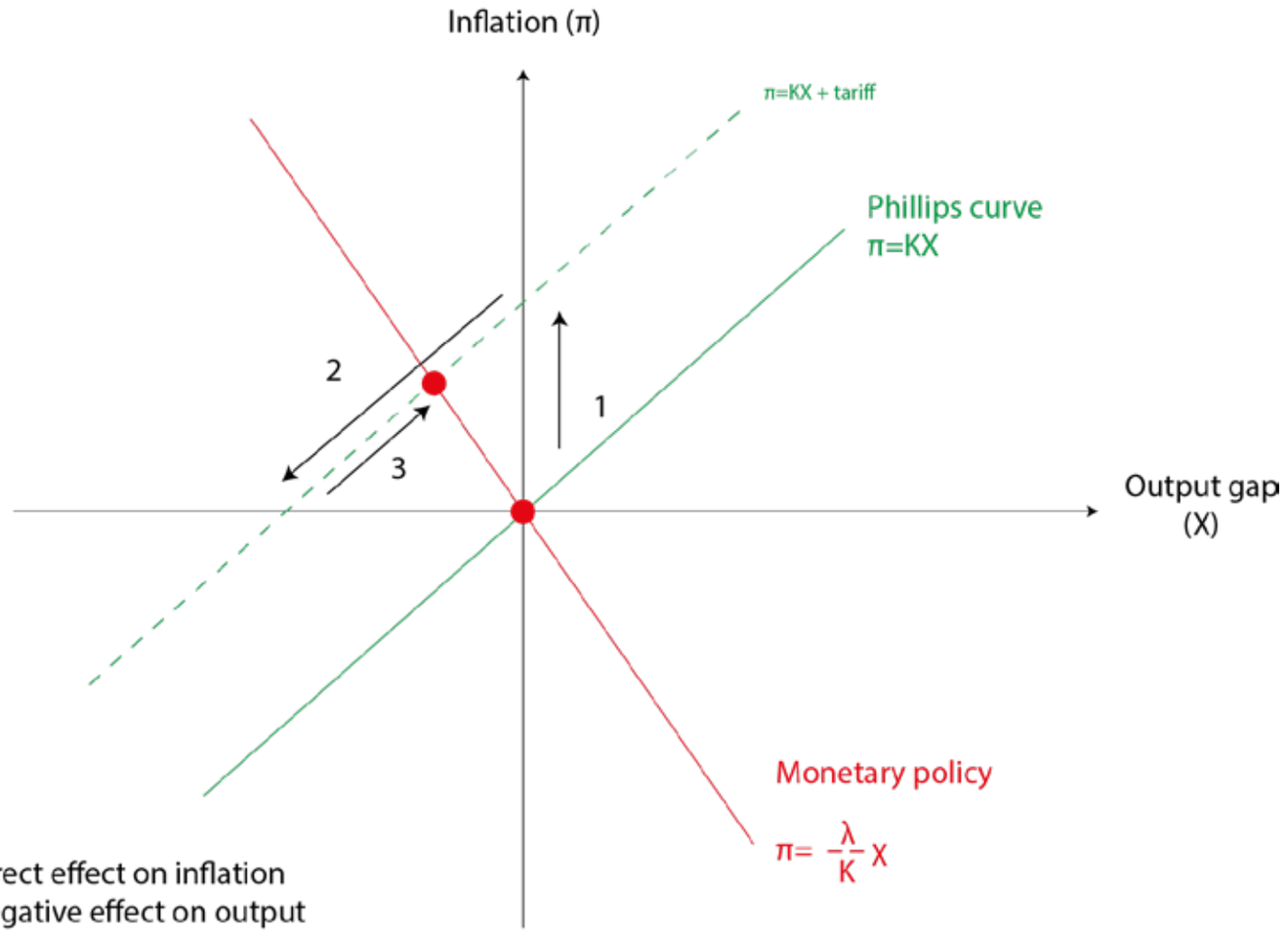
Trade barriers and macroeconomic policy

Just as with the exchange rate, I would caution against taking the simple macroeconomic estimates of the effect of trade policy at face value. These estimates and calibrations based on them are probably underestimating the effect of tariffs. The reason, again, is that the empirical estimates likely incorporate a counterbalancing policy response.

When changes that might affect activity, such as tariff increases, are put in place, other policies are typically implemented in response to (or together with) tariff increases to mitigate the effect (eg. fiscal stimulus, monetary policy loosening). In the extreme with a large monetary or fiscal response, the estimated trade elasticities will be very small. But these estimates confound the potentially larger negative effect of the tariff with the counterbalancing effect of policy[25].

This point is pervasive across macroeconomics, and can be illustrated in a simple diagram[26]. Figure 4 shows a simple model economy with a positively sloped aggregate supply relation between the output gap and inflation (also known as a structural Phillips curve). The other line gives a stylised example of how a monetary policymaker might seek to balance her mandated objective of achieving the inflation target, while avoiding undesirable volatility in output and employment. When the two goals conflict, the policymaker chooses to balance the objectives, so the line is negatively sloped.

Figure 4. Illustration of Phillips curve and monetary policy



When trade barriers, such as tariffs, are increased, two key changes occur. First, there is a direct increase of the higher tariffs on prices and inflation. This immediately shifts the Phillips curve up – in the short run, there is more inflation for a given level of output. But in a short space of time, the tariff is also likely to lead to lower production and a fall in output. It is this second effect that we would like to estimate.

However, this is only the first part of the equilibrium process. Policymakers observe (or anticipate) the fall in output and respond with more stimulus. In this example, that comes from looser monetary policy, but looser fiscal policy would have a similar effect. This shifts the economy back along the Phillips curve. The fall in output we actually observe is due to the policymaker's choice to lean against inflation, rather than the direct effects of the tariff. At the extreme, a monetary policymaker could opt to ignore the impact of tariffs on inflation, if she thought they might be very short-lived. If so, we may not see any effect on output in the data at all[27].

In the example in Figure 4, the policymaker opts to partially offset the effect of the tariffs on output, so macroeconomic estimates of the effect may be too small. In practice, the policy response will depend on how much the tariffs affect demand relative to supply. If they have large effects on aggregate supply, then monetary policy will be more limited in its ability to offset them, and empirical estimates may be less biased.

In the case of our microeconomic example of washing machines: there is no response of macroeconomic policy (on their own, washing machines do not often play a major role in MPC deliberations!) We can therefore identify the effect at the microeconomic level. When there are broader tariff increases that affect the aggregate economy, there is naturally a stronger offsetting response of macroeconomic policy.

This also helps rationalise increases in measures of uncertainty. If the aggregate effect of tariffs was negligible and direct effects were limited to a small subset of producers, the effect on aggregate uncertainty should be small. But

if the gross effects are larger and it is not clear that policy can continue to neutralise them indefinitely, uncertainty effects can be material. This is even more likely if there is a possibility of further trade-war escalation, which could create further uncertainty over whether policies could offset their effect.

Given the identification difficulties, I am inclined to place more weight on the microeconomic estimates of the direct effects of trade barriers on the economy[28]. Even for large economies such as the US, these are likely to be damaging to growth. If the initial effects are amplified by falls in confidence and higher uncertainty, the overall slowdown may be larger still. These consequences will be even more material for smaller economies.

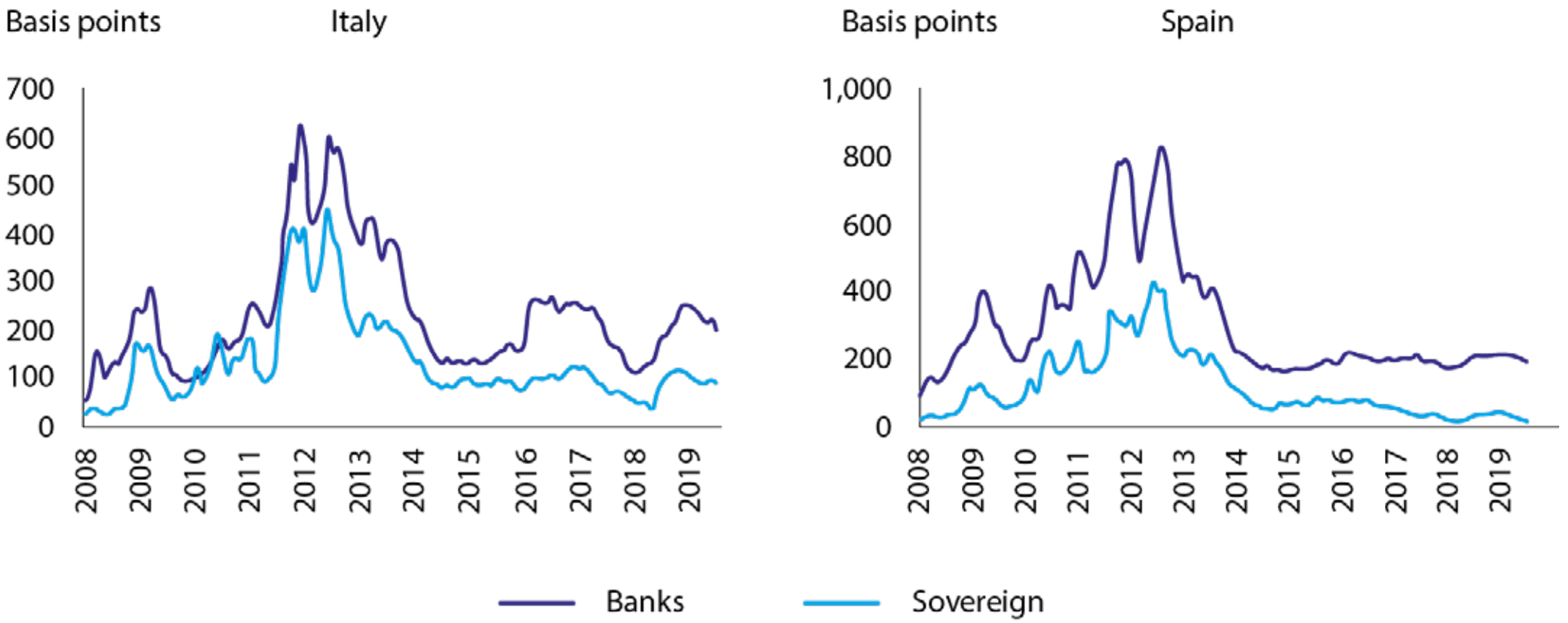
The 'doom loop': the bank-sovereign nexus

Trading relationships have been the major source of uncertainty during my time on the MPC. But for much of the past decade, spillovers from financial sector risks were the preeminent international issue facing governments and monetary policymakers. The 2011-12 European debt crisis, which was the source of large spillovers to the UK banking system, was amplified by linkages between euro area banks and their governments. During my tenure on the MPC, worries about a similar developments taking root in Italy have been an ongoing concern.

The idea is that there are negative two-way spillovers between government and bank balance sheets, which combine to create a damaging feedback loop for the real economy. During the euro area crisis, there were sharp correlated rises in measures of riskiness of euro area banks and their respective governments.

Figure 5 shows the correlated rises in credit default swap (CDS) premia, a market proxy for default risk on banks and on governments at the height of the crisis, and more recently in Italy. Many economists linked this observation to the presence of large quantities of their own government's sovereign debt on the balance sheets of euro area banks. This created the sovereign-bank nexus, or so-called 'doom loop'[29].

Figure 5. Bank and sovereign CDS premia



Source: Thomson Reuters Datastream.

The proposed mechanism arises following a negative reassessment of either bank or government finances. For example, if domestic banks make large losses on their outstanding loans, as occurred in Spain and elsewhere following the crisis. Or if investors reassess governments' ability to repay their existing debt, as happened in Greece. As the perceived risk of a government default increases, the price of outstanding government bonds falls.

The doom loop posits that if government bonds make up a sizeable proportion of domestic bank assets, then a fall in their price will reduce banks' net worth and their ability to lend to the real economy. The resulting credit crunch will lead to slower growth and lower tax receipts, further worsening the government's fiscal balance. This causes another decline in bond prices, creating a negative feedback loop. Slower growth and higher unemployment also leads to write-downs on bank credit, further impairing bank balance sheets.

If the banks are bailed out, the fiscal situation is likely to deteriorate again. In all, the doom loop suggests that banks holding their own government's bonds can turn the initial negative shock into a catastrophic downturn.

Proposed policy solutions focus on ensuring that government bond holdings do not become concentrated in a given country's domestic banking system. For the euro area, these have included suggestions ranging from: full banking union with deposit insurance to achieve risk-sharing between banks; increasing capital risk weights on domestic sovereign debt to incentivise banks to diversify their holdings; or introducing a diversified safe asset that banks could hold without large exposures to any one sovereign, including their own. These suggestions aim to break the vicious circle by preventing government default probabilities from influencing bank lending decisions.

Strategic sovereign default

The doom loop was no doubt important during the euro area crisis, but bank lending decisions are only one part of the story. In the extreme, the doom loop logic suggests governments who borrow from their own banking sector

may be forced into default after a bad shock. But in many cases, governments also face strategic choices over if and how to default, which can be influenced by who will bear the cost. Abstracting from these incentives risks missing a key benefit of banks holding their own sovereign's debt.

Completely diversifying banks' holdings of government assets across countries risks a strategic default loop. When a large share of sovereign debt is held by domestic banks, it increases the government's incentive to repay[30]. If a fall in sovereign bond prices were to reduce banks' net worth, then a strategic decision to default outright would be far worse. And it would lead to the same negative consequences for bank lending to the real economy and to economic growth. As a result, governments have strong incentives to avoid default if they can.

In contrast, if government debt is completely diversified to foreign bondholders, then the immediate pain from a default may be low. This type of strategic default has more often been discussed with reference to emerging markets, where government borrowing from international creditors is common[31]. As the cost of default decreases and the probability of default increases, the price of government bonds fall, feeding into a similar feedback loop that precipitates a default.

These incentives suggest risks associated with policy solutions that involve banks holding too diversified a portfolio of government debt. Doing so may lead to a damaging strategic default loop. But given the doom loop can arise following a negative shock when banks hold too concentrated a portfolio, it may be socially optimal for banks to hold some intermediate share of their own government's debt[32]. I explore these conditions in detail in forthcoming research[33].

As with the previous discussions, thinking about the full set of decisions and how they interact in equilibrium can affect the recommended policy solution. Monetary policy can also affect the conditions determining the optimal

share of domestic government debt, since it can affect the severity of the doom loop channel. The euro area crisis was brought under control by the monetary policy actions taken by the ECB. If we were confident that the costs of such episodes could be mitigated by monetary policy or other central bank actions, then this would suggest placing more weight on avoiding incentives for strategic sovereign default.

Contagion may also negate some of the benefits of diversifying government bond holdings. If banks in country A hold sovereign debt issued by country B rather than their own government's, but increases in sovereign credit risk in country A also transmit via contagion to country B, then the doom loop may still operate as before[34]. Given these different possibilities, looking at the empirical evidence is one way to discern their relative importance.

While the doom loop idea initially arose from an empirical observation, my interpretation is that the evidence is rather mixed. Figure 6 shows banks' holdings of own sovereign as a percentage of total debt. As the figure illustrates, the largest pre-crisis exposure was in Germany, rather than in 'periphery' countries, where the loop was believed to be important. Even measured as a proportion of total bank assets, periphery banks' holdings were small in absolute terms before the crisis (Figure 7).

On the amplification mechanism itself, simple regressions suggest that a one percentage point increase in a euro area periphery country's sovereign CDS premia are associated with a one percentage point increase in that country's banks' CDS premia. But the exact same relationship holds for 'core' countries. This evidence is suggestive of a larger initial shock in periphery countries than in core countries, rather than a stronger doom loop channel coming from either a stronger propagation mechanism or higher initial exposure.

While the doom loop is a plausible theoretical mechanism, this indicative evidence suggests that we need to go further to show its empirical relevance. And since the theory is not conclusive that the costs of high levels of

Figure 6. Banks' holdings of own sovereign debt as share of total sovereign debt

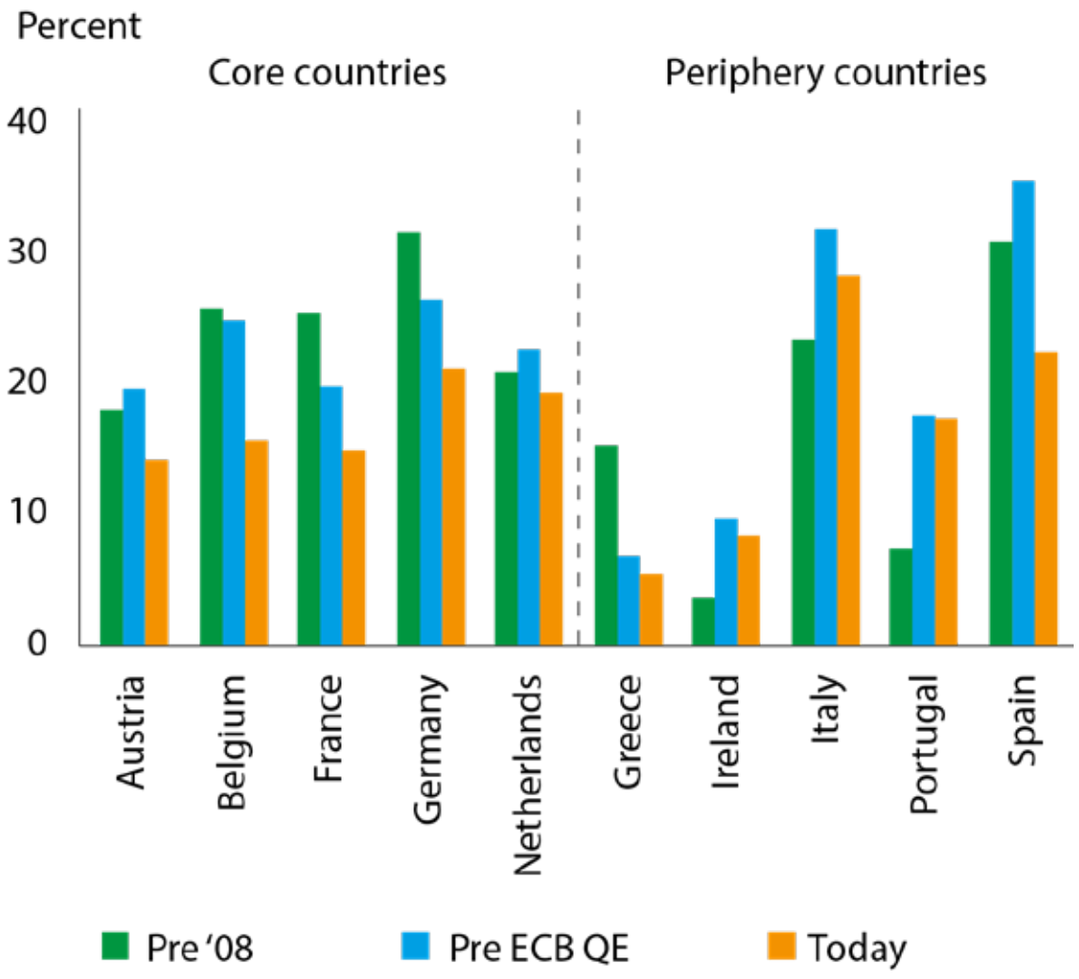
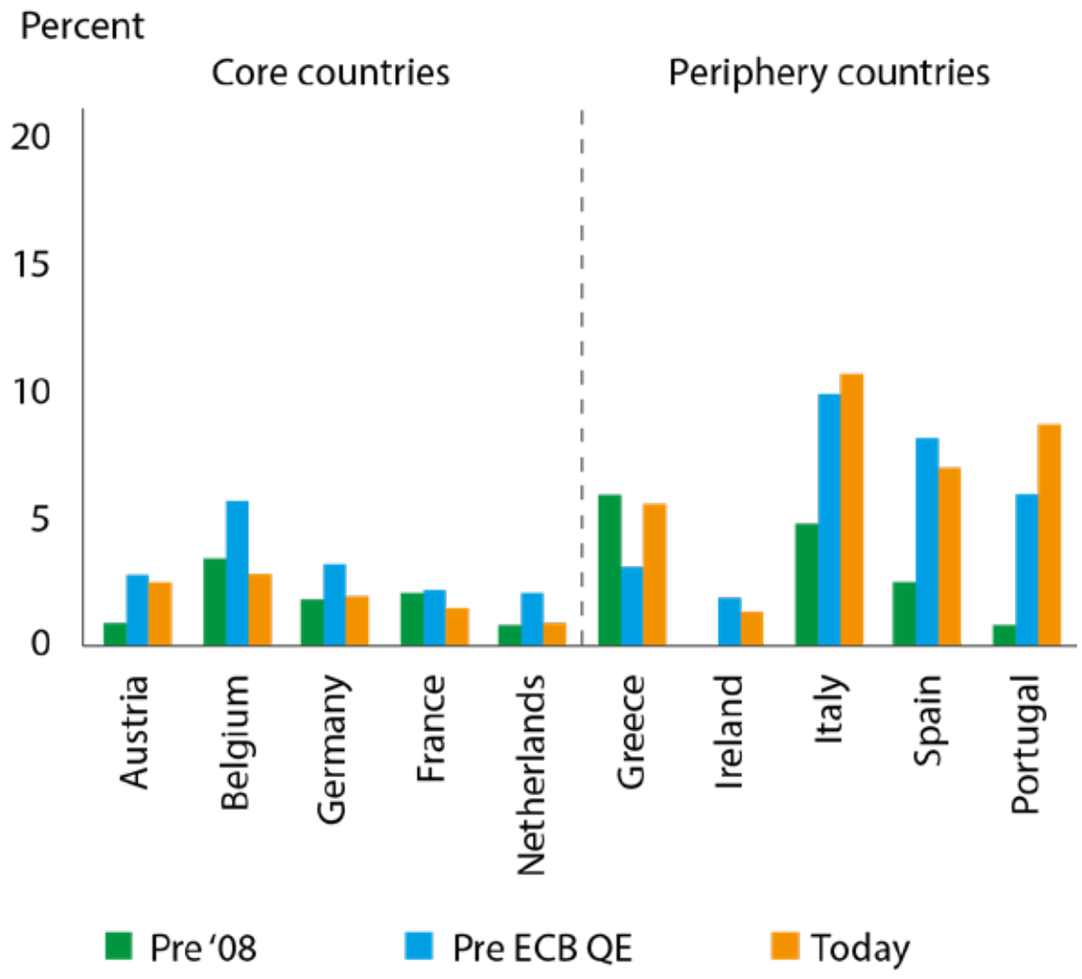


Figure 7. Banks' holdings of own sovereign debt as a share of total assets



Source: Arslanalp and Tsuda (2012) and ECB.
Notes: Pre '08 is Q4 2007; Pre ECB QE is Q4 2013. Today refers to latest datapoint available.

domestic government debt holdings outweigh the benefits, more quantitative work on this issue would help quantify the relative importance of each channel and guide policy recommendations.

Conclusion

I have discussed three ideas in international macroeconomics. What links them, as well as being key topics on the international policy agenda today, is that they all highlight the need for general equilibrium thinking, as well as paying close attention to gathering high-quality empirical evidence to inform the policy debate.

I promised 'open' questions in the title. And I leave you with three wide open ones. I do not think these are settled issues in the literature, and hence the policy implications drawn so far are too premature. ■

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Endnotes

1. Effects of the Kennedy Round Tariff Concessions on the Exports of Developing Countries by JM Finger (1976); and General Equilibrium Evaluations of Tariff-Cutting Proposals in the Tokyo Round and Comparisons with More Extensive Liberalisation of World Trade by Fred Brown and John Whalley (1980).

2. In his role as the first chair of CESifo's European Economic Advisory Group. See Corsetti et al (2002).

3. Ashtari Tafti and Tenreryo (forthcoming); McLeay and Tenreyro (forthcoming).

4. See IMF (2019), Carstens (2019), Gopinath et al (2019), Boz et al (2019) and Gourinchas (2019). See also the discussion of these ideas in Carney (2019).

5. See Gopinath (2015), for example. IMF (2019), Gopinath et al (2019) and others argue that the growth of global value chains also reduces the impact of exchange-rate movements on profitability and the response of export supply, as an increasing proportion of inputs are imported, and so are also priced in dollars.
6. Governor Carney's remarks at the 2019 Jackson Hole Symposium discussed some of the broader implications of this and other developments for the international monetary and financial system (Carney, 2019).
7. Gopinath (2019). In the presence of currency mismatches on borrower balance sheets, the modelling suggests that capital controls can mitigate some costs of exchange-rate fluctuations. If, as the models assume, exchange-rates have small effects on trade volumes under dollar pricing, then any benefits of capital controls are amplified.
8. McLeay and Tenreyro (forthcoming).
9. See Broadbent (2017), who makes a similar set of points and also stresses the effect of the exchange rate on the profitability of tradeable goods.
10. These margins are important empirically. Bernard et al (2009) report that changes in the set of products and countries that US firms export to from accounted for an average of 31 per cent of annual changes in exports between 1993 and 2003.
11. Empirically, product switching is frequent. Bernard, Redding and Schott (2011) find that one half of US manufacturing firms alter their product mix at least every five years. Bernard and Okubo (2018), using annual data, report that 20 per cent of Japanese manufacturing firms change their product mix each year.
12. In the presence of sunk costs of entry, entry of new firms may be more likely for depreciations that are perceived to be more persistent.
13. See Dhingra and Tenreyro (2017) for evidence of piggy-back exporting in agricultural markets.
14. For example, see "Reeling peso to boost some Argentine companies despite debt woes" (Reuters, May 14, 2018), and conversely, "Peso's Rise Squeezes Chile's Exports" (Wall St Journal, Jan 28, 2004).
15. This point was recently made by De Gregorio (2019). Corsetti, Crowley and Han (2018) present microeconomic evidence consistent with the idea that the invoice currency of UK exports does match the pricing currency, but they do

not explore any potential non-linearities in the pricing decision. They also present evidence that there is often switching between invoice currencies at a relatively high frequency, which is unlikely to be consistent with sticky dollar prices.
16. Even if input prices were set in dollars (if production used imported inputs, for example), the depreciation will make those dollar profits worth more in domestic currency.
17. In addition, these nominal effects may boost share prices and price-to-earnings ratios, as pointed out by Forbes (2014).
18. Dreschel, McLeay and Tenreyro (2019).
19. IMF (2019) also examines the response of trade volumes to exchange rate changes instrumented using identified monetary policy shocks, which has the potential to more accurately identify the causal link.
20. McLeay and Tenreyro (2019).
21. Caselli et al. (2019).
22. Fajgelbaum et al (2019).
23. Caldara et al (2019) model how uncertainty about future tariffs can reduce investment and activity.
24. See Bordo and Levy (2019) for a recent discussion of the supply-side effects of tariffs.
25. Reversals in trade policy may also mitigate the response of exports to tariffs in the data, since firms are less likely to respond less to tariffs that they perceive to be temporary, especially when there is the threat of foreign retaliation. See for example, Ruhl (2008) and Erceg, Prestipino and Raffo (2018).
26. As in McLeay and Tenreyro (2019), taken from Seneca (2018). See Kareken and Miller (1976) for an earlier version of a similar graphical exposition.
27. In practice, lags in the transmission mechanism and uncertainty over the effect of any tariffs would mean that policy is unlikely to be able to perfectly offset effects of tariffs on demand. If there are effects on supply, monetary policy will not be able to offset them without generating more inflation.
28. It is also possible that some microeconomic estimates suffer from a different type of endogeneity bias, if successful lobbying for tariffs depends on opportunities and returns within a sector.

29. Acharya, Drechsler and Schnabl (2014), Brunnermeier et al (2016), Farhi and Tirole (2018).
30. Ongena, Popov and van Horen (2019) provide evidence that banks increase holdings of their own government's debt in stressed times due to moral suasion. They suggest this may be partly due to political pressure, but that the incentives are likely increased by the knowledge of the feedback loop negatively impacting banks if government debt auctions are undersubscribed.
31. For example, Aguiar and Gopinath (2006) and Arellano (2008).
32. An alternative intermediate solution would be for government debt to be held domestically, but by the non-bank private sector. This would mean that the cost of default would be borne by the domestic economy, but negative shocks would not be amplified via credit supply or bank bailouts as in the doom loop. Without the amplification via the banking sector, the cost of default would probably be lower, however, so this solution may still reduce the incentives to repay.
33. Ashtari Tafti and Tenreyro (forthcoming).
34. Popov and van Horen (2015) provide empirical evidence of a causal link between increases in sovereign risk and a fall in credit supply by banks (in other euro area countries) holding large quantities of those sovereigns' debt.

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The future of the euro area economy

Europe needs to strengthen common institutions and empower the European economy to respond to today's challenges, says Christine Lagarde. This would be a game changer for Europe's stability and prosperity and for that of the global economy, too

TS Eliot said that *"every moment is a fresh beginning"* and it certainly feels that way for me today. But in many respects it feels that way for Europe, too. The idea of European renewal may, for some, elicit feelings of cynicism.

We have heard it many times before: *"Europe is at a crossroads"*; *"now is Europe's moment."* Often that has not proven to be the case. But this time does in fact seem different.

Turnout at the latest European elections was the highest in a quarter of a century. A new Commission is about to begin its term with an agenda to strengthen Europe in areas like environmental policies, digitalisation and defence. Discussions are moving forward on completing banking union and building a capital markets union. This is essential because, all the while, the world around us does not stand still.

In recent years, the global environment has been transformed in ways that none of us could have imagined. We have seen the post-war global order fracturing, the rise of new – and some old – powers, rapid changes in technology, and an uncertain outlook for global trade and finance.

Uncertainty abounds and conventional wisdom is being challenged, in politics, in diplomacy and in economics. And, unavoidably, this calls on Europe to consider its place in the world and reset its ambitions. I would like to focus on the economic dimension of this question. As the global economy evolves, how can Europe best position itself?

Challenges in the global economy

This question is prompted by two main challenges in the global economy today. The first relates to the changing nature of world trade, which has multiple causes.

Ongoing trade tensions and geopolitical uncertainties are contributing to a slowdown in world trade growth, which has more than halved since last year. This has in turn depressed global growth to its lowest level since the great financial crisis.

These uncertainties have proven to be more persistent than expected, and this is clearly impacting on the euro area. Growth is expected to be 1.1% this year, ie. 0.7 percentage points lower than we projected a year ago[1].

We face a global environment that is marked by uncertainty. We have a unique possibility to respond to a changing and challenging world by investing in our future, strengthening our common institutions and empowering the world's second largest economy

At the same time, there are also changes of a more structural nature. We are starting to see a global shift – driven mainly by emerging markets – from external demand to domestic demand, from investment to consumption and from manufacturing to services[2].

In parallel, world trade is being reordered as new technologies disrupt conventional supply chains and workplace organisation, and as potential new risks emerge from climate change. All this obviously has implications for our external sector, not least because the euro area's exports are intense in capital and intermediate goods.

It suggests that Europe needs to innovate and invest to respond to these challenges and preserve its competitiveness in the longer run. But it also suggests that the high rates of trade growth that we are used to seeing are no longer an absolute certainty.

The second challenge relates to domestic growth in advanced economies. Advanced economies are in the midst of a long-term deceleration in growth rates, which have roughly halved since the late 1980s. This is reflected in the long-term decline of global interest rates. As growth rates are a fundamental driver of interest rates, even countries that have tried to raise interest rates have gradually lowered them again.

Supply-side factors, such as productivity and demographics, are clearly one driver behind this. Labour productivity growth has fallen by almost two-thirds in advanced economies since the early 1990s.

In 2015, there were four working-age people for every person over the age of 65 in advanced economies. By 2050, that ratio will be less than two to one. But there is evidence that demand-side factors are playing a role as well.

In the euro area, domestic demand has contributed to the recovery, helping to create 11.4 million new jobs since mid-2013. But over the past ten years, domestic demand growth has been almost 2 percentage points lower on average than it was in the decade before the crisis, and it has been slower than that of our main trading partners[3].

This is reflected in the shift in our current account position, which has moved from being broadly balanced before the crisis to showing a surplus since, as well as in the relatively subdued performance of underlying inflation. So, these twin external and domestic challenges call on us to consider – as Europeans – how we should respond to the new environment.

The answer lies in converting the world's second largest economy into one that is open to the world but confident in itself – an economy that makes full use of Europe's potential to unleash higher rates of domestic demand and long-term growth.

There are two reasons why this would be beneficial: *resilience* and *rebalancing*.

Resilience and rebalancing

Resilience rests on two pillars. It relies on having firms that are competitive globally and can export to the world when domestic growth falls; and it relies on having a strong internal economy which can sustain demand when the global economy weakens.

Open trade is therefore a platform for resilience, as we saw clearly during the sovereign debt crisis. From 2010 to 2013, the share of extra-euro area goods exports in GDP increased by about 20%, while the share of intra-euro area exports grew by just 5%.

The global competitiveness of many euro area firms was a vital shock absorber in that period, and the benefits were spread across the monetary union via value chain linkages. Without a strong export sector, our crisis would plainly have been worse.

At the same time, it is also clear that stronger domestic demand puts economies in better position to withstand swings in the global business cycle and disruptions in world trade – like those we are seeing at the moment – and to keep their growth trajectories on course.

One sign of this can be found by looking at the correlation between global growth and domestic growth over the past 40 years for countries with different trade exposures, as captured by their current account positions.

It turns out that the group of surplus countries tends to grow faster than the world economy during periods of global upswings, but also to contract more sharply during periods of global downturns. For the group of deficit countries, the opposite is the case[4].

And when global growth falls, stronger internal demand can help protect jobs, too. This is because domestic demand is linked more to services – which are more labour-intensive – while external demand is linked more to manufacturing, which is less labour-intensive[5].

We are seeing that shield in action in the euro area today: the resilience of services is the key reason why employment has not yet been affected by the global manufacturing slowdown[6].

But there is also a second benefit to strengthening the domestic economy, which is that it facilitates *rebalancing*. More dynamic internal growth offers a way to improve the functioning of the euro area and to accelerate crisis

recovery. Since countries in a monetary union do not have their own exchange rates, they have to adjust to crises through prices.

This is easier to achieve when growth is strong at the euro area level and inflation is in line with the ECB's objective. Adjusting countries can quickly improve their relative prices and export more to other members of the union.

But if internal demand is too weak and inflation too low, such rebalancing across countries obviously becomes harder. And to some extent, this is what we saw in the euro area after the crisis. As demand was stronger in our trading partners, vulnerable countries had to reverse their imbalances mainly by increasing net exports outside the euro area.

Importantly, strengthening internal growth is fully consistent with all countries maintaining their competitiveness. If countries boost growth by investing in productive areas of the economy, it not only lifts demand in the short run. It also provides the ingredients for maintaining competitiveness in the face of long-run global challenges.

So the question is, what can public policies do to further develop our domestic demand and growth potential, while also encouraging dynamic and globally competitive firms?

Policies to boost internal growth

In my view, since our challenges are common ones, we must meet them with a common response. This involves moving towards a new European policy mix, which has a number of key elements.

The first is monetary policy, which I start with because it is my area of responsibility and which will undergo a strategic review due to begin in the near future.

The ECB's accommodative policy stance has been a key driver of domestic demand during the recovery, and that stance remains in place. As laid out in the ECB's forward guidance, monetary policy will continue to support the economy and respond to future risks in line with our price stability mandate. And we will continuously monitor the side effects of our policies.

But it is clear that monetary policy could achieve its goal faster and with fewer side effects if other policies were supporting growth alongside it. One key element here is euro area fiscal policy, which is not just about the aggregate stance of public spending, but also its composition. Investment is a particularly important part of the response to today's challenges, because it is both today's demand and tomorrow's supply.

While investment needs are of course country-specific, there is today a cross-cutting case for investment in a common future that is more productive, more digital and greener.

Public investment in the euro area remains some way below its pre-crisis levels. The share of productive expenditure in total primary expenditure – which in addition to infrastructure includes R&D and education – has also dropped in nearly all euro area economies since the crisis[7]. And new investment needs are emerging.

Both national policies and European programmes like InvestEU have a role to play. And the Budgetary Instrument for Convergence and Competitiveness is also a good start. This tool acknowledges that, even when governments need to consolidate their finances, we have a common interest in maintaining sufficient levels of public investment.

But a stronger domestic economy also rests on higher business investment, and for that raising productivity is equally important. Firms need to be confident in future growth if they are to commit long-range capital.

Though all advanced economies are facing a growth challenge, the euro area has been slower to embrace innovation and capitalise on the digital age than others such as the United States. This is also reflected in differences in total factor productivity growth, which has risen by only half as much in the euro area as it has in the United States since 2000.

To help us close this gap, we have a very potent tool at our disposal: empowering our internal market. The private sector calls it: scale. Completing the digital single market, the capital markets union and the single market in services can provide the impetus Europe needs to launch new and innovative firms and to spread new technologies faster around the union. These are the building blocks of the European economy of the future.

And the projected gains are significant: new studies find that the full implementation of the Services Directive would lead to gains in the order of €380 billion[8], while completing the digital single market would yield annual benefits of more than €170 billion[9].

This growth dividend would in turn help close the circle with public investment by ensuring that public debt is sustainable. Finally, empowering our internal market also means completing our Economic and Monetary Union. The design of EMU – and in particular the balance between risk reduction and risk sharing – is closely linked to the propensity to save and spend in Europe.

On the one hand, a monetary union focused too much on risk sharing is likely to produce moral hazard and too little saving, which harms the union as a whole. But on the other hand, prioritising risk reduction alone is likely to lead to the opposite problem: excess saving and fragile growth as countries are forced to self-insure by running persistent surpluses.

The solution to the famous *"paradox of thrift"* is institutions. Good institutions exist to ensure that people are not forced into actions that are rational at the individual level but self-defeating collectively.

So, completing EMU is about finding the right trade-off: enough protection against moral hazard to discourage under-saving, but enough mutual insurance to prevent over-saving. In this way, we could tap into new sources of growth that would otherwise be suppressed. And that would truly represent a *"new approach"* for Europe.

Conclusion

We face a global environment that is marked by uncertainty. But I believe that, if we approach this challenge in the right way, it can also be a moment of opportunity.

We have a unique possibility to respond to a changing and challenging world by investing in our future, strengthening our common institutions and empowering the world's second largest economy.

All of this would be a game changer, not just for our own stability and prosperity, but for that of the global economy, too. It does require us to think differently about Europe. It will almost certainly not be easy. But as St Francis of Assisi once said, *"Start by doing what's necessary; then do what's possible; and suddenly you are doing the impossible."* ■

Christine Lagarde is President of the European Central Bank

Endnotes

1. September 2019 ECB staff projections.

2. See ECB (2017), "China's economic growth and rebalancing and the implications for the global and euro area economies", Economic Bulletin, Issue 7.

3. Since the onset of the financial crisis, domestic demand growth in the euro area has averaged 0.5%, compared with average growth of 2.3% in the decade before 2008.

4. Internal ECB analysis.

5. See Anderton, R, Aranki, T, Bonthuis, B and Jarvis, V (2014), "Disaggregating Okun's law? Decomposing the impact of the expenditure components of GDP on euro area unemployment", Working Paper Series, No 1747, ECB, Frankfurt am Main, December.

6. See Lane, P (2019), "Europe's role in a changing global economy", presentation at the European Commission's Annual Research Conference in Brussels, 15 November.

7. European Fiscal Board (2019), "Assessment of the EU fiscal rules with a focus on the six and two-pack legislation", August.

8. Pelkmans, J (2019), "Contribution to Growth: The Single Market for Services", study prepared for the European Parliament's Committee on the Internal Market and Consumer Protection.

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The international role of the euro

The euro is 20 years old. Poul Thomsen considers what can be done to further strengthen the role of the euro as an international reserve currency

Introduction

I am going to talk about what can be done to strengthen the euro's role as a reserve currency. This is a timely question, for at least two reasons:

- First, this being the 20th anniversary of the euro, it is a good time to take stock of the use of the euro as a global currency.

- Second, many European policymakers have been calling for strengthening the international role of the euro, including President Juncker in his State of the Union address last year. With a new Commission assuming office, it is an opportune time to ask what more policymakers can do.

The desire to boost the international role of the euro is motivated by a number of factors. One is the sense among European policymakers—rightly or wrongly—that the US benefits from an 'exorbitant privilege', and that an increased role for the euro could reduce what is perceived by some as European vulnerabilities stemming from the dominance of the dollar.

In a speech at the Fed's recent Jackson Hole Symposium, Bank of England Governor Mark Carney discussed the imbalances in the international monetary and financial system created by the dominance of the US dollar[1].

He argued that the high share of trade invoicing and financial activities denominated in dollars increases spillovers from US policies and weakens the effectiveness of monetary policy in other countries, undermining their ability to focus on domestic objectives.

He noted that growth in dollar-denominated borrowing by nonfinancial firms globally has increased vulnerabilities to fluctuations in the dollar exchange rate and caused central banks to continue building up costly dollar reserves.

This is especially true in emerging markets, which represent a growing share of the global economy. This dynamic reinforces the strong network effects of trade invoicing in dollars and continued dominance of the dollar as an international reserve currency.

Enhancing the global role of the euro is a welcome by-product of changes needed to make the euro work better for Europe

Governor Carney concluded that *"ultimately a multi-polar global economy requires a new international monetary and financial system to realize its full potential."* This includes a diversification of international reserve currencies and reduced reliance on the dollar[2].

Carney focused in particular on the Chinese renminbi's potential. I will focus on the potential for the euro. As a starting point, we should remind ourselves that the euro already is an important reserve currency. In fact, it is the second most utilized international reserve currency—a role it inherited in large measure from the deutsche mark yet subsequently expanded on[3].

My remarks will be from the perspective of what can be done to further strengthen the role of the euro as an international reserve currency. But, you will see that the policy conclusions are to a considerable degree similar to what we have been arguing will be needed to strengthen the resilience of the euro area in any event: namely, to reduce the zone's vulnerability to country-specific shocks and to foster convergence within the monetary union.

You could say that—in my view—strengthening the role of the euro as a reserve currency would be a by-product of much-needed reforms to make the euro area work better for all its citizens.

What makes a good international reserve currency and how does the euro stack up?

Let us start by reminding ourselves of some of the main findings from the large body of economic research on the key features that an international reserve currency should possess.

First, the currency should have a large transaction area. This is important for providing a sufficient underlying demand for its use, both in trade and in finance. The British Empire provided such a basis for the use of sterling up to WWII, and the US has been the world's largest economy since the late 19th century.

The euro area clearly qualifies here. At current exchange rates, the eurozone accounted for 16 percent of global GDP in 2018, making it the second largest single currency zone in the world in terms of output.

The second feature is good institutions. This includes things like a stable monetary policy and respect for the rule of law. Users of an international reserve currency need to be confident that they will not be arbitrarily expropriated, whether through violent swings in inflation and the exchange rate or through outright seizure of assets. Having a stable monetary policy also helps to generate lower interest rates, which makes it attractive to foreigners to borrow in the currency.

On institutions, the euro area and its member states measure up pretty well. According to the World Governance Indicators, euro area countries rank in the top 20 percent of all countries on the rule of law, with just a few exceptions.

Moreover, the EU has been a strong defender of multilateralism and dispute resolution through global institutions such as the WTO. And the experience of the last 20 years has shown the ECB's strong commitment to its inflation objective and strong independence even in the face of considerable criticism, at times from powerful member states.

The third feature a reserve currency needs is deep, liquid, and open financial markets. Financial markets need to be deep to provide enough assets denominated in the currency to satisfy the demand of foreign investors and central banks. And markets need to be liquid and open—meaning few controls on the currency—so that foreign holders of assets denominated in the reserve currency feel confident that they can move in and out of their positions easily and without excessively moving prices and exchange rates.

For example, research on the history of reserve currencies shows that the development of deep and liquid financial markets was critical to the US dollar gaining parity with sterling as an international currency before WWII[4].

While euro area financial markets are open—with strong safeguards against capital controls— they are not nearly as deep and liquid as US financial markets. For example, in 2018, euro area bond and equity markets were worth about 20 trillion dollars compared to over 50 trillion dollars in the US.

Moreover, the choice of euro-denominated assets is more limited than dollar-denominated assets. For instance, less than 30 percent of euro area nonfinancial corporations' financing comes from tradable debt and listed equity versus about 70 percent for US firms. One issue here is clearly the much higher reliance on relationship-based lending than on arm's-length capital markets in the euro area.

Overall, euro area financial markets are also much more fragmented than in the US, including for sovereign debt. The market for US Treasury bonds is one of the deepest and most liquid in the world. There is no single comparable market in the euro area.

The fourth important feature of an international reserve currency, according to some literature, is the backing of a strong central state, in part to give the currency true permanence. As Robert Mundell put it 20 years ago, and I quote: *"You have to have a belief that the euro is going to be there not just tomorrow and 10 years from now, or 30 years from now, but 100 years from now."*[5]

Obviously, there is no strong central state for the euro area as whole. It is an economic and monetary union, but *it is not a political union*. I want to emphasize this, because this is of course the defining feature of the euro area—the

feature that makes this area fundamentally different from other major currency areas, which all are political unions with a strong centre.

This, I will argue—the fact that it is not a political union—is clearly the limiting feature when it comes to the ability of the euro to seriously challenge the dollar.

The global financial crisis and the euro area debt crisis that followed exposed the fact that national policies in some euro area member states were not always consistent with membership in a monetary union. It also highlighted a number of weaknesses in the architecture of the monetary union itself.

It is therefore not surprising that after climbing considerably in its first decade, international use of the euro declined sharply as the euro area debt crisis caused investors to question the sustainability of the zone in its current form.

Of course, much has been done since the crisis to address the architectural shortcomings of the monetary union. The establishment of the ESM and the creation of the banking union were important steps. As we all know, however, the architecture remains incomplete.

And, perhaps even more importantly, national policies in important areas still fall well short of what is needed for countries to thrive within the euro area. In particular, several countries with high public debt levels have done too little to put their debt burdens on a downward path and reduce their vulnerability to country-specific shocks and attendant shifts in market sentiment. Most of these high-debt countries also have low productivity and competitiveness gaps and have failed to implement many of the structural reforms they need to overcome these problems.

At the same time, euro area countries running large and persistent external and fiscal surpluses have done too little to boost domestic investment and demand, which would of course also contribute to a healthy rebalancing within the region.

In light of this, let me now turn to what I see as the prospects for improving the functioning of the euro area and increasing the international role of the euro.

Prospects for improving the functioning of the euro area and increasing the international role of the euro
In line with what I just said, I see three important issues critical to increasing the international role of the euro. The first is the balance between the network effects of using a single currency in trade and finance and the desire for greater diversification in international reserve currencies.

I will only briefly comment on this. The second is the depth and liquidity of euro area financial markets. The third, and most important, is how well the euro area functions for its members and the attendant impact on its attractiveness as a reserve currency.

As mentioned, there are often strong network effects and efficiency gains from transacting in one currency[6]. But, history shows that there is nothing inevitable about having a single dominant global currency. The growth in the international use of the euro in its first decade—when it was essentially taking market share from the dollar—is evidence of the appetite for more than one major international currency.

This desire for diversification in reserve currencies and for reducing the vulnerabilities and spillovers created by the dominance of just one serves as a counterweight to the network benefits of transacting in a single currency.

European policymakers are of course interested in increasing the invoicing of international trade in euros. How to do this is still not entirely clear to me though—this is usually a decision taken by individual actors, and depends on various factors, including the strength of the network effects already discussed.

European policymakers have argued for pricing more commodities in euros. I remain to be convinced about the success of such efforts. For commodities with a truly global market, such as oil, the efficiency gains from everyone pricing in a single currency seem to be quite strong. In those markets it is hard to see the euro making significant inroads into the dollar's dominance anytime soon.

Let me turn now to the second point: enhancing the role of the euro by developing deeper and more liquid euro area financial markets looks more promising. Here prospects are better.

For the banking union, the biggest element still missing is a common deposit insurance scheme for banks. At the same time, further work is also needed to strengthen the bank resolution and bank supervision frameworks. This includes reducing the still-excessive fragmentation of rules and regulations along national lines.

As to capital market union, I believe that there is a growing sense among member states that capital market integration offers an opportunity for EMU deepening that could be politically easier than some other reforms. By this I mean that many of the necessary steps do not run into the concerns about risk-sharing versus risk-reduction that have stalled other parts of the architectural reform agenda.

Thus, while completing the banking union and building a capital market union are undoubtedly still long-term projects, I do sense an encouraging political willingness to reinvigorate some of these efforts. A caveat though: realistically, euro area financial markets will never be as integrated as those in the US. This reflects in part that some

of the necessary measures—like harmonization of bankruptcy procedures—are highly political and will run into the familiar obstacles to EMU deepening.

But it also reflects the prevalence of SMEs in Europe compared to the US, which suggest that relationship banking will always be more important in Europe. Thus, while the prospects for making progress on BU and CMU suggest to me that it is realistic to envisage an expanded role for the euro as an international reserve currency, these considerations also suggest the limitations for such an expansion.

But, the main limitation—and this brings me to the third point—remains the inconsistencies of policies at the national level with being member of a currency union and limitation in the euro area's architecture.

Of course, the architectural reforms needed to improve how the euro area serves its members entail more than just developing a deeper financial union. The fiscal rules need to be overhauled and a central fiscal capacity needs to be created to provide insurance against country-specific risks.

Even more important than architectural reforms—in my view—is the need for member states to have policies that are consistent with membership in a monetary union. As I mentioned before, this means reducing fiscal vulnerabilities where they are high and seeing countries with low productivity growth and competitiveness gaps implement structural reforms to improve the resilience and efficiency of their domestic economies.

And again: countries with sizable external surpluses need to do their part by investing more at home and supporting faster wage growth, including to help engineer a healthy rebalancing within the euro area. Here, in my view, we have the main limitation when we discussed the prospect for a stronger role for the euro. Without much stronger coherence in policies at the national level with the limitations of belonging to a currency union, and

without architectural changes to help weather country-specific shocks, the euro area will remain more vulnerable to shocks.

I don't see how one can seriously dream about the euro seriously rivalling the dollar without making much more progress in ensuring policy-consistency and completing the architecture.

The problems the Commission is having in enforcing the fiscal rules is on open display every day. So is the failure to seriously advance the architectural reforms in the face of this inability to enforce the rules as key architectural reforms appear stuck over concerns that increased risk sharing creates serious moral hazard problems and therefore should be contingent on first making progress on risk reduction.

These issues lie outside of what we are discussing today. But again: I don't see how we can imagine the euro seriously rivaling the dollar without first solving these fundamental problems inside the euro area.

Before I conclude, let me briefly comment on one special issue: the supply of euro-denominated safe assets. As I mentioned, the euro area does not have a single safe asset comparable to US Treasuries. I agree that it would be desirable to have an increased supply for safe assets and that this would help enhance the euro's global role.

But what are the prospects for this? Some observers have called on Germany and other AAA-rated countries to issue more debt. While there are good reasons for Germany and other countries with fiscal space to issue more debt in order to finance infrastructure and other reforms to boost their long-term growth potential, the notion that fiscal objectives should factor-in the need to feed more safe assets into world financial markets is tough to sell even under the most ambitious notions about giving greater weight to area-wide objectives in national fiscal policy.

The fact is that the discussion of safe assets quickly runs into the familiar conflict between risk-sharing and risk-reduction. On the one hand, we have the proposal to create a common euro area safe asset, perhaps some sort of debt instrument jointly backed by all euro area member states. On the other hand, we have the concerns that such 'mutualization' will cause moral hazard problems.

Here the counter-argument is that poor policies at the national level have caused some countries to lose their high credit ratings and that the logical conclusion is to create more safe assets by making lower-rated assets safer. From this perspective, the solution is for countries that are currently considered less safe to pursue better policies—more prudent fiscal policies and more ambitious structural reforms.

Thus, a safe asset is not a silver bullet that will somehow allow the euro area to bypass the fundamental challenges regarding risk-sharing versus risk-reduction that are hampering the development of a more resilient euro area—there and no easy shortcuts to creating a stronger role for the euro as a reserve currency.

To conclude, I believe that further progress on banking, and in particular capital market union, could help strengthen the euro's global role. But I also believe that this role will be limited as long as we have not overcome the fundamental problems in policies at the national level and the shortcomings in the architecture that have been evident since the GFC. Enhancing the global role of the euro is a welcome by-product of changes needed to make the euro work better for Europe. ■

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Endnotes

1. Carney (2019). "The Growing Challenges for Monetary Policy in the Current International Monetary and Financial System." Speech at the Federal Reserve's Jackson Hole Economic Policy Symposium.

2. See also Farhi, Gournichas, and Rey (2011) "Reforming the International Monetary System," Centre for Economic Policy Research, 76, and Gournichas, Rey, and Sauzet (2019) "The International Monetary and Financial System," NBER Working Paper No. 25782.

3. See ECB (2019) "The International Role of the Euro" for details on the international use of the euro.

4. See for example, Eichengreen and Flandreau (2009). "The rise and fall of the dollar (or when did the dollar replace sterling as the leading reserve currency?)" European Review of Economic History, 13(3), p. 377-411.

5. See Mundell (1999). "The Euro: How Important?" Cato Journal, 18(3), p. 441-444.

6. For a theoretical explanation of how a dominant currency emerges see Gopinath and Stein (2018), "Banking, Trade, and the Making of a Dominant Currency," Harvard Working Paper

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How to stabilise the euro area

We need more supportive fiscal policy alongside monetary policy for a faster return to price stability with fewer side effects, says Mario Draghi. Acting too late leads to a longer period of accommodative policies

The resilience of the euro area through many years of crisis has proven its critics to be wrong. Several countries, not least Greece, have undertaken remarkable efforts in order to thrive as members of the monetary union. Important institutional reforms have taken place to strengthen the euro area, notably the creation of the banking union and the European Stability Mechanism (ESM). As I have outlined elsewhere, the euro has been beneficial in many ways[1], and today the single currency is more popular than ever[2].

But the fact that the crisis lasted much longer here than in other advanced economies – and came with a substantial social cost – still weighs on perceptions of our monetary union. Have we learned the lessons of that episode? And have we taken the necessary steps to prevent such an outcome in the future? These are the questions I would like to address.

The answer comes down to whether the euro area has increased its ability to stabilise macroeconomic shocks. In this regard, there are two key dimensions that matter.

The first is the ability to ensure stabilisation across countries. This is about finding the right balance between convergence and insurance. The second is the ability to ensure stabilisation over the cycle. This is about all policies playing an appropriate role in contributing to euro area growth.

Stabilisation across countries

The classical perspective on stabilisation in a monetary union is provided by the optimum currency area (OCA) theory. This principally focuses on the cross-country dimension, ie. how to ensure that sharing a single monetary policy and exchange rate does not deprive some members of the capacity to adjust to shocks. While the literature lists several criteria that are important, the key is the balance between *convergence* and *insurance*[3].

There needs to be enough convergence across states such that they largely face common shocks, and so a single monetary policy is broadly appropriate for all members. However, effective insurance mechanisms also need to be in place – based on diversification across the currency union – so that states can still stabilise their economies when their local cycles diverge. In such situations, by design, insurance becomes more effective.

Take the US as an example. Shocks are relatively similar across states, which underpins the common monetary policy[4]. But local cycles still deviate from the aggregate cycle[5]. So, both private and public insurance are in place to compensate.

Policymakers have a responsibility to learn the lessons of the past, to study the experiences of others, and to avoid foreseeable risks to the public by altering their policies today

In the private sector, integrated credit markets allow cross-border banks to offset losses in one region against gains in another, which helps maintain the provision of credit in all regions throughout the cycle. Portfolio diversification through capital markets allows households to support their income during downturns via gains on financial holdings in better performing parts of the union. It is estimated that around 70% of a local shock is smoothed in this way[6].

Public insurance works through similar principles. The Federal Deposit Insurance Corporation (FDIC) allows banks in different states to insure each other against failure, backstopped by a credit line from the US Treasury. The federal budget complements the state-level automatic stabilisers, smoothing a further 10% of shocks[7].

Twenty years after its launch, it is important to assess how the euro area compares in terms of convergence and insurance.

In terms of real convergence, several euro area countries have achieved significant progress, particularly the Baltic States, Slovakia and, to a lesser extent, Malta and Slovenia. The gap between real GDP per capita in these countries and the euro area mean has been reduced by around one-third since 1999[8].

However, other countries that also started far from the euro area average – such as Portugal and Greece – have, on balance, been unable to close the gap significantly.

Real convergence in income per capita is important for the cohesion of a monetary union, so it is vital that the right national and European policies are in place to help countries that have fallen behind since the crisis to re-converge, in particular Greece. At the same time, a slower pace of real convergence does not necessarily prevent a monetary union from being able to stabilise its economy effectively.

What matters more is *business cycle* convergence, since this determines the optimality of monetary policy across states. And business cycles can converge long before income levels do. In the US, for example, GDP per capita in the richest state is still around twice that of the poorest state, which is roughly the same gap as in the euro area today[9]. But US states have had relatively correlated cycles since around the 1930s[10].

When the euro area was established, there were conflicting views on how cycles would respond. According to the 'specialisation hypothesis', monetary union would allow countries to exploit their comparative advantages and increase inter-industry trade. This would expose countries to different industrial shocks, and business cycles would become less correlated[11].

The alternative view was the 'endogeneity hypothesis', which held that the euro would lead to greater intra-industry trade. Industrial structures would therefore become more similar and cycles *more* synchronised[12].

What few foresaw at that time, however, was the rapid emergence of global value chains (GVCs) in both global and euro area trade and how this would affect the transmission of shocks. Between 1990 and 2015, the average ratio of intermediate goods exports to GDP – a measure of value chain integration – increased more than twofold globally, but nearly fourfold in the euro area.

In 2014, participation in GVCs – the share of gross exports consisting of value added which crosses multiple borders – was around 20 percentage points higher in euro area countries than in the US or China[13].

Value chains increase *both* specialisation and synchronisation[14], since demand shocks are transmitted along the supply chain. In fact, trade along value chains has been found to generate more synchronisation than trade in final goods[15].

Consistent with this, multiple studies find that business cycle synchronisation in the euro area has risen since 1999[16]. A substantial share of the variation in GDP growth across euro area countries can now be explained by a common factor that is not shared with other G7 economies[17].

Overall, growth dispersion among euro area countries is now at the same low level as among US states – and roughly half the level before the crisis[18].

The single market has played a key role in trade integration, but the euro has also contributed. New ECB research finds that the euro has facilitated trade creation and the emergence of GVCs within the euro area, especially between 'old' and 'new' member states since 2007[19].

One recent meta-study finds that being part of the monetary union can explain at least half of the overall increase in business cycle correlation among euro area countries since 1999[20].

Countries' participation in value chains nonetheless varies, with some more exposed to agglomeration effects than others[21]. This underlines the need to continue deepening and broadening the single market, so that all member states are well integrated into the European value chain and share in the common business cycle.

But just as in the US, euro area countries are still exposed to idiosyncratic shocks due to their trade structures, as we see in Germany today. And in contrast to the US, common shocks can have asymmetric effects due to different levels of public debt, as we saw during the crisis. Consequently, IMF analysis finds that, while business cycles have become more synchronised during the euro period, their *amplitude* across euro area countries has diverged since the crisis[22].

So, to address this, there needs to be insurance across euro area countries, and such insurance is also likely to be highly effective, perhaps even more so than in the US[23].

Progress in this area is much less advanced, however. Only around 25% of local shocks are smoothed through financial markets in the euro area[24]. We still do not have in place the ESM backstop for the single resolution fund and a European deposit insurance scheme. And there has been little meaningful progress on fiscal policy coordination. Long ago we reached an impasse on key issues which is being perpetuated by two alleged dichotomies.

The first is the notion that private and public insurance are substitutes, and so if the euro area focuses on deepening private risk-sharing, greater public risk-sharing will not be required. But this misunderstands how private insurance develops in the first place. It emerges from deep and resilient financial integration, especially of retail banks, and that only arises in the shelter of public risk-sharing, such as strong backstops and deposit insurance schemes.

The reason is that public insurance guarantees that costs will be shared in the event of bank failures, which is crucial for national authorities to let capital and liquidity flow freely within the monetary union. Without insurance, on the other hand, there will always be an incentive to ring-fence in order to safeguard national balance sheets, which blocks effective risk sharing[25].

US banks, for instance, rely on intra-group funding to respond to local shocks and manage credit growth, allowing them to keep their lending more stable over the cycle[26].

Similarly, without public insurance, banks have a weaker business case to engage in cross-border consolidation. Some of the key benefits of operating multinationally – such as the ability to optimise liabilities by funding loans in one country with deposits in another – cannot be attained if there are different deposit guarantee schemes across

countries, and different creditor hierarchies in an insolvency scenario. This is one reason why cross-border banking M&A activity within the euro area is currently at historical lows[27].

In any event, private risk-sharing based on diversification can break down in the face of large common shocks, as happened to some extent in the US during the crisis. One study finds that capital market risk-sharing in the US dropped by almost half in the crisis period[28]. Thus, private insurance cannot ever fully substitute for effective public risk-sharing.

The second alleged dichotomy is the notion that public insurance creates moral hazard, and therefore risks have to be reduced before they can be shared. But this overlooks both the theoretical and empirical evidence we have on the incentive-effects of risk-sharing. There is a wealth of evidence that moral hazard depends on the appropriate design of insurance schemes[29]. And what we see in practice is that the absence of insurance does not lead to lower risks, either for individual countries or for the euro area as a whole.

This is because the assumed mechanism – that the absence of backstops leads to market discipline on governments, which in turn promotes reforms – is not reflected in reality. ECB research going back to 1975 finds no convincing evidence that high interest rates lead to reforms, if one controls for the business cycle and other factors[30].

On the contrary, when countries are under market pressure, they are typically either compelled to enter macroeconomic adjustment programmes, or they enact reforms that are poorly designed and easily reversed. This normally means, among other things, consolidating budgets by raising taxes, which makes the recession worse. And when several countries are in this position, because backstops are not in place to arrest contagion, it spreads and prolongs the crisis for the *whole* monetary union.

We saw this clearly in the euro area in 2010-12. Economies representing one-third of euro area GDP were forced into a pro-cyclical fiscal stance to shore up confidence in their public debt, which was a factor that led to the euro area's second recession. In other words, lack of insurance actually *raised* risks.

In contrast, an effective, quasi-automatic euro area fiscal backstop, with proper eligibility criteria, could have stabilised expectations and led to a more appropriate fiscal stance. This is one reason why I have called on several occasions for a euro area fiscal instrument of adequate size and design.

The same is true in the financial sector. Without public insurance, in a crisis markets typically panic and begin fire sales, which propagate risk. Appropriate backstops, on the other hand, help stabilise market expectations and reduce risks. The role of the FDIC in the aftermath of the Lehman collapse is a good example of this.

During that period, around 500 banks were resolved without triggering financial instability. In contrast, one estimate puts the total number of banks resolved in the euro area in the same period at around 50[31]. In the absence of credible backstops, the clean-up of the euro area's banking sector took considerably longer.

Today, it is estimated that a public backstop for the whole euro area would have the same credibility as that of the US, thereby significantly reducing risks in a crisis. But if national governments are still expected to backstop their own banks, countries such as France or the Netherlands could face potential fiscal costs of 10-12% of their GDP[32].

All this should make it clear that deepening public insurance by completing the banking union and strengthening fiscal union is not about creating a transfer union. It is about creating a euro area in which there is *less* need for public risk-sharing in future, because we have the instruments in place to stabilise crises more quickly, and because we have the right framework to allow private sector risk-sharing to develop more sustainably.

Moving in this direction is evidently politically difficult. But that should not stop us from identifying the problems and making the case for fixing them, so that we can build a monetary union in which convergence is truly balanced by insurance.

Stabilisation over the cycle

Stabilisation in a monetary union also has an aggregate dimension – that is, how *all* policies combine to ensure support for growth over the cycle. This was not much addressed in the OCA literature, which rested on the classical notion that monetary policy should respond to common shocks and fiscal policy to local shocks. This made sense in the conditions prevailing at the time. But it needs to be re-examined in the new environment we face today.

The defining feature of this new environment is the secular decline in the natural rate of interest, which is the rate that in principle balances desired saving and planned investment in the economy. The natural rate is a difficult and intangible concept, but we can nonetheless intuit, from certain long-term trends, that it has been on a downward path.

The most important trend is slowing potential growth across advanced economies, and in particular slowing total factor productivity (TFP) growth, which implies a lower rate of return on capital. As potential growth falls, borrowing costs for the private sector have to fall as well, since firms will only borrow at a price that is below their expected rate of return on investment.

Over time, this creates a downward pull on interest rates. Since the 1990s, long-term real yields have fallen by over 400 basis points in the US, over 500 basis points in Japan and over 600 basis points in Germany[33]. We can get a sense of this dynamic if we compare the economy in the US in the 1990s with that today. In the 1990s, with inflation around 2-3%, and potential growth thought to be around 3-4%, nominal policy rates at 3% were seen as highly

accommodative[34]. Now, with lower inflation and long-term growth expected to be 1.5-2%, nominal interest rates at that level would be seen as extremely tight and trigger a recession.

But the size of the decline in real yields since the 1990s also reflects other secular factors that have arisen since then. These have depressed interest rates *even relative to growth* by encouraging people to save more and invest less. The most powerful is adverse demographics. In the euro area, the demographic transition is estimated to have reduced real interest rates by around one percentage point over recent decades. On current trends it can be expected to depress real rates by a further 0.25-0.5 percentage points by 2030[35].

Other studies have pointed to the role of rising income inequality, where increasingly rich households save more of their permanent income[36]; an excess of global saving especially in emerging markets[37]; and a general increase in risk aversion, which is captured in a rising demand for safe assets[38].

The upshot is that, across a range of estimates, the natural rate in the euro area has been trending down to very low levels. Estimates for the US are slightly higher but display the same downward path[39]. This has important repercussions for monetary policy, namely in that any interest rate set by the central bank that is not in line with the trend of the natural rate would be contractionary.

Thus trying to raise rates too quickly would be self-defeating, since it would only lead to growth and inflation falling and rates having to be cut once more.

In fact, if such a stance caused a longer slump and a rise in uncertainty about monetary policy, it could even lead to 'hysteresis effects' in investment and risk sentiment[40]. That would in turn depress TFP growth further and cause the natural rate to fall more.

This environment has two key implications. The first is that the optimal policy mix to stabilise the economy changes. With a falling natural rate, the effective lower bound on interest rates becomes more salient. Before the crisis, it was estimated that rates were likely to hit zero in the euro area roughly once every 50 years[41].

Now, monetary policy increasingly has to use unconventional policies to achieve its mandate, and to do so for longer and with more intensity. This is not a barrier to the central bank achieving its objective, but it increases the risk of side effects along the way.

In contrast, fiscal policy playing a more supportive role alongside monetary policy would lead to a faster return to price stability and therefore fewer side effects. This is because fiscal policy becomes more powerful when monetary policy is close to the effective lower bound, as the multipliers are higher[42].

Furthermore, in certain situations, supportive fiscal policy can complement monetary policy in cutting through the obstacles that are weighing on demand – which is the case in the euro area today.

A main driver of the weak outlook at present is heightened uncertainty, which is triggering 'paradox of thrift' behaviour in parts of the private sector. Uncertainty encourages higher saving which compresses demand and incomes, which in turn feeds back into more uncertainty and *lower*, not higher, saving. Fiscal policy can break this vicious circle since, with its greater multipliers, it can push incomes and income expectations higher.

Moreover, while there may be limits to how much households can bring forward future income in response to lower borrowing costs, governments can in principle *raise* their future income through their spending today. This is the case if government spending raises productivity and thereby future potential output, which increases fiscal space today[43]. Higher expected growth in turn makes private sector transmission more effective.

This is not about policy coordination. Our framework in the euro area is built on monetary dominance, where the central bank decides its policy independently based on price stability considerations alone. Rather, if governments want to see a faster exit from unconventional policies, it is in their interests to align with monetary policy.

But this is not what we have seen up to now. From 2009 to 2018, the average cyclically-adjusted government primary balance[44] was -5.7% for Japan and -3.6% for the US, but 0.5% for the euro area.

The second implication of the falling natural rates is that other policies are required for interest rates to rise significantly in the future. While monetary policy has to treat the natural rate as given, both structural and fiscal policies can raise it.

Structural policies can accelerate resource re-allocation, innovation and the diffusion of new technologies, all of which raise TFP[45]. Efficient public spending can increase productivity through, for example, improving education systems or public investment in key infrastructures. The financing of that investment through debt issuance can increase the supply of safe assets and help absorb excess saving.

Fiscal policies can also be used to reduce inequality and encourage greater labour force participation among older workers, thereby lowering saving. In fact, new estimates suggest that the use of these types of fiscal policies in advanced economies in recent decades has prevented the natural rate from falling further[46].

At the same time, well-targeted macroprudential policies can help temper the side effects of low interest rates in the transition period while these policies come into full effect.

The gains at the national level from such measures would be significant where there are large domestic investment needs and reform gaps. In all large euro area countries, net public investment[47] has essentially been zero over the last decade. The share of productive expenditure in total primary expenditure – which in addition to infrastructure includes R&D and education – has also dropped in nearly all euro area economies since the crisis[48].

As an illustration of the effects of higher investment, ECB model-based analysis finds that, in an economy like Germany, raising productive public investment by 1% for 5 years could ultimately yield GDP up to 2% higher and private investment up to 2% higher[49].

Moreover, if the most indebted countries were to couple public investment with structural reforms to raise future growth, higher borrowing would create fewer uncertainties about debt sustainability[50].

The impact would be greater still if euro area countries were to coordinate their policies, and especially when those actions are aligned with the forward guidance provided by monetary policy. ECB simulations find that the spillovers from coordinated investment spending in the euro area are up to six times larger when the central bank does not increase interest rates in response[51]. As the decline of the natural rate is a common challenge, with common causes and consequences, the case for coordination among countries is strong.

The most effective response, however, would be an investment-led stimulus at the euro area level. This would be the best way to achieve an efficient distribution of spending among euro area countries – and is a further reason why I have called for a euro area fiscal instrument. The agreement on the Budgetary Instrument for Convergence and Competitiveness is a step in the right direction, but it does not yet meet the necessary criteria in terms of size or design.

Whichever route is taken, monetary policy will continue to do its job. The latest decisions of the Governing Council have shown its determination in the face of a continuously weakening outlook for growth and inflation.

Consistent with our monetary dominance framework, these decisions are intended to ensure that inflation returns to our objective without undue delay. But if fiscal and structural policies also play their role in parallel – and more so than we see today – the side effects of monetary policy will be less, and the return to higher rates of interest will be faster.

Timely and effective policy actions, however, are of the essence. The fact that interest rates have been able to rise faster in the US than in the euro area since the crisis is, in no small part, because fiscal policy there has played a greater role alongside monetary policy.

By the same token, lack of policy alignment in Japan in the face of decades of deflationary forces eventually led to a situation where both monetary and fiscal policy had to be extremely accommodative to jolt the economy out of entrenched disinflation.

Conclusion

This brings me to my conclusion. Policymakers have a responsibility to learn the lessons of the past, to study the experiences of others, and to avoid foreseeable risks to the public by altering their policies today.

Our monetary union was born incomplete and, within a decade, faced a crisis few could have anticipated. It is understandable that it was not ready. But we know now what it takes to provide stabilisation across countries, and we know what we risk if we act too late to stabilise the union as a whole. This only leads to a longer period of highly accommodative policies.

We want to determine our circumstances, not to have our hand forced by them. The diagnosis of what needs to be done is clear. The roadmap has been laid out. ■

Mario Draghi is the President of the ECB

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A challenging path ahead

Reuben Borg, Marco Buti, Oliver Dieckmann, Björn Döhring, and Alexandru Zeana consider the European Commission's Autumn 2019 forecast

The current weakness of GDP growth and low inflation in the euro area are unlikely to be reversed, by themselves, in the next two years. The near-term outlook will much depend on whether the rest of the economy, in particular the services sector, will remain resilient to the persistent slowdown in manufacturing, and on the continued robustness of employment.

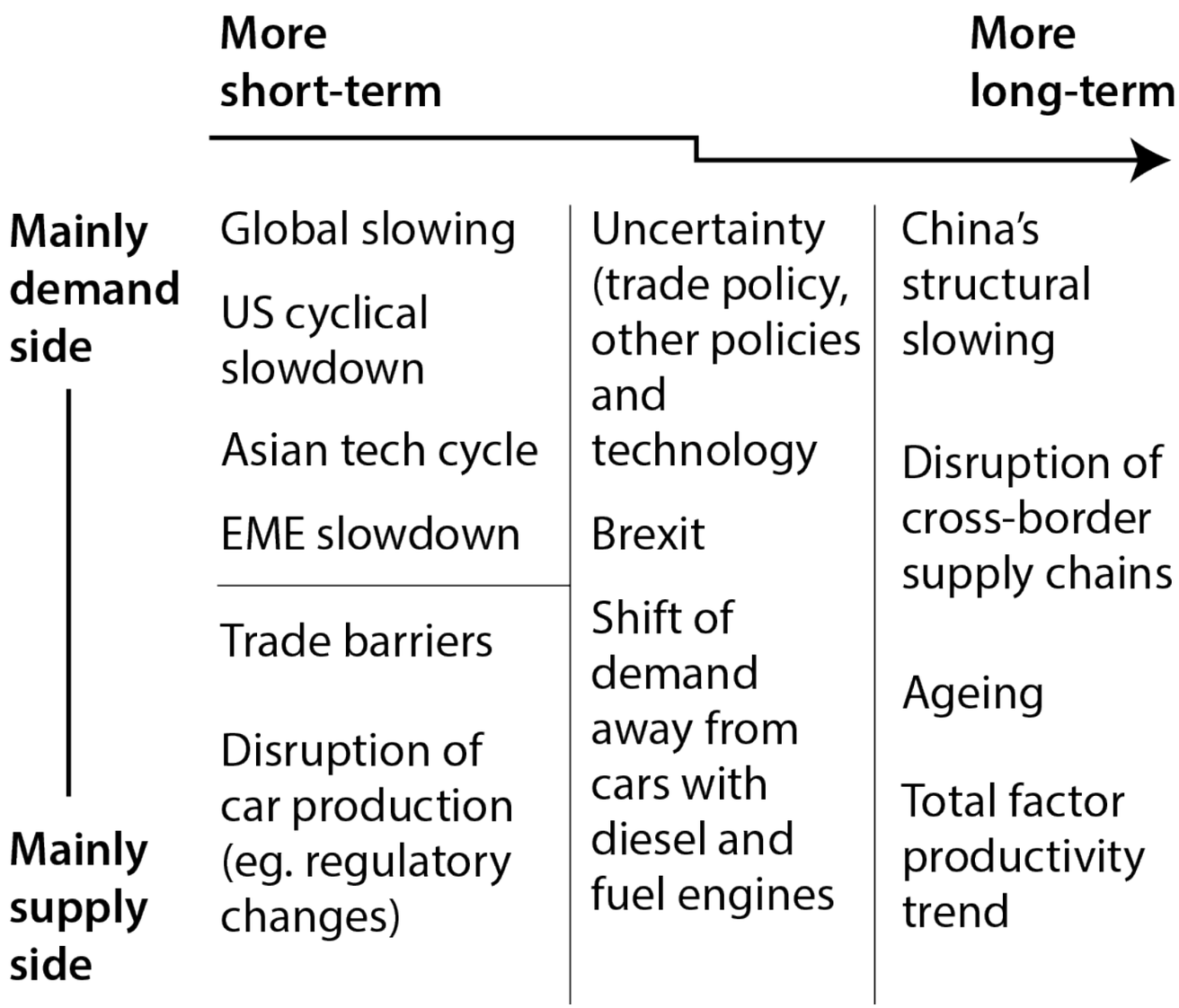
This column introduces the European Commission's Autumn 2019 Forecast, which suggests that while a recession is not in the cards unless major risks were to materialise in the near future, a prolonged period of very low growth and inflation might loom for the medium term.

A more supportive economic policy mix is needed to stabilise the economy in the near term, to prevent the risk of protracted sluggishness in the medium term, and to provide impetus to the transition towards an environmentally and socially sustainable economy.

Economic activity in the euro area has decelerated over the past year, reflecting both a global growth slowdown and domestic growth impediments. More recently, the global economy has turned out even weaker than expected, with flat-lining world trade amid high policy uncertainty (IMF 2019). The deteriorating global environment has hit European manufacturing and investment.

A closer look at the factors that are currently dampening economic growth in the euro area (Figure 1) reveals a combination of interacting supply shocks (eg. trade tensions), cyclical developments (eg. the maturing cycle in the US), structural shifts (eg. the transition in China), and long-term developments (eg. trend towards lower productivity growth).

Figure 1. Factors impacting on economic growth and inflation in the euro area



The key question for the euro area outlook is whether the various negative shocks will fade and allow an even modest rebound, whether growth will remain subdued, or whether the negative factors might interact in a way that would push the economy in the direction of recession.

The European Commission's just released Autumn 2019 European Economic Forecast projects a protracted period of slow growth and muted inflation, arguing that the impact of several factors holding back growth will not fade swiftly. GDP growth in the euro area is projected at 1.1% this year and 1.2% in both 2020 and 2021 (Table 1).

... today's policy decisions concerning education, digitalisation and research will shape the fairness, technological edge and growth potential of the economy over the coming decades

Table 1. Forecast for the euro area

	Annual percentage change					
	2016	2017	2018	**2019**	**2020**	**2021**
GDP	1.9	2.5	1.9	**1.1**	**1.2**	**1.2**
Private consumption	2.0	1.7	1.4	**1.1**	**1.2**	**1.2**
Public consumption	1.9	1.3	1.1	**1.6**	**1.5**	**1.3**
Gross fixed capital formation	4.0	3.5	2.3	**4.3**	**2.0**	**1.9**
of which: equipment	5.8	4.0	4.3	**2.5**	**1.6**	**1.9**
Exports (goods and services)	2.9	5.5	3.3	**2.4**	**2.1**	**2.3**
Imports (goods and services)	4.1	5.0	2.7	**3.2**	**2.6**	**2.7**
Contribution to GDP growth:						
Domestic demand	2.3	1.9	1.5	**1.8**	**1.4**	**1.3**
Inventories	0.0	0.2	0.0	**-0.4**	**0.0**	**0.0**
Net exports	-0.4	0.5	0.4	**-0.3**	**-0.1**	**-0.1**
Employment	1.4	1.5	1.5	**1.1**	**0.5**	**0.5**
Unemployment rate (a)	10.0	9.1	8.2	**7.6**	**7.4**	**7.3**
Harmonised index of consumer prices	0.2	1.5	1.8	**1.2**	**1.2**	**1.3**
General government balance (b)	-1.4	-0.9	-0.5	**-0.8**	**-0.9**	**-1.0**
General government gross debt (b)	92.2	89.8	87.9	**86.4**	**85.1**	**84.1**

(a) as % of total labour force. (b) as a % of GDP

Source: AMECO

While downside risks remain large, a movement into recession is not in the baseline. The outlook for a subdued expansion without a rebound is a change of assessment compared to previous Commission forecasts.

Equipment investment growth dropping due to weak foreign demand and uncertainty

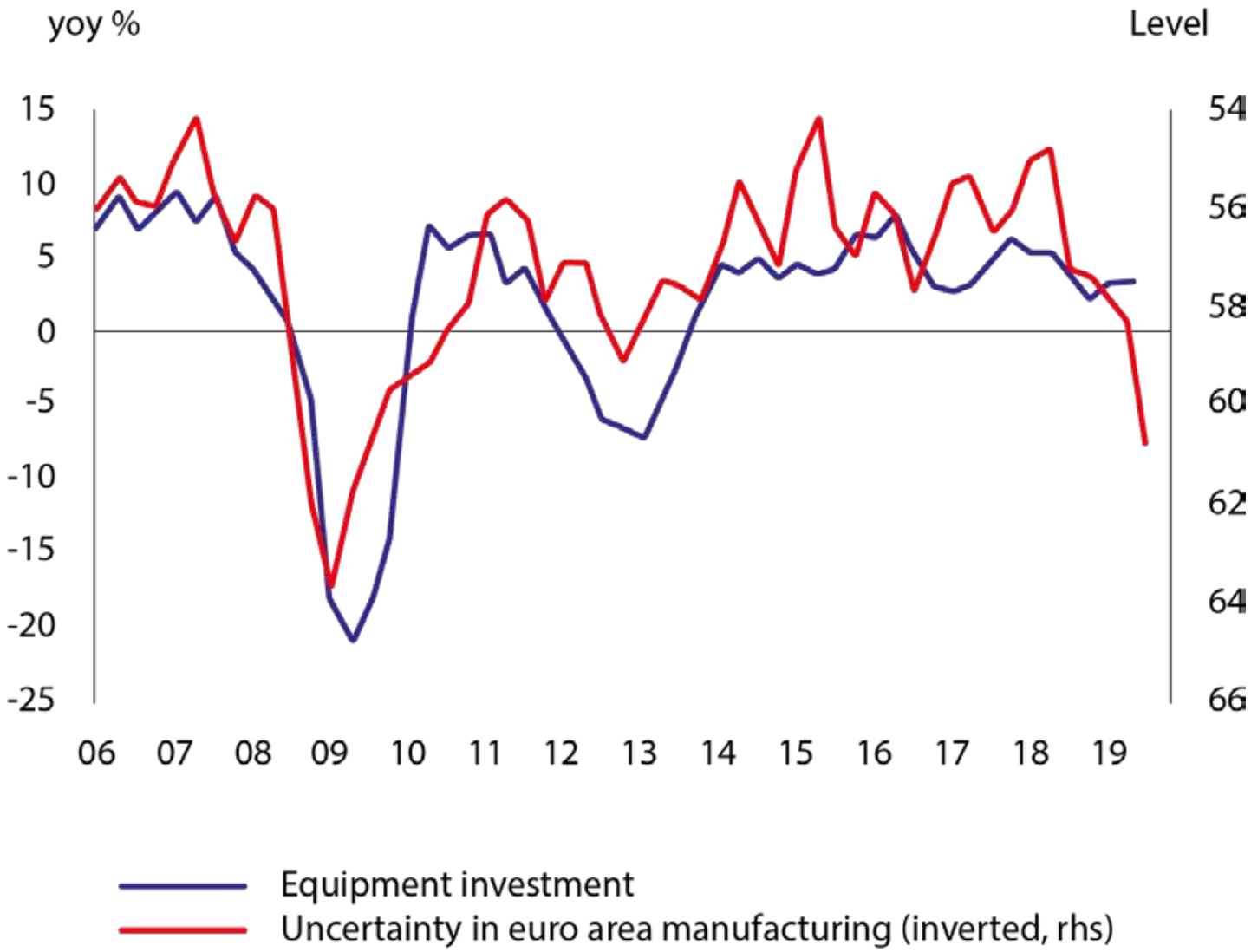
Extraordinarily high uncertainty and the implementation of tariffs by Europe's two biggest trading partners on their bilateral trade is having a large impact on investment. Global trade policy uncertainty is at a record high, and the uncertainty reflected in the dispersion of replies to the European Commission's manufacturing industry surveys has also surged (Figure 2, inverted scale).

Uncertainty at such high levels is bound to dampen investment (Baker *et al*. 2016). As it is driven by potentially persistent factors such as a lack of reliability of agreed trade rules and an uncertain outlook for cross-border activity (eg. foreign trade, FDIs, global value chains), the impact of uncertainty on the real economy may also be longer lasting. Companies might not only delay investment plans but cancel them or redirect investments into regional production chains.

Recent studies examining the impact of the current trade tensions highlight the negative impact of uncertainty (Caldara *et al*. 2019), also as a transmission channel to countries not directly involved in the trade conflict (IMF 2019: Box 1.2).

The impact of tariffs and trade policy uncertainty may be amplified through global value chains (Wozniak and Galar 2018). The geographical fragmentation of production implies that intermediate goods cross borders several times, making the production process more vulnerable to trade restrictions at each production stage and increasing the cumulative tariff incorporated in final goods prices. If persistent trade policy uncertainty were to induce firms to

Figure 2. Equipment investment and uncertainty in industry, euro area



Source: Eurostat, DG ECFIN

shorten and reshape their supply chains, the recent drop in the trade elasticity of global GDP growth could become more persistent.

Against the backdrop of the probably protracted weakness of world trade, the euro area outlook for the coming years depends on four main factors:

- if and for how long the rest of the economy, in particular the services sector, can remain resilient amid the manufacturing weakness;
- whether the negative impulse delivered through trade will spread geographically;
- if the labour market continues to hold up; and
- how wage growth will feed through to inflation.

We first raised this issue (with respect to three of these 'divergences') back in spring (Buti *et al*. 2019). By now, there are more indications of the weakness spreading, motivating the projection that the slowdown will be more persistent.

The longer the manufacturing weakness lasts, the more likely it is to spread across sectors and geographically

Not all manufacturing recessions lead to a contraction of the whole economy. While manufacturing output in the euro area as a whole has been declining since mid-2018, output growth in the rest of the economy has been holding up (Figure 3), expanding at an annual rate of around 1.7% in the first half of 2019.

Looking ahead, the services PMI has remained in expansion territory, but decreased somewhat in recent months. The Commission's services sentiment indicator has fallen below its long-term average this summer, also pointing to limits to a continued divergence of manufacturing and services.

Among the large Member States, the slowdown from buoyant GDP growth in 2017 to 2019 was particularly sharp in Germany (from 2½% to less than ½%), due to its export dependency and large manufacturing base. Despite their strong integration into the value chains of German manufacturing, some neighbouring countries have so far shown remarkable resilience.

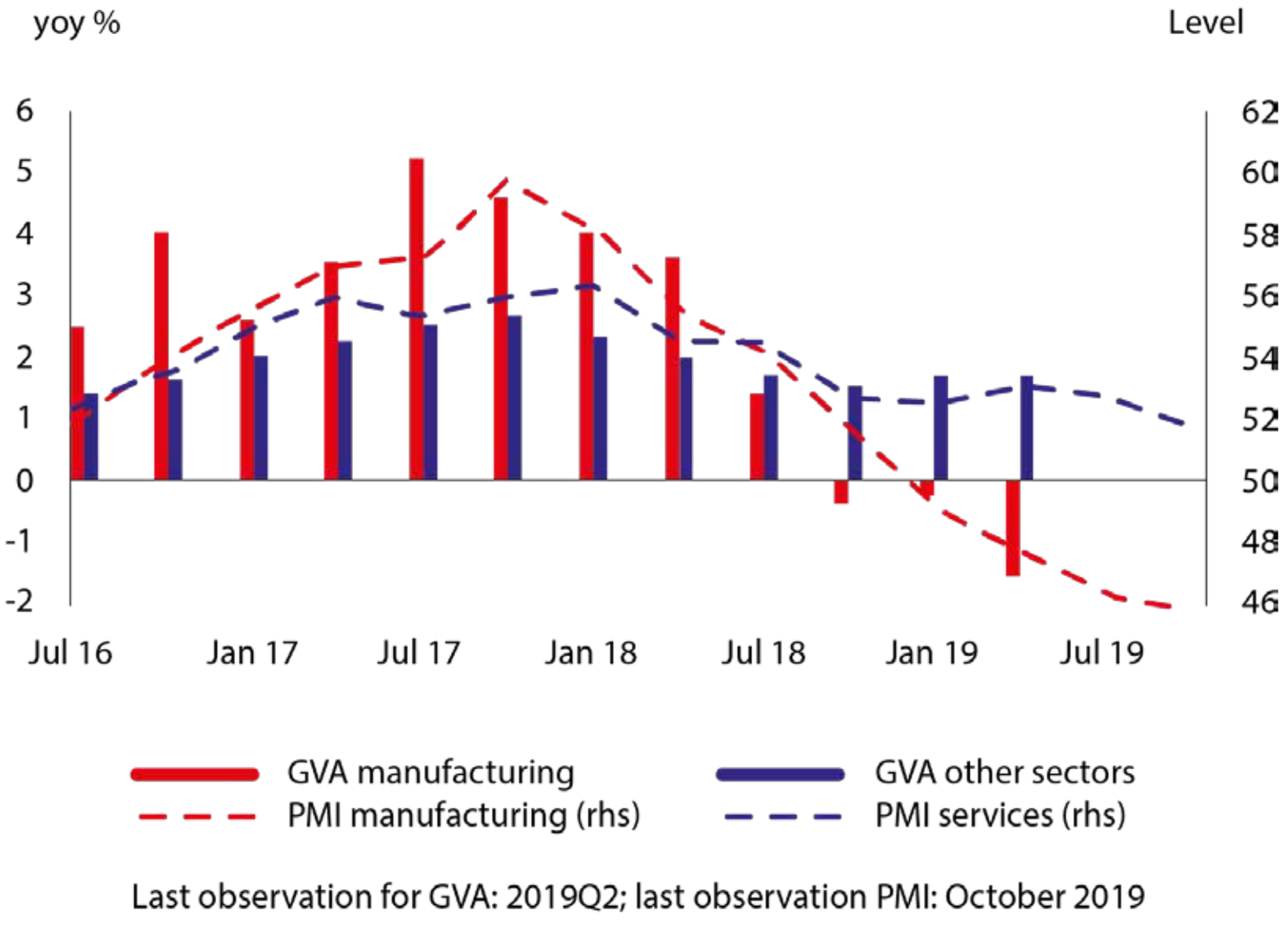
However, some convergence towards lower growth is expected for 2020. Even so, the growth rates of Central and Eastern European countries are projected to remain well above the EU average in 2020 and 2021 on account of booming labour markets, strong construction activity, and in some countries the opening of new factories and the switch to new product lines.

The strength of the labour market should prevent a worse outcome and wage growth should eventually feed through to inflation

The situation of European labour markets has improved further despite the economic slowdown. Both the number of persons employed and the number of hours worked continued to increase this year, while unemployment rates fell further.

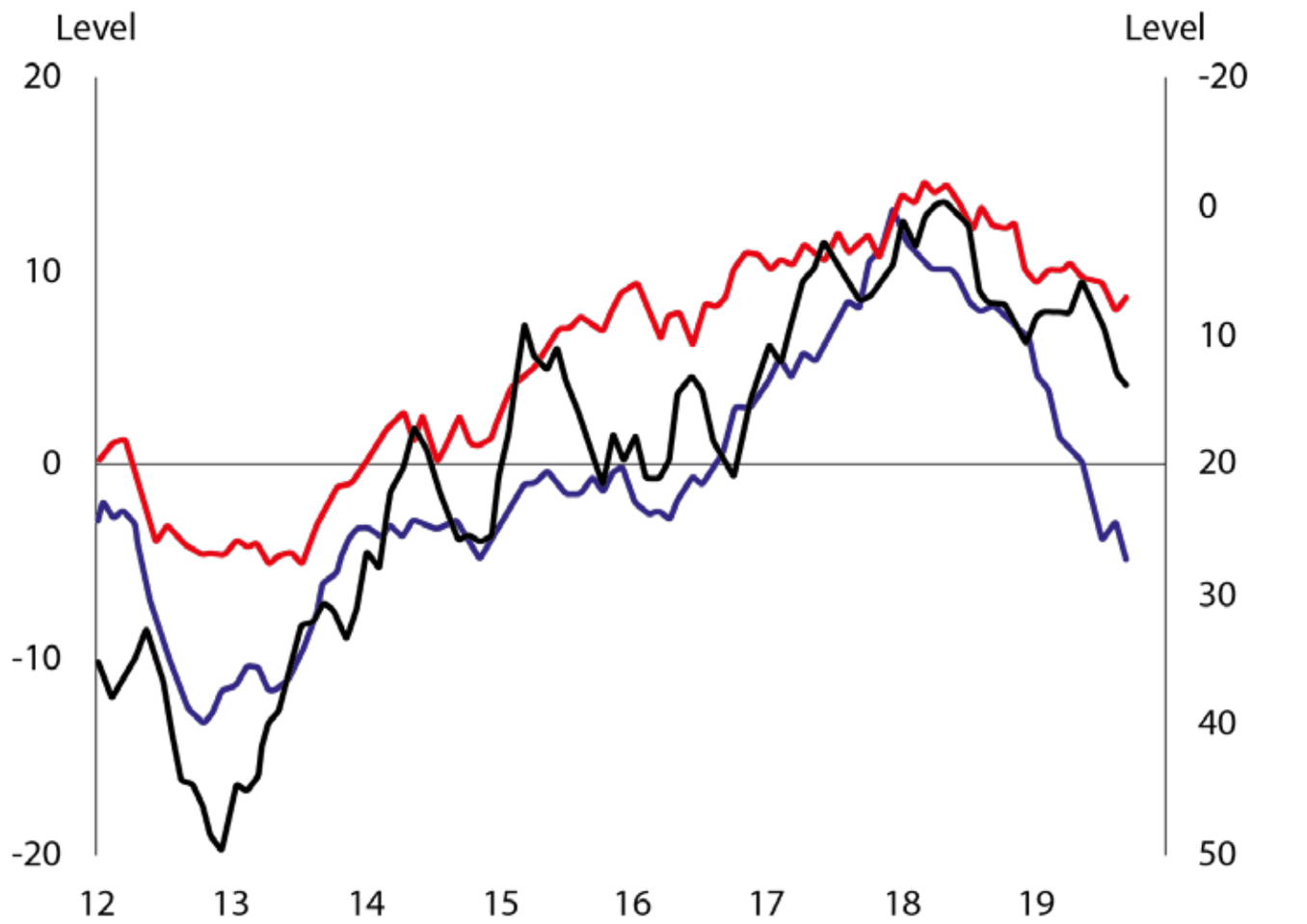
However, near-term employment indicators have moderated over the last few months suggesting that the economy's weakness has started affecting labour markets (Figure 4). For the moment, the only indications of employment growth coming to a halt come from the manufacturing sector. Employment in the services sector and construction is still on the rise and weighs significantly more in aggregate employment.

Figure 3. Gross value added and PMIs by sector, euro area



Source: Eurostat, DG ECFIN

Figure 4. Employment expectations, Commission surveys, euro area



Source: DG ECFIN

The reasons behind the slight decrease in employment growth are similar to those impacting GDP growth. An analysis of the contributors to employment growth using the Commission's Global Multi-country model (Albonico *et al*. 2017) suggests that external demand has contributed negatively to employment growth in 2019, which was only partly compensated by domestic demand.

Supply factors, including the impact of past labour market reforms and possibly some labour hoarding, have also contributed positively and are set to continue supporting employment next year, although to a lesser degree.

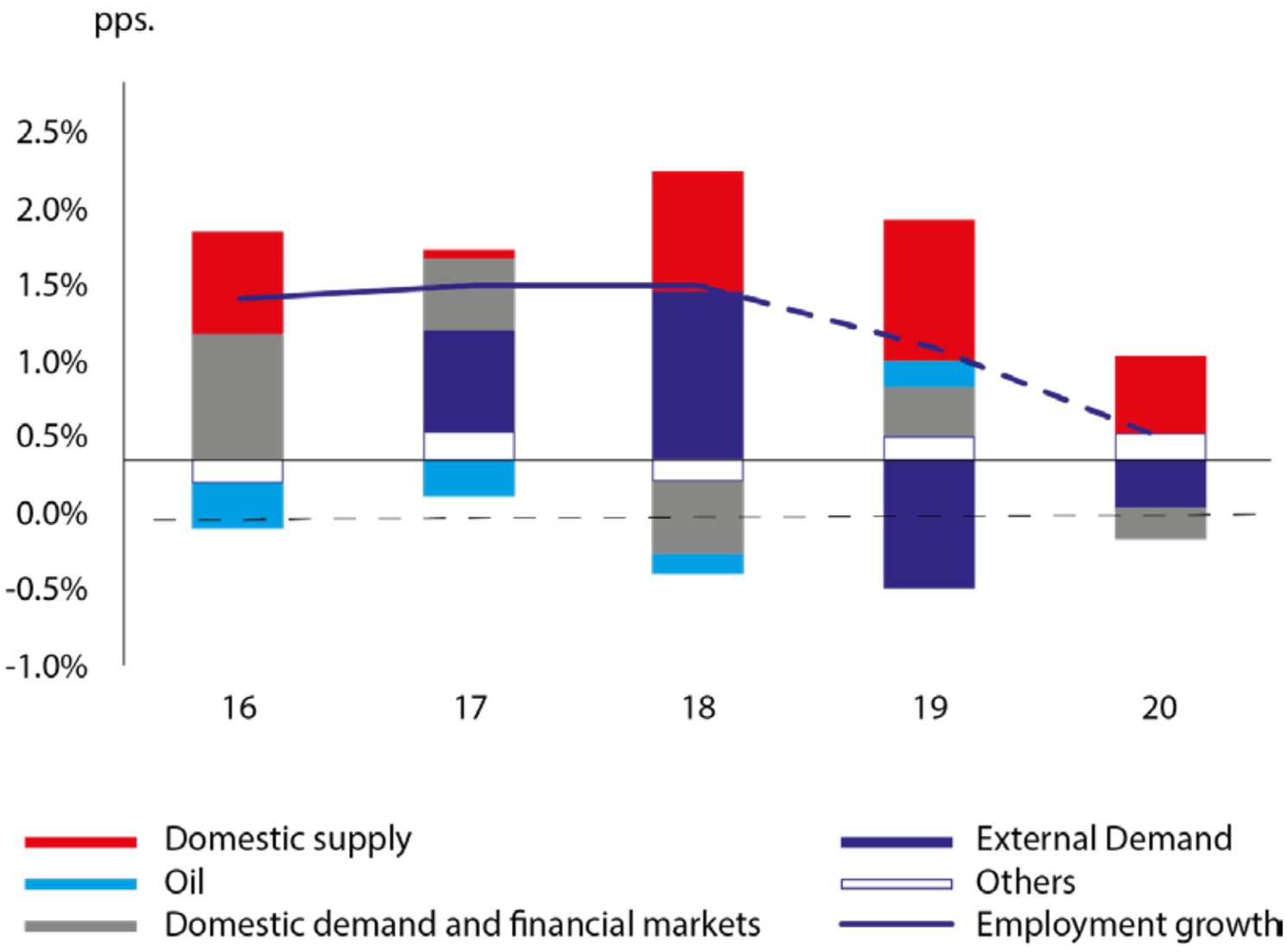
Overall, over the next two years, employment growth is expected to continue but at a moderate pace, reflecting the lagged effect of the GDP slowdown. The relationship between economic activity and the labour market thus remains consistent with traditional views such as Okun's law (Ball *et al*. 2017).

If anything, the expansion so far has been rather job-rich (Botelho and Dias da Silva 2019). As a corollary, productivity growth has declined, in part due to shifts in the sectoral composition of the economy towards services. This suggests that the rate of GDP growth at which employment growth drops to zero may now be lower than in the past.

Finally, some labour hoarding in countries and sectors where labour markets had recently turned particularly tight is expected to limit headcount reductions as long as employers perceive the current economic weakness as temporary.

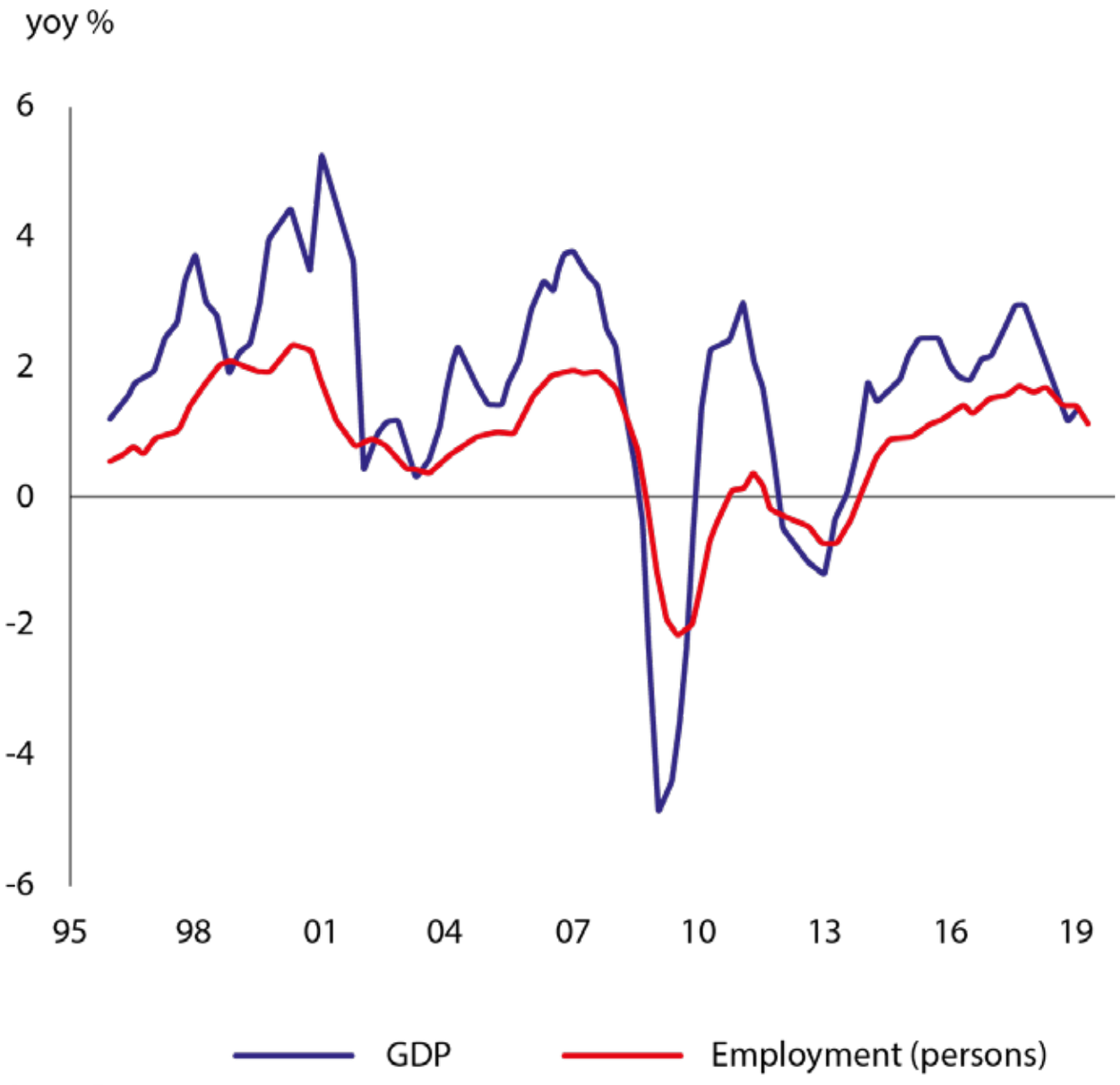
Reflecting the lagged impact of labour-market tightening, wage growth has picked up in 2017 and 2018. Aggregate data suggest that firms have absorbed higher wage costs in their profit margins rather than passing them on in higher selling prices to consumers, and core inflation has hardly reacted to higher wage growth (Figure 7).

Figure 5. Contributors to employment growth in the euro area (expressed as deviations from long-term trends)



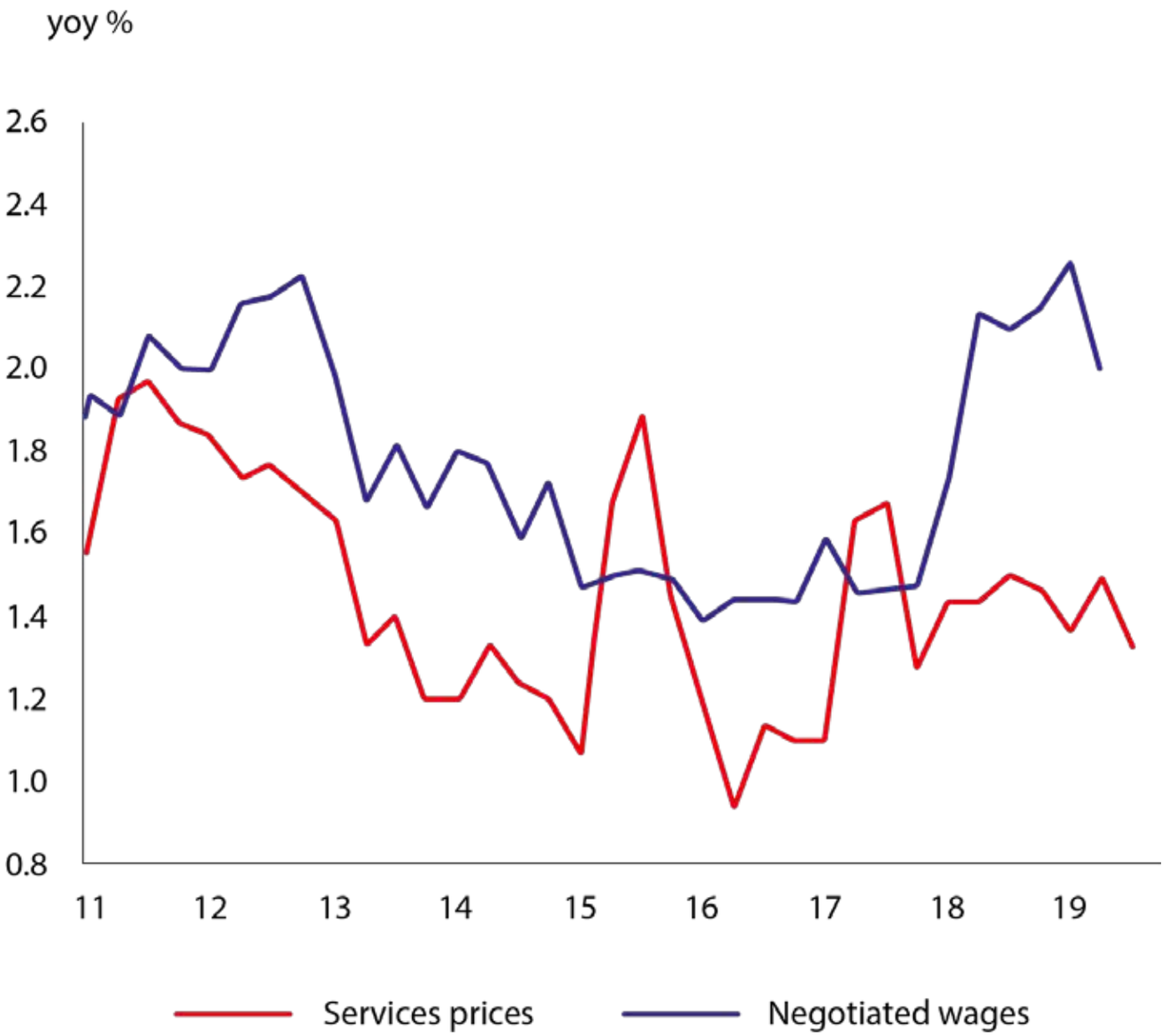
Source: DG ECFIN
Note: The bars represent deviations from the long-term trend rate of employment growth (0.3%). A bar above (below) the horizontal axis represents a positive (negative) contribution.

Figure 6. Employment and GDP growth



Source: Eurostat

Figure 7. Wage growth and services inflation, euro area



Source: Eurostat, ECB

The positive momentum in wages may last for some time, to the extent that wages have been agreed for several years, or that labour shortages persist in some sectors (eg. construction). Data for 2019 suggest, however, that wage growth may not further increase. This contributes to the expectation of only modest inflation increases as projected in the forecast.

The combination of persistent shocks and long-standing structural issues could prolong the weakness into the medium term

In the absence of further negative shocks, the negative cyclical and structural factors discussed above are unlikely to be strong enough to draw the European economy into a recession.

However, slowing productivity growth was already evident before the Great Recession, and Europe is now entering a phase where demographic ageing is felt more strongly. The combination of recent shocks with these underlying impediments to trend growth might well lead to an equilibrium with more or less stagnating aggregate economic output and very low inflation in the medium term.

Persistently low growth and inflation amid very low interest rates have implications for potential output and equilibrium real interest rates (natural rate). In the euro area, the equilibrium interest rate may have declined (Jordà and Taylor 2019; see also Holston *et al*. 2017). Both a lower natural rate and low inflation expectations decrease the policy interest rate that is needed for effective monetary policy and imply that central banks find themselves more often at an effective lower bound of policy interest rates.

Discussions about a related risk of secular stagnation (Rachel and Summers 2019) are not new. Recently, new momentum has been added to the discussion by the very low or negative long-term bond yields on most euro area

sovereign bonds, which have been interpreted as an indication of reduced growth and inflation expectations and a prolonged period of very accommodative monetary policy (eg. Darvas 2019).

However, other analyses have seen the subdued pace of growth since the Great Recession largely as a legacy of the crisis, and empirical analysis has not been able to provide strong evidence in favour of the secular stagnation hypothesis (eg. Roeger 2014).

In conclusion, some of the recent shocks – such as the impact of trade policy uncertainty on global value chains or structural shifts in demand for cars – are unlikely to be reversed soon. They might interact with longer-standing weaknesses of trend growth and dampen medium-term growth to an extent where they trap the European economy in an equilibrium of very low growth and inflation.

Economic policies need to become more effective and better coordinated

The prospect of a prolonged phase of subdued GDP growth and muted inflation has prompted the ECB to implement additional easing measures in September, calling at the same time for fiscal and structural policies to be stepped up (European Commission 2019) in order to reach an overall more supportive policy mix.

The weak near-term outlook and the substantial downside risks call for the deployment of stabilising macroeconomic policies, while the risk of a prolonged period of low growth in the medium term calls for addressing the causes of low productivity growth. At the same time, policymakers must not be distracted from the challenge of steering the transition to a socially and environmentally sustainable economy.

A more supportive fiscal stance for the euro area as a whole is justified in the current situation by the sharp slowdown of manufacturing and the drop of GDP growth below trend. More importantly, the risks surrounding

this outlook are large and negative, including a further escalation of trade and geopolitical tensions, and a more substantial spillover of the manufacturing slump to the rest of the economy.

Therefore, the risk associated with deploying fiscal support unnecessarily now appears smaller than the risk associated with inaction (Boone and Buti 2019). In the absence of a euro area budget for stabilisation, fiscal stabilisation requires a more coordinated response.

For the member states with fiscal space, using it actively and pre-emptively would allow not only a fiscal stimulus to be provided, but also the public capital stock to be refreshed and modernised, thereby boosting potential growth. Member states with high public debt should enact prudent policies that put their debt credibly on a sustainable downward path. But they should also prioritise investment and improve the quality of taxation and expenditure.

Intertemporal coherence is also important. A targeted package of fiscal and structural policies must at the same time contribute to the transition to an environmentally and socially sustainable and productive economy. Physical investment undertaken today must contribute to the ecological transition.

The buildings, transport and energy infrastructure built today, for example, will still be in use in 2050 – a date by which the European economy should be fully de-carbonised.

Likewise, today's policy decisions concerning education, digitalisation and research will shape the fairness, technological edge and growth potential of the economy over the coming decades. The economic setback makes it no easier to deliver such a package. But at the same time, very low or negative financing costs provide an opportunity to bring forward projects with a high social, environmental and economic return. This window of opportunity should be used now. ■

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Limits of the ‘Brussels effect’

The EU model of financial market regulation is increasingly copied by third countries. Alexander Lehmann considers bank regulation in the European Union neighbourhood

The EU model of financial market regulation is increasingly copied by third countries. In this context, the EU's efforts to promote its model beyond its borders should take into account the underdevelopment of financial markets in many partner countries, and the often insufficient capacity of regulators and supervisors.

The EU's policy in its neighbourhood in eastern Europe has for some time been to encourage countries to bring their regulatory standards into line with those of the single market, in exchange for increased access to EU markets.

In financial services, this policy is motivated by the need to prevent financial instability being imported from third countries into the single market. For this reason, advanced countries can seek formal recognition that their regimes are 'equivalent' to the EU's.

But in emerging markets and developing countries, wholesale adoption of EU legislation runs up against the weaknesses of local supervisors, and might also result in the introduction of legislation that is irrelevant in underdeveloped financial markets.

The trade agreements that the EU concluded with Georgia, Moldova and Ukraine in 2014 are examples of this EU approach. The three agreements envisage regulation in the partner countries converging with that of the EU and set schedules for this to happen.

Included in the schedules are the core elements of prudential rules for banks and all EU legislation on the payments system and capital markets in effect at the time the trade deals with concluded, with new EU legislation incorporated on a rolling basis. In the agreement with Ukraine, there is clear language tying access to the EU market to Ukraine's adoption of legislation that is sufficiently close to the EU's.

The countries of the western Balkans, meanwhile, are interested in regulatory convergence with the EU given the deep engagement of euro area banking groups in local banking markets. For these countries, foreign-owned subsidiaries command a significant share of local banking assets, though these subsidiaries are typically small within the overall assets of the parent groups. The concerns of the host country supervisor may not figure prominently within a college of supervisors assessing the soundness of the entire group.

Exporting EU regulation to third countries irrespective of the broader development of institutions and laws will not automatically yield equivalent benefits in terms of financial stability as in the EU itself

In 2015, six western Balkan countries signed a memorandum of understanding with the European Banking Authority (EBA). This settled the thorny issue of confidentiality in information exchange and has already facilitated cooperation in supervisory and resolution colleges. There are broad requirements for these countries to bring their regulatory and supervisory standards in line with the EU's, but specifics and timeframe depend on host-country market development.

In a sign of this close integration Serbia and Albania signed cooperation agreements with the Single Resolution Board, the only countries to do so apart from five major G20 economies.

In the four EU accession candidates (Serbia, Albania, Montenegro and North Macedonia) the European Commission has assessed the local financial sectors as 'moderately prepared' to take on the obligations of EU membership. In Serbia and Montenegro, accession talks have started on the relevant chapters.

Serbia and Albania adopted laws on bank recovery and resolution in 2015 and 2017 respectively. Both laws closely follow the model defined by the EU bank recovery and resolution directive (BRRD, 2014/59/EU), though requirements for the bail-in of bank creditors are very different, and the rules of implementation of course diverge from the EU's.

Constraints in local markets and institutions

Exporting EU regulation to third countries irrespective of the broader development of institutions and laws will not automatically yield equivalent benefits in terms of financial stability as in the EU itself. Inadequate accounting standards and creditor rights might undermine this. In capital markets regulation a high standard law may, in fact, be counterproductive without good enforcement.

Some instruments that are central to recent EU legislation might be missing entirely in local markets, such as the requirements for subordinated bank debt that could be subject to a bail-in based on well-defined creditor hierarchies, if a bank has to be resolved.

Other EU targets may be out of line with local market development (such as the level of deposit insurance coverage). Capital markets in EU neighbourhood countries are even less developed than banking sectors, and adopting some recent EU legislation (such as the Directive 2014/65/EU on markets in financial instruments, MiFID II) would be well out of proportion.

More practically, local supervisors might lack the resources to enforce complex regulation. Some evidence of this emerged in the November 2019 update of the World Bank database on practices in bank regulation and supervision.

Across the 160 countries surveyed, there have been significant increases in the number and complexity of regulations since the global financial crisis. This has not been matched by an increase in supervisory powers and capacity. Rules on disclosures and stress testing of bank assets place particularly severe strains on supervisors.

Brussels might, therefore, be risking the unilateral imposition of EU rules on third countries and thereby discriminating against market participants originating in jurisdictions with incompatible standards.

However, this seems less of a concern in banking regulation than in product standards. EU banking regulation, on the whole, reflects international standards, most importantly the Basel III framework and the resolution regime promoted by the Financial Stability Board. These are in essence sensible targets, though the timeframe for adoption should be proportionate to the development of markets and institutions.

	4 candidates				3DCFTA			Average of 6 euro area NCAs
	Albania	Macedonia	Montenegro	Serbia	Georgia	Moldova	Ukraine	
Number of supervisor's financial system responsibilities other than banks	5	3	6	6	7	4	4	5
Number of professional supervisors	30	31	45	58	56	64	301	593
o/w% with more than 10 years' experience	53	52	20	44		20	46	43

Source: Bank Regulation and Supervision Survey, World Bank, Nov. 2019.

But the effort to promote in emerging markets financial regulation that resembles that adopted in the EU since the financial crisis should be focused on those countries where euro area banks already have extensive stakes, primarily emerging Europe and Latin America.

There is also a justified interest in aligning supervisory practices, which will facilitate the coordination of cross-border supervision and crisis management.

In the four western Balkan candidates for EU membership, cooperation and information exchange in the cross-border colleges could be further strengthened. Local supervisors could be strengthened through targeted technical assistance. Given the extensive stakes of euro area banks, the interests of home and host-country authorities are likely aligned. A strong local framework will also define standards for new investors – such as those from Russia and China – in the local banking markets.

It is not clear that convergence with technically complex EU financial regulation should be a condition for preferential market access under trade agreements. Local market development should be taken into account.

For Georgia, Moldova and Ukraine, the obligation to 'approximate' their laws to the EU standard should be interpreted flexibly, focusing on principles rather than transposition. Deadlines for the adoption of EU legislation should be scheduled in line with countries' own regulatory strategies, and new EU law should be adopted only when relevant and sensible for local market development and financial stability. ■

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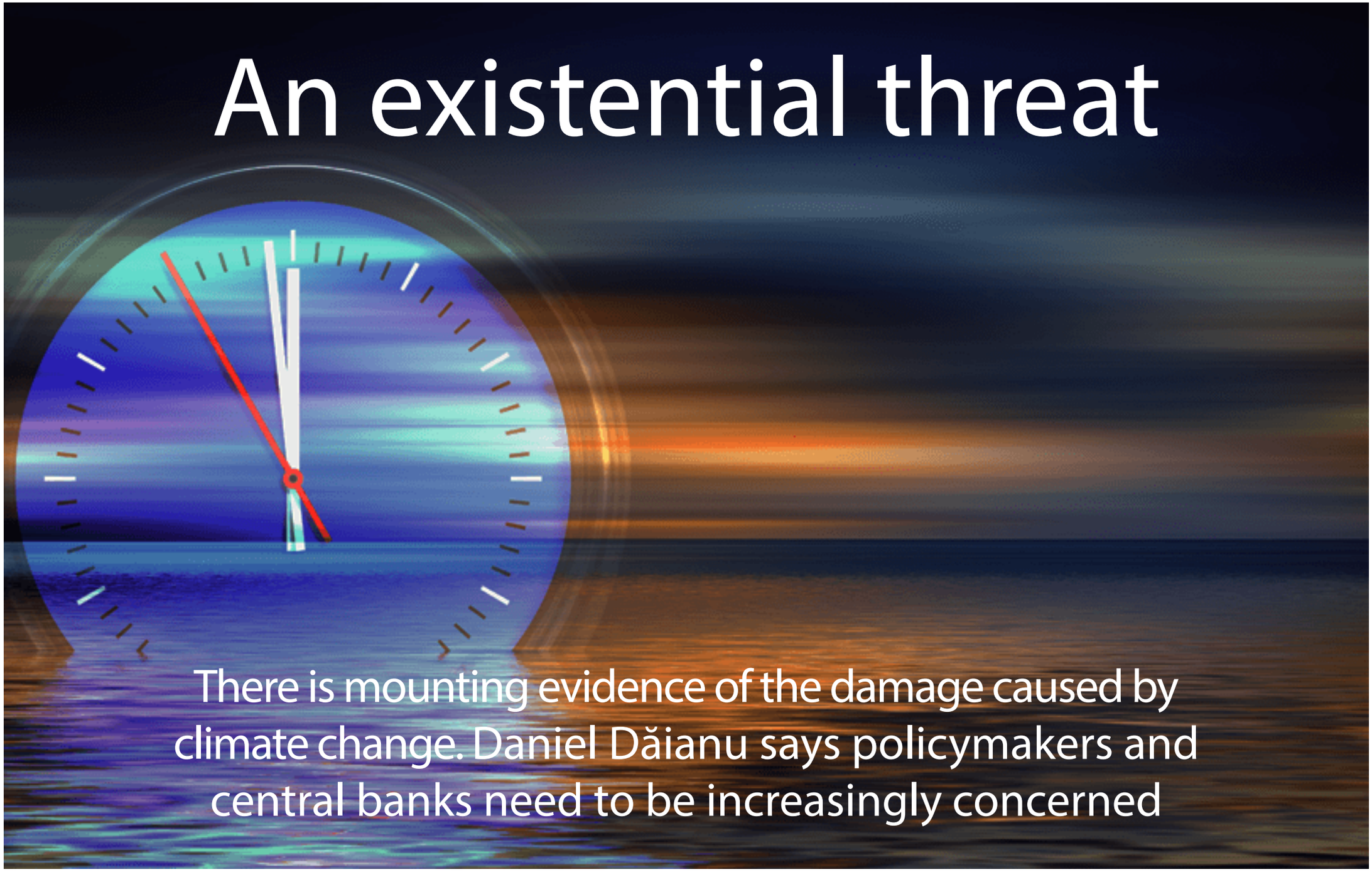

Financial markets are inherently myopic and misconduct is not rare. This means that proper regulations have to operate to rein in finance. Moreover, the Great Recession was enhanced by monumental failures of policymaking and a misleading paradigm, as Alan Greenspan ruefully remarked during Congress hearings in August 2008.

Let us recall the Big Bang of 1986 in the City of London, the rescinding of Glass Steagall in the US in 1998 and what followed via other waves of deregulation – with the emphasis put on 'self-regulation' (light touch regulation) according to the logic that markets know best, that they can regulate themselves!

But finance is not the most blatant case of neglect, or inadequate philosophy in policymaking. In 2006, in a famous report, Nicholas Stern, permanent secretary at the UK Treasury at the time, stressed that climate change poses the biggest challenge to economics, that markets can hardly account for climate change and their effects; that public policies need to address this reality sooner than later[1].

Nicholas Stern's views and those of scientists that think analogously (The Club of Rome, as a gathering of kindred spirits, being a most prominent one, the UN Intergovernmental Panel on Climate Change and various other groups of experts have also to be mentioned) have, arguably, been vindicated and there is a wide-spread wakeup call in this respect.

There is mounting evidence that points at an existential threat due to effects of global warming and overall climate change, to environmental degradation.

A recent article published by *Nature*, the distinguished scientific weekly, talks about a tipping point mankind may have already crossed and the existential menace unless resolute measures are adopted[2].

Climate change will, inter alia, foster more migration, massive shifts of population from inhospitable areas. And one can already see how disruptive such migration can be socially, economically, and politically.

A personal recollection deserves to be made by the author of this text (nota bene: who was an MEP). In 2008 and 2009, climate change was heatedly debated in the European Parliament, and action was asked for by many MEPs. Unfortunately, action was stalled, or derailed in advancing legislation and prodding other EU institutions to move forward resolutely.

Policymakers, in general, have to be much more attentive to sustainable growth challenges in their decision making

This occurred owing to the power of vested interests, of car manufacturers especially, and it should also be said, owing to various EU member states which flexed their bargaining clout. Ironically, some of those car manufacturers have been involved in big scandals for obnoxious practices in recent years; they cheated on as emissions they produce. One has to add here disasters caused by the negligence of major oil and gas companies.

It makes sense to say a few words on central banks and their rising concern about climate change. For to see major central banks paying attention to climate change may surprise a few. As a matter of fact, they have started to consider income distribution, new technologies (AI, digitalization, fintech/blockchain), cyber-warfare increasingly in recent years. Central bankers seem no longer to be like high priests.

Central banks realize that their conventional and non-conventional operations do have distributional effects, that income distribution does matter for a fair society, for the stability of democracy. And that, apart from the unknowns that they confront when overhauling their cognitive and operational frameworks, including how to integrate financial markets in their inflation targeting models (which used to assume that price stability implies, ipso facto, financial stability), there is a huge challenge posed by climate change. This is because climate change entails a different existential territory in view of the threats is poses.

A framework for understanding the concerns of central banks when it comes to climate change must consider, among other things:

- a dramatically changed environment (*"Low rates for longer with rising vulnerabilities…"* as the latest *Global Financial Stability* report of the IMF remarks), demographics, economic stagnation (or secular stagnation, as Larry Summers suggested by resuscitating an expression used by Alvin Hansen in 1937), and a *"regime change"* for monetary policy, as Olivier Blanchard put it[3];

- the exposure banks and other financial institutions have to sectors that are and will be severely impacted by climate change;

- de-carbonization of the economy , which is a must if mankind wishes to survive. Green finance is a catchword in this regard and central banks can and are supposed to do a lot in this respect by, among other things, accepting green bonds as collateral, or purchasing them outrightly.

By the way, there is a network of central banks that examine climate change seriously and aim at adapting their policies in this regard. This network was initiated by the Bank of England and includes the Fed, the Bank of Canada, Banque de France, the Bundesbank. The ECB has joined this demarche and other central banks are likely to follow.

Reexamining monetary policy neutrality

But what about market neutrality? Should it be maintained as a central tenet of central banks' conduct when it comes to climate change?[4] This is a most critical issue to address. Central banks' stance may seem appropriate in view of their traditional philosophy not to interfere in markets' resource allocation function.

But, as it is alluded above, one has reasons to debate this stance in view of financial markets' inherent myopia and, when it comes to climate change, of massive inter-generational involved distribution effects, as well as negative externalities that are not factored in by markets.

As central banks have resorted to unconventional measures (QEs in particular), and in doing it, have considered, for instance, how to support SMEs, why not favour sectors that are lesser polluters and green industries? This is the spirit of green finance.

It may be that central banks have to broaden their mandate; as they pay attention to distributional effects of their operations, they have to consider climate change and whether they can do something about it as well. Not necessarily alone, certainly, but together with other public policymakers.

But, arguably, they may have to go beyond considering various risks and banks' exposure to sectors which are heavily impacted by climate change; they would need to think in terms of enhancing a sustainable habitat for people. This may imply a change of philosophy and conduct, of their 'institutional heart and soul'.

To sum up, three perspectives one can imagine on monetary policy neutrality: one that keeps things unchanged; one that keeps a neutral policy rate, but redefines neutrality; and one that discards neutrality. Let us focus on the latter two.

Redefining neutrality

A neutral policy rate (NPR) implies non-interference with market resource allocation. But NPR relies on potential output growth and takes the inflation target as the key parameter; some central banks consider also unemployment as a policy parameter (keep in mind the Unemployment Act of 1946 in the US). And potential output can be redefined in terms of 'welfare' (the ongoing debate on redefining GDP, shifting to Gross Welfare Product).

One can add another dimension to potential output/growth, namely 'sustainability', the extent to which economic activity harms the environment. Therefore, in a certain context, slower economic growth may be better than higher growth, a sort of steady state economics – as the leading ecologist Hermann Daly propounded decades ago. This happens when growth produces significant negative externalities.

The bottom line: the policy rate would consider a level of economic activity that takes into account social and ecological concerns. But who would define that level of economic activity?

This a fundamental question, for it may cripple central banks' independence to the extent 'non-harming environment potential growth' would be set by someone else.

Or central banks would not consider environmental concerns in their decision algorithms and governments, instead, would favor less carbon-intensive sectors as part of an overall industrial/environmental policy. In this case, central banks would maintain a monetary policy neutrality stance that would be quite similar to option one.

Discarding neutrality

Discarding market neutrality relies on a fundamental assumption: that markets are too myopic to consider ecological concerns. In this respect, one would make a distinction between accepting 'green bonds' as collateral and redefining the policy rate as a 'green policy rate'.

Discarding market neutrality introduces a clear bias in formulating the policy rate. As Mark Carney said: there could be an environmental Minskyan type moment.

Among aspects to consider are in this context are:

- heavy exposure of banks, of finance in general, to high carbon emitting (carbon intensive) sectors; the aim is to reduce this exposure, via regulation and preference for green bonds

- central banks need to work together with governments

- transition costs to a new, 'sustainable equilibrium' may be high, but unavoidable

- there is a coordination problem involved.

A key problem persists: who would set the policy rate? Another cognitive and operational issue: can we have models that, as finance is being taken into account in revised new Keynesian frameworks, consider environmental concerns too? Quite likely, this is possible.

There are influential voices (central bank governors included) who say that monetary policy is already overburdened, that ecological concerns should not constrain monetary policy further – Jens Weidmann, the governor of Bundesbank, is one of them. This view clashes with other central bankers' view, who are keen on having central banks involved in combating climate change (Mark Carney, Villeroy de Galhau for instance).

The European Commission has named climate change one of its leading priorities, as a matter of fact its top priority. And it has asked the European Investment Bank (EIB) to be a *"financial engine of the low-carbon transition"* – while the president of the EIB, Werner Hoyer, talks about the power of green public finance[5].

Another policy issue is whether one can devise macro-prudential policies measures that consider environmental concerns by reducing overexposure to high-carbon sectors. This should not be a problem.

Can a carbon tax deal with negative externalities (as a group of eminent economists, including Nobel Prize laureates argued in a Wall Street message of 17 Jan 2018)? Taxes clearly can help since they influence incentives. But, as is the case with a Tobin tax, taxes may not be sufficient to change business conduct dramatically.

The corporate world, major companies in particular, have to turn into stakeholders, alter their short-termism in pursuing their profit objective. Ethical considerations have to get into the picture as well. Maximizing profits has to be constrained by other goals, by the need to make our life sustainable, by an injection of ethical values in decision-making processes.

Business models have to change, as would individual and collective habits have to. But can we change our economic and social models, 'reinvent capitalism'? There is an ongoing debate on this topic, that was triggered by the financial crisis and the waking up to the reality of proliferating 'winners take all' games, the erosion of the middle class[6].

Economics, applied economics in particular, need to overhaul themselves too. A few tracks of action are to be highlighted here:

- changing GDP to other welfare measure; the report produced by a group of economists led by Joseph Stiglitz and Jean Paul Fitoussi[7] comes to mind, and more recent work by Diana Coyle and Mariana Mazzucato as well;

- focusing on citizens' life conditions; some suggest that the median-income per capita should be a key measure for policymakers; that would hook up well with the notion of inclusion[8];

- how to make stakeholders' concept embedded into firms' natural temptation to pursue higher profits and be responsive to share-holders' interests remains a big challenge.

A recent open statement of the Business Roundtable in the US, that groups 180 CEOs of the most powerful American companies,' suggests that something may have happened in their collective mindset in view of the

natural calamities of recent years. These calamities can no longer be seen as isolated events, as tail events; they have become rather common occurrences and this cannot be looked upon nonchalantly.

Things have become very worrisome and we need to provide answers to key questions:

- can we summon the political will to do something significant about it?
- do we have the knowledge and the resources to change business models and society's interaction patterns in order to make transition to a sustainable life?
- can we do it at a time of a new 'cold war' between the US and an economically and technologically growing China? When Realpolitik and Geopolitics, Geo-economics are back in action so prominently?
- can the EU play a global coordinating role in this respect in view of Europeans' attachment to 'green values'?

Can powerful vested interests be overcome? Can all this be achieved within the time span that it appears we have at our disposal in order to obtain our habitat livable? How can we cope with so many disruptions and ruptures simultaneously?

Central banks have a major role to play not only since they have been regarded, justifiably or not, as *"the only game in town"* (Mohamed El Erian). Christine Lagarde's words in the European Parliament, where she indicated empathy with the idea that 'market neutrality' needs to be reexamined in the conduct of central banks, of the ECB, were quite refreshing.

Policymakers, in general, have to be much more attentive to sustainable growth challenges in their decision making. ■

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Endnotes

1. Nicholas Stern, "The Stern Review: The Economics of Climate Change", London, LSE, 2006
2. "Climate tipping points: too risky to bet against", Nature, 27 November 2019
3. Olivier Blanchard, in his presidential speech at the annual AEA meetings of Jan 2019: ("Public debt and low interest rates")
4. See also Benoit Coere, "Monetary policy and climate change", ECB, 8 November 2018
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6. Among thoughtful works are Paul Collier's "The Future of Capitalism. Facing the New Anxieties", Allan Lane, 2018; Raghuram Rajan, "The Third Pillar: How markets and the State leave Community behind" Penguin, 2019"; Paul Mason: "Post-capitalism: A Guide to Our Future", London, Penguin Books, 2015.
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This article is based on the presentation made at an ISEE (Institute for the Study of Extreme Events) seminar on climate change, Bucharest, Academy of Economic Studies, 23 October 2019.

TCFD: strengthening the foundations of sustainable finance

Mark Carney says the financial sector must help the transition to ‘net zero’ (a neutral carbon footprint). Businesses need to keep improving their disclosure of climate risks

Introduction

Prime Minister Abe made climate change an important theme of the Japanese G20 presidency, calling on nations to put *"promises into practice."* And Environment Minister Koizumi recently said Japan is *"committed to realising a decarbonised society."* Japanese companies are heeding these calls. In the past year, almost 200 Japanese firms have joined the TCFD, bringing Japan to the top of the TCFD league table[1].

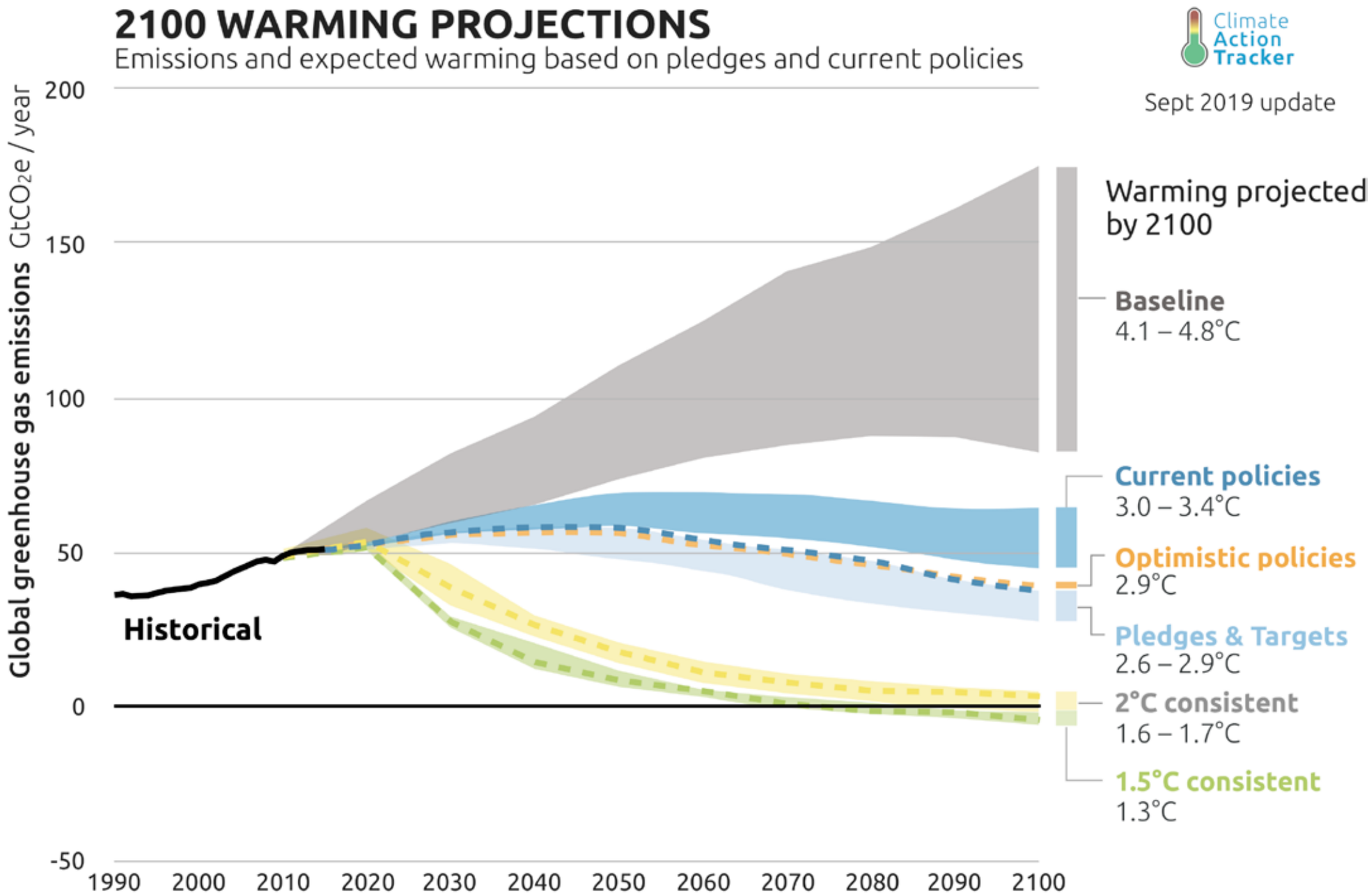
This welcome progress, and that of the TCFD more generally, must be set against growing challenges. Over the past five years, global carbon emissions have risen by 20% and sea levels by over 3.3mm per year[2]. Global temperatures are on course to increase by 3.4°C by 2100[3].

The physical impact of these changes will not be evenly distributed. With ferocious typhoons, record-breaking heatwaves and major landslides, Japan is already at the sharp end of a new pattern of devastating extreme weather events.

The transition to a low carbon economy will also bring its own risks and opportunities. Changes in climate policies, new technologies and growing physical risks will prompt reassessments of the values of virtually every financial asset. Firms that align their business models to the transition to a net zero world will be rewarded handsomely. Those that fail to adapt will cease to exist. The longer that meaningful adjustment is delayed, the greater the disruption will be.

Like virtually everything else in the response to climate change, the development of a more sustainable financial system is not moving fast enough for the world to reach net zero.

Chart 1. Global warming projections to 2100 under different policy pathways



To bring climate risks and resilience into the heart of financial decision-making, climate disclosure must become comprehensive, climate risk management must be transformed, and investing for a two-degree world must go mainstream. I want to focus on how the TCFD can help achieve these goals.

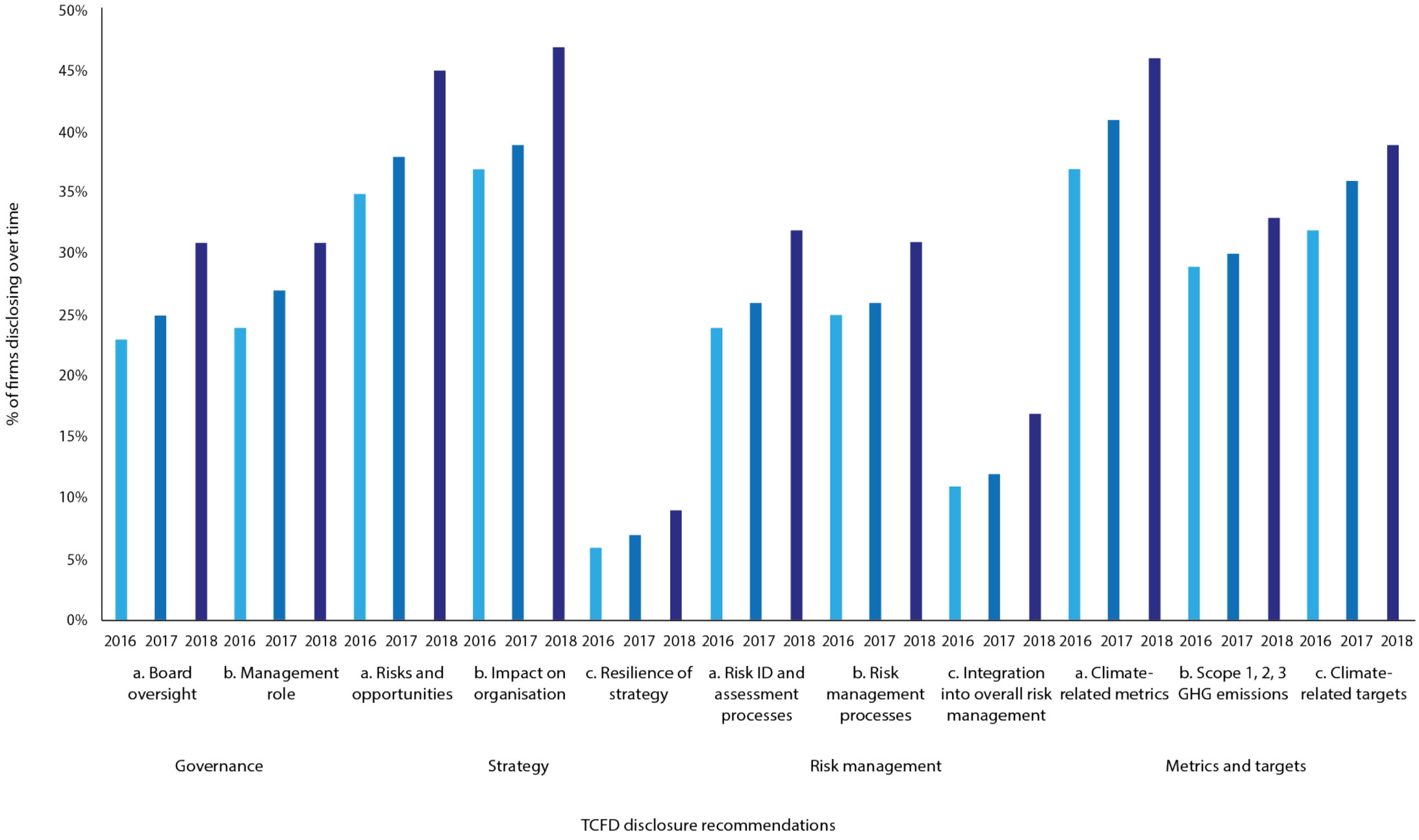
TCFD: progress to date

Only two years after the final TCFD recommendations were published, support has skyrocketed and conversations about climate-related financial risks have moved from the fringes to the forefront.

The demand for TCFD disclosure is now enormous. Current supporters control balance sheets totaling $120 trillion and include the world's top banks, asset managers, pension funds, insurers, credit rating agencies, accounting firms and shareholder advisory services[4].

The TCFD provides the necessary foundation for the financial sector's role in the transition to net zero that our planet needs and our citizens demand

Chart 2. Changes in TCFD disclosures by recommendation 2016–2018



The supply of disclosure is responding, with four fifths of the top 1100 G20 companies now disclosing climate-related financial risks in line with some of the TCFD recommendations[5]. On every recommended metric in TCFD, disclosures have been steadily increasing, rising from an average of 2.8 to 3.6 over the past three years. Three quarters of investors are now using TCFD disclosures when investing and the same percentage report a marked improvement in the quality of climate disclosures[6].

Japanese TCFD supporters increased from 9 to 199 in just over a year and now have a market cap of almost $2 trillion. Japanese government support through the Implementation Study Group and the TCFD Consortium has catalysed action and created a blueprint for other countries in 'how-to-TCFD'.

As the volume of disclosures has increased, so has their sophistication. Companies, financial firms and policymakers increasingly recognise that disclosures must go beyond the static to the strategic. Climate risks have a number of distinctive elements, which, in combination, require a strategic approach. These include their:

- Breadth, as climate risks affect multiple lines of business, sectors and geographies;
- Magnitude, as the full impacts of climate risks are large, potentially non-linear and irreversible;
- Foreseeable nature;
- Dependency on short-term actions given that the size of future impacts will, at least in part, be determined by the actions taken today; and
- Uncertain time horizon, which may stretch beyond traditional business planning cycles.

The nature of these risks means that the biggest challenge in climate risk management is in assessing the resilience of firms' strategies to transition risks.

Markets need information to assess which companies can seize the opportunities in a low carbon economy and which are strategically resilient to the physical and transition risks associated with climate change.

The good news is that half the companies surveyed by the TCFD are using scenario analysis to assess the resilience of their strategies. Financial firms are at the forefront of these assessments.

The Bank's supervisory body - the Prudential Regulation Authority (PRA) – surveyed banks in the UK last year and found that almost three quarters are starting to treat the risks from climate change like other financial risks – rather than viewing them simply as a corporate social responsibility issue[7].

Banks have begun considering the most immediate physical risks to their business models – from the exposure of mortgage books to flood risk and the impact of extreme weather events on sovereign risk. And banks have started to assess exposures to transition risks in anticipation of climate action. This includes exposures to carbon-intensive sectors, consumer loans secured on diesel vehicles, and buy-to-let lending given new energy efficiency requirements.

To embed essential climate risk management skills recommended by the TCFD in financial decision-making, the Bank of England has set out its supervisory expectations for institutions in the world's leading international financial centre with respect to:[8]

- Governance, where firms will be expected to embed fully the consideration of climate risks into governance frameworks, including at board level, and assign responsibility for oversight of these risks to specific senior role holders;

- Risk management, where firms will need to consider climate change in line with their board- approved risk appetite;

- The regular use of scenario analysis to test strategic resilience; and

- Developing and maintaining an appropriate disclosure of climate risks.

Recognising the need for industry to build capacity and develop best practices, the PRA has also established a Climate Financial Risk Forum, jointly with the FCA, to work with firms from across the financial system.

TCFD: the path ahead

Although the private sector has made rapid progress on reporting and risk management, more is required. Over the next few years, companies, their banks, insurers and investors must:

1. Increase the quantity and quality of disclosures;

2. Refine disclosure metrics to determine which ones are most decision-useful;

3. Spread knowledge on how to assess strategic resilience; and

Chart 3. Rates of disclosure against each of the TCFD recommendations by industry

Recommendation	Recommended disclosure	Banking	Insurance	Energy	Materials & Buildings	Transport	Agri, Food & Forest	Tech & Media	Consumer Goods
Governance	a. Board Oversight	48%	29%	38%	37%	25%	22%	19%	29%
	b. Management's Role	54%	35%	32%	35%	18%	26%	17%	40%
Strategy	a. Risks and Opportunities	51%	39%	57%	50%	39%	40%	38%	50%
	b. Impact on Organisation	55%	26%	64%	65%	34%	45%	25%	52%
	c. Resilience of Strategy	20%	12%	13%	12%	5%	4%	2%	6%
Risk Management	a. Risk ID and Assessment Processes	52%	30%	38%	41%	23%	24%	24%	22%
	b. Risk Management Processes	46%	33%	42%	39%	17%	26%	19%	23%
	c. Integration into overall Risk Management	32%	16%	21%	18%	11%	9%	17%	21%
Metrics and Targets	a. Climate-Related Metrics	51%	27%	49%	63%	36%	45%	37%	55%
	b. Scope 1,2,3 GHG Emissions	42%	22%	39%	41%	28%	26%	29%	38%
	c. Climate-Related Targets	50%	24%	45%	53%	32%	30%	24%	51%

4. Consider how to disclose the extent to which portfolios are ready for the transition to net zero.

Let me explain briefly what this means for the TCFD.

First, we must work to increase the quantity and quality of disclosures by sharing best practice.

Despite the increasing number of TCFD supporters, only a quarter of the companies surveyed disclosed information aligned with a fuller set – that is six or more – of the TCFD's recommended disclosures[9].

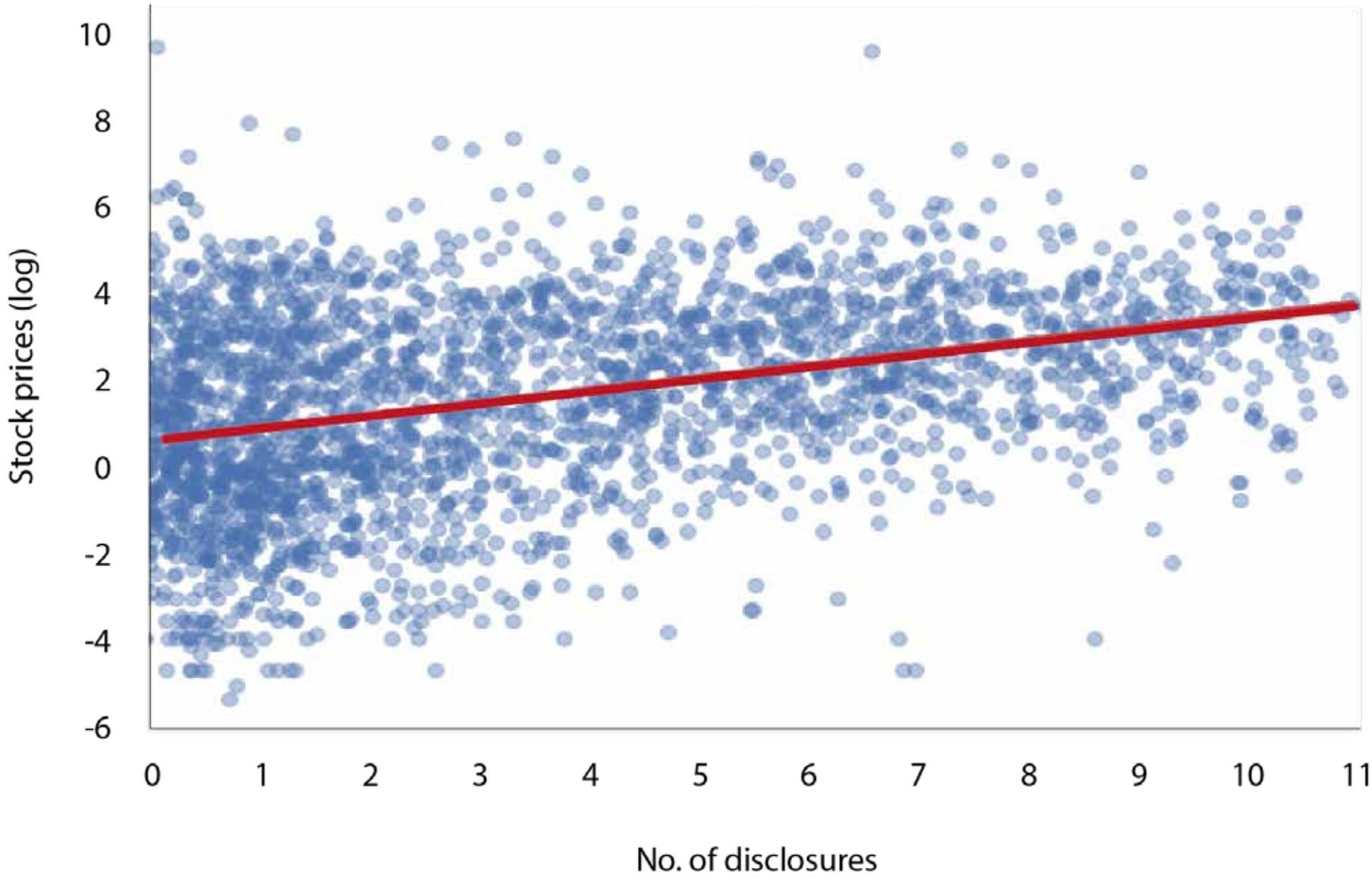
Three quarters of users of climate disclosures said that more information is needed on the financial impact of climate risks and the strategic resilience of firms.

Progress in both quantity and quality is uneven across sectors. While in 2017 the non-financial sectors (energy, transport, building and agriculture) led the way, banking is now the most advanced sector in disclosing information.

Through multi-sector TCFD summits and more focused TCFD industry preparer forums, companies should continue to share knowledge on how, what and where they disclose information to give the market the information it needs.

Better TCFD disclosure is an opportunity. Research by the Bank of England and PwC finds a positive correlation between companies' stock price and the number of TCFD disclosures that firms make[10]. This could be because investors reward companies that are leaders in managing climate-related risks or simply because TCFD adoption identifies companies that are more naturally disposed to longer-term strategic thinking and planning.

Chart 4. Relationship between stock price and number of TCFD disclosures made



And TCFD disclosure is increasingly a responsibility, as suggested by research from the Commonwealth Climate and Law Initiative that concludes that non-disclosure is a bigger liability risk than disclosure[11].

That is just one reason why jurisdictions like the UK and EU have signalled their intentions to make TCFD disclosure mandatory.

Second, the TCFD disclosure recommendations should be refined to those that investors consider most decision-useful.

The TCFD needs to reach a definitive view of what counts as a high quality disclosure before they become mandatory. In my view, the next two reporting periods should balance the urgency of the task and the imperative of getting it right.

This is best delivered by the current process of disclosure by the users of capital, reaction by the suppliers of capital, and adjustment of these standards to ensure that the TCFD metrics are as comparable, efficient and as decision-useful as possible.

Supervisors of financial sector firms will also need to consider which metrics are most useful for different levels of assessment:

- Microprudential, to assess how individual firms are managing climate-related risks – for example the impact of a physical or transition risk on a loan book.

- Macroprudential, to consider how and whether individual exposures could scale up to systemic risk.

- Macroeconomic, to help understand how the financial system and economy interact in different climate transition scenarios.

Quantitative assessments could help guide these judgements. Research by the Bank and PwC found that some TCFD disclosures were positively correlated with the stock price of firms that have disclosed to date, with the disclosures about a firm's targets, scope 1, 2 and 3 emissions, risk management, resilience and impacts exhibiting the strongest correlations. Note that given the potential selection bias of companies with climate strategies tend to be early adopters of the TCFD, these correlations were positive.

This still nascent field will be important to understanding the utility of different climate disclosures. To this end, the Bank will continue its research.

Third, we must spread knowledge on how to measure and use information on strategic resilience to manage risks and realise opportunities.

Consistent with the Paris Accord's objective to stabilise temperature increases to below two degrees, many governments are now committing to reaching net zero carbon by 2050.

Prime Minister Abe has rightly highlighted the enormous investments that will be necessary to deliver these objectives. With an estimated US $90 trillion of infrastructure spending expected between 2015 and 2030, the right decisions now can make sure those investments are both financially rewarding and environmentally sustainable.

There has been a recent surge of environmentally focused investment funds. In Japan alone, Environmental, Social and Governance (ESG) assets quadrupled from 2016 to 2018 to reach $2 trillion.

Table 1. Strength of correlation between individual TCFD recommendations and stock price

Recommendation	Recommended disclosure	Coefficient	P-value	Adjust r-squared
Governance	a. Board Oversight	0.36	0.00	0.40
	b. Management's Role	0.51	0.00	0.40
Strategy	a. Risks and Opportunities	0.62	0.00	0.41
	b. Impact on Organisation	0.79	0.00	0.42
	c. Resilience of Strategy	0.82	0.00	0.40
Risk Management	a. Risk ID and Assessment Processes	0.54	0.00	0.40
	b. Risk Management Processes	0.87	0.00	0.42
	c. Integration into overall Risk Management	0.66	0.00	0.40
Metrics and Targets	a. Climate-Related Metrics	0.70	0.00	0.41
	b. Scope 1,2,3 GHG Emissions	0.82	0.00	0.42
	c. Climate-Related Targets	0.99	0.00	0.43

As the transition gains traction, it is likely that both ESG and mainstream investors will increasingly focus on companies' strategic resilience to climate change[12].

95% of users found TCFD information on strategic resilience useful, but three quarters want more information on the financial impacts[13]. This year's report to the Osaka G20 Summit found that, while firms were starting to consider strategic resilience, only about 50% systematically conducted scenario analysis and of those that did, two fifths did not disclose the information[14].

Almost 80% considered the assessment of strategic resilience somewhat or very difficult, identifying a lack of relevant and granular data, the difficulty in determining scenarios to use, and the quantification of climate risks and opportunities as the biggest hurdles[15].

This is not surprising – scenario analysis is a new and complex practice. And most of the off-the-shelf climate scenarios (such as the IEA and IPCC publications) are intended for policy or research, not business analysis. Improvements will be best achieved with collective force.

For some companies, scenario analysis is already part of their business planning and risk management. The TCFD report provides case studies – from Rio Tinto to Unilever to Citi – and finds common characteristics of good scenario analysis:

- Using multiple climate-related scenarios to assess strategic resilience
- Describing assumptions and parameters specific to the company

- Identifying potential impacts of climate-related risks or opportunities
- Disclosing potential strategic resilience under different climate-related scenarios

To develop leading practices, the TCFD has created a Knowledge Hub that provides guidance, research, tools, standards, frameworks and webinars[16].

Looking ahead, the TCFD is currently considering how to:

- Provide additional guidance on how to conduct scenario analysis;
- Publish business-relevant scenario templates to lower implementation costs; improve understanding and improve comparability; and
- Start a work stream on how to roll out these approaches to portfolio measurement to more asset owners.

The Bank of England is doing its part by assessing the strategic resilience of the world's leading financial centre. The Bank will be the first regulator to stress test its financial system against different climate pathways, including the catastrophic business as usual scenario and the ideal – but still challenging – transition to net zero by 2050 consistent with the UK's legislated objective[17].

In response, banks will need to establish how their borrowers are managing current and future climate-related risks and opportunities. Those assessments will reveal:

- Which firms have strategies for the transition to a net zero economy;
- Which are gambling on new technologies or government inaction; and
- Which haven't yet thought through the risks and opportunities.

The test will help develop and mainstream cutting-edge risk management techniques, and it will make the heart of the global financial system more responsive to changes in the climate and to government climate policies.

As with climate disclosure, such strategic assessments will need to go global if the world is going to stabilise temperatures below two degrees. That is one reason why the Bank is developing its stress testing approach in consultation with industry, the Credit Rating Agencies and the Network for Greening the Financial System (NGFS) – a group of 42 central banks and supervisors (including the JFSA) that represent half of global emissions.

Fourth and finally, the TCFD should consider how asset owners could best disclose how well their portfolios are positioned for the transition to net zero.

For sustainable investment to go truly mainstream, it needs to do more than exclude incorrigibly brown industries and finance new, deep green technologies. Sustainable investing must catalyse and support all companies that are working to transition from brown to green.

Such 'tilt' investment strategies, which overweight high ESG stocks, and 'momentum' investment strategies, which focus on companies that have improved their ESG ratings, have outperformed global benchmarks for close to a decade.

More widespread adoption of such strategies is essential. At present, one of the biggest hurdles to doing so is the huge variation in the measurement of ESG[18].

Common taxonomies to identify environmental outperformance, such as the EU's Green Taxonomy and the Green Bond Standard can help but they tend to be binary (either dark green or all brown).

Mainstreaming sustainable investing will require a richer taxonomy – 50 shades of green.

One promising option highlighted by the UN's Climate Financial Leaders is the development of transition indices composed of corporations in high-carbon sectors that have adopted low carbon strategies.

Consideration should also be given to the new assessments by leading asset owners of how well their portfolios are positioned for a two degree target.

Once again, Japan is leading the way. GPIF, the world's largest pension fund, calculates that its portfolio is aligned to a 3.5 degree world. Allianz assesses that it is on 3.7 degree path and has committed to get to 1.5 degrees by 2050. AXA estimates that its assets are currently consistent with a 3.7 degree path, and it has developed an innovative climate Value-at-Risk model to measure the opportunities as well as risks from the climate-related exposures of its investments[19].

With our citizens – led by the young – demanding climate action, it is becoming essential for asset owners to disclose the extent to which their clients' money is being invested in line with their values.

Conclusion

The TCFD provides the necessary foundation for the financial sector's role in the transition to net zero that our planet needs and our citizens demand.

So whether the TCFD is used to manage the growing physical and transition risks from climate change or to finance the enormous opportunities to develop more resilient and sustainable economies, your work to develop the TCFD and spread its adoption is literally vital. ■

Mark Carney is Governor of the Bank of England

Endnotes

1. Full list of current TCFD supporters available at: https://www.fsb-tcfd.org/tcfd-supporters/

2. Climate.nasa.gov. Available at: https://climate.nasa.gov/vital-signs/sea-level/

3. Source: Climate Action Tracker. Data available at: https://climateactiontracker.org/global/temperatures/

4. Full list of current TCFD supporters is available at: https://www.fsb-tcfd.org/tcfd-supporters/

5. The TCFD's June 2019 Status Report assessed, using artificial intelligence, 1100 companies reports over three years from 2016 to 2018 inclusive. Full report available at: https://www.fsb-tcfd.org/wp-content/uploads/2019/06/2019-TCFD-Status-Report-FINAL-053119.pdf

6. TCFD Status Report (2019).

7. Prudential Regulation Authority report on the impact of climate change on the UK banking sector: https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/report/transition-in-thinking-the-impact-of-climate-change-on-the-uk-banking-sector.pdf

8. Available at: https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisorystatement/2019/ss319.pdf?la=en&hash=7BA9824BAC5FB313F42C00889D4E3A6104881C44

9. TCFD Status Report (2019).

10. On average, each additional TCFD disclosure correlates with a 0.18% increase in stock price. While a positive correlation between financial metric and TCFD disclosure does not indicate that TCFD disclosure caused an increase in stock price, it raises questions for further analysis about the effect of climate-related disclosures.

11. "Laggard companies that fail to disclose climate risk in line with the TCFD recommendations may be less attractive to investors and struggle to secure loans or insurance. [F]ailure to disclose may suggest that a company has not considered climate risk, or that it has something to hide in relation to its exposure – either way, silence can send a warning signal to the market. Conversely, companies that embrace climate risk reporting will appear ahead of the curve and be well positioned to take full advantage of the commercial opportunities presented by the transition to a low carbon economy." For full report, see: https://www.smithschool.ox.ac.uk/research/sustainable-finance/publications/CCLI-TCFD-Concerns-Misplaced-Report-Final-Briefing.pdf

12. The Task Force encourages companies to describe the characteristics of their strategies that allow them to adapt to climate-related changes materially affecting their business while maintaining operations and profitability and safeguarding people, assets, and overall reputation. The TCFD report identifies that investors are likely to need information on the range of scenarios considered by a company; implications of each scenario for the business; strategic options considered; and the reasoning around the strategy adopted. Another factor that may warrant disclosure is the company's ability – and flexibility – to adjust its strategy in response to emerging climate conditions, including alternative ways to use resources and the robustness and redundancy of business processes.

13. TCFD Status Report (2019) pg. 64.

14. TCFD Status Report (2019) pg. 63.

15. TCFD Status Report (2019) pg. 62.

16 This includes several industry associations and non-governmental organisations that have brought companies

together to work through sector-specific approaches to climate change issues. For example, the World Business Council for Sustainable Development (WBCSD) has convened or announced "preparer forums" for various sectors and industries: oil and gas; electric utilities; chemicals; construction; automobiles; and food, agriculture, and forest products. The United Nations Environment Programme Finance Initiative worked with 16 large global banks to pilot the TCFD recommendations and develop a scenario-based approach for assessing the potential impact of climate change on the banks' lending portfolios.

17. The Bank of England set out in its July 2019 FSR its intention to test the UK financial system's resilience to the physical and transition risks of climate change. It will gather views on the design of the exercise and, as a first step, will publish a discussion paper in autumn 2019. More information available at: https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-report/2019/july-2019.pdf

18. With the growth of different ESG measurement approaches, scores have been shown to vary greatly between providers. Barclays found positive but low correlations across all three ESG dimensions (14% for governance and 13% for environment) when comparing MSCI and Sustainalytics. Similarly, State Street Global Advisors found a correlation of 0.53 for constituents of the MSCI World Index.

19. See Axa 2019 Climate Report, available at: https://www-axa-com.cdn.axa-contento-118412.eu/www-axa-com%2F308285a0-f209-4b04-9a3e-41d8df848445_axa2019_ra_en_climate_report_19_07_2019_pdf_mel.pdf

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Digital currencies, stablecoins and the evolving payments landscape

Lael Brainard considers the history of technological advances challenging what money is, and looks at the next chapter in the payments landscape

Technology is driving rapid change in the way we make payments and in the concept of 'money'[1]. There is a long history of technological advances challenging the prevailing notions of money, from the trading of coins to the use of paper currency, to the electronic debiting and crediting of funds on the accounts of banks.

Today, efforts by global stablecoin networks such as Facebook's Libra to establish the next chapter in the story of money are raising threshold questions about legal and regulatory safeguards, financial stability, and monetary policy. Because of its potential global reach, Facebook's Libra imparts urgency to the debate over what form money can take, who or what can issue it, and how payments can be recorded and settled[2].

Reassessing money

Money has traditionally served three functions[3]. Money facilitates payments as a medium of exchange, serves as a store of value that can be relied on for future use, and simplifies transactions by providing a common unit of account to compare the value of goods and services.

A decade ago, Bitcoin was heralded as a new kind of digital money that would address frictions in payments as well as serve as a unit of account and store of value without the need for centralized governance. Bitcoin's emergence created an entirely new payment instrument and asset class exchanged over a set of payment rails supported by distributed ledger technology.

Distributed ledger technology may allow for a shared, tamper-resistant ledger that can be updated by anyone with sufficient computing power, in contrast to traditional recordkeeping systems built on a single ledger managed by a trusted central entity[4].

But Bitcoin and some other early iterations of cryptocurrencies have exhibited extreme volatility, limited throughput capacity, unpredictable transaction costs, limited or no governance, and limited transparency, which have limited their utility as a means of payment and unit of account[5].

Stablecoins were designed specifically to overcome the substantial volatility exhibited by first-generation cryptocurrencies, which limits their reach in payments and their utility as a unit of account. As the name implies, stablecoins aim to maintain stable value by tying the digital currency to an asset or basket of assets, such as commercial bank deposits or government-issued bonds. Stablecoins also differ from the initial set of cryptocurrencies in that they may be issued by a central entity and rely on third-party institutions for some aspects.

We will likely see far-reaching innovation in payments in the coming years, with a plethora of new and emerging options, including stablecoins

Just as any currency's value as a medium of exchange increases with the size of the network using it, so too the power of a stablecoin payment system will depend on its ability to achieve widespread adoption, due to the associated network externalities. In light of the 2.7 billion active monthly users on Facebook's platforms, the Libra stablecoin project stands out for the speed with which its network could reach global scale in a payment system[6].

To assess the efforts by stablecoin issuers to provide the three functions of money, it is useful first to consider existing arrangements for the issuance, regulation, and transfer of money. Central bank money and commercial bank money are the foundations of the modern financial system. Central bank money is composed of physical cash and money held in deposits at a central bank.

Central bank money is important for payment systems because it represents a safe settlement asset, allowing users to exchange central bank liabilities with confidence in their acceptance and reliability. In addition, central banks can play a critical role as providers of liquidity by lending central bank money at moments of stress.

Commercial bank money refers to money held in deposits at commercial banks. It is widely used in part because people are confident that they can convert it on demand to the liability of another commercial bank or the central bank, such as physical cash. This confidence comes in no small part because bank deposits are insured, and commercial banks are subject to supervision, regulation, and deposit insurance requirements[7]. Consumers and businesses also use this money in transactions because of its convenience and availability, which in turn expand with the size of the network using this money.

Nonbank private money or assets can also facilitate transactions among a network of users. In some cases, such as airline miles, such assets may have value only within the network. In other cases, the issuer of an asset within

a network may guarantee convertibility to a sovereign currency. Consumers trust that the company issuing such money will be able to honour these liabilities.

Many US consumers have experience with nonbank private money in the form of gift cards, loyalty points, and virtual gaming currencies. Although many of these are relatively limited in scale and purpose, some nonbank money networks are sizeable. Starbucks reported that it had $1.6 billion in stored value card liabilities as of September 2018—more than the deposits held at many depository institutions[8].

As the scale and scope of such private networks grow, so too do the convenience and benefit of transacting within the network in a self-reinforcing dynamic, called network externalities. These network benefits may be augmented by the active use of network data for a host of purposes, from allocating and pricing credit to sharing reviews to prioritizing information that is pushed to users.

In China, consumers and businesses participate in two mobile networks, Alipay and WeChatPay, which by some accounts handled more than $37 trillion in mobile payments last year[9]. These networks operate within China based on the renminbi as the unit of account, and balances are transferable in and out of bank or credit card accounts.

Stablecoins with global scale and scope

Stablecoins may resemble private nonbank liabilities depending on their design and claim structure. 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. Indeed, for some potential stablecoins, a close assessment suggests users may have no rights with respect to the underlying assets or the system overall.

We have seen the growth of massive payments networks on existing digital platforms, such as Alibaba and WeChat, and the issuance of stablecoins on a smaller scale, such as Tether, Gemini, and Paxos. What sets Facebook's Libra apart is the combination of an active-user network representing more than a third of the global population with the issuance of a private digital currency opaquely tied to a basket of sovereign currencies[10]. It should be no surprise that Facebook's Libra is attracting a high level of scrutiny from lawmakers and authorities[11].

Libra, and indeed any stablecoin project with global scale and scope, must address a core set of legal and regulatory challenges before it can facilitate a first payment. I will emphasize a few issues in particular.

- First, compliance with know-your-customer rules and regulations are essential to ensure stablecoins are not used for illegal activities and illicit finance. Libra's business model is inherently cross-border, and, as such, each participant in the system deemed to be a financial institution would need to ensure compliance with each national jurisdictions' anti-money-laundering laws. Libra's intended global reach would likely necessitate a consistent global anti-money-laundering framework in order to reduce the risk of illicit transactions.
- Second, issuers of stablecoins designed to facilitate consumer payments must clearly demonstrate how consumer protections would be assured. Consumers will need to be educated on how their rights differ with respect to digital wallets compared to bank accounts.

In the United States, as elsewhere, statutory and regulatory protections have been implemented with respect to bank accounts so that consumers can reasonably expect their deposits to be insured up to a limit; fraudulent transactions to be the liability of the bank; transfers to be available within specified periods; and clear, standardized 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. Consumers need to be cautioned that stablecoins are likely to be starkly different from sovereign-issued currency in legal terms.

It will be important to get clarity on what legal entity can be held responsible for the security of personally identifiable information and transaction data and how personal data will be stored, accessed, and used. The large number of cyber breaches in the last few years highlight the importance of these issues.

- Third, it will be necessary to define the financial activities that the various players in the Libra ecosystem are conducting in order for jurisdictions to assess whether existing regulatory and enforcement mechanisms are adequate. As the legal domicile of the Libra Association, Switzerland is of particular interest.

Swiss authorities have established three new categories to facilitate their approach of regulating by function: 'payment tokens' are cryptocurrencies that are meant for use in payments or value transfers; 'utility tokens' are blockchain-based applications; and 'asset tokens' are cryptoassets that are analogous to equities, bonds, and derivatives[12]. To the extent that some innovations do not fit neatly within a single category, these classifications may not be mutually exclusive.

In the United States, regulators are closely examining the specific functions of particular stablecoins and cryptocurrencies more broadly to determine whether and where they fit in the existing regulatory structure and whether additional authorities or guidance is necessary. US market regulators have authorities for products judged to be securities or commodity futures under relevant law.

At the state level, the New York State Department of Financial Services has established a BitLicense for entities associated with virtual currencies[13]. The Federal Reserve and the other federal banking agencies have supervisory authority over banks, including, in many cases, the ability to regulate and examine companies that provide services to banks.

Neither the Federal Reserve nor any other regulator has plenary authority over payment systems operating in the United States. Although the Financial Stability Oversight Council does have the authority to designate systemically important nonbank financial companies; financial market utilities; or payment, clearing, and settlement activities based on the facts of the specific situation, it is not clear at this time whether any cryptocurrency issuer would meet the statutory requirements for designation.

Stablecoins, and cryptocurrencies more generally, challenge the long-held premise that payments must be recorded in a central ledger managed by a single entity. In fact, banks were established to perform this central ledger function. Distributed ledger technology allows for the direct peer-to-peer transfer of assets, potentially eliminating the need to transact through intermediaries.

While distributed ledger technology could offer advantages by enhancing operational resilience, increasing transparency, and simplifying recordkeeping, the public and immutable nature of the transactions ledger also introduces risks, such as data privacy concerns and legal complexity.

Global stablecoin networks also may pose challenges to bank business models. In the extreme, widespread migration to one or more global stablecoin networks could disintermediate the role of banks in payments. If consumers and businesses reduce their deposits at commercial banks in favor of stablecoins held in digital wallets,

this could shrink banks' sources of stable funding, as well as their visibility into transactions data, and thereby hinder banks' ability to provide credit to businesses and households.

That said, many banks are likely to adapt by offering alternative methods of peer-to-peer settlement and by incorporating stablecoins into their business models, whether by partnering with fintech firms who issue stablecoins or by issuing their own, as some are already doing[14].

Moreover, widespread adoption of stablecoins could have implications for the role of central banks and monetary policy. Payments are the economy's circulatory system. Large-scale migration into a new stablecoin network for purposes of payments may prove to be the leading edge of a broader migration.

If a large share of domestic households and businesses come to rely on a global stablecoin not only as a means of payment but also as a store of value, this could shrink demand for physical cash and affect the size of the central bank's balance sheet. The central bank's approach to implementing monetary policy may be complicated to the extent that banks' participation in short-term funding markets is affected.

These effects are likely to be more significant for small, open economies or those with weak monetary institutions, where the migration away from the sovereign currency to a global stablecoin could weaken the scope for independent monetary policy through a process that is the digital analogue of dollarization[15].

Large-scale stablecoin use could also affect larger, advanced economies with extensive connections to the global financial system, including by increasing market volatility and by transmitting shocks across borders.

Finally, there are likely to be financial stability risks for a stablecoin network with global reach. If not managed effectively, liquidity, credit, market, or operational risks—alone or in combination—could trigger a loss of confidence and a classic run.

A global stablecoin network raises complicated issues associated with many legally independent but interdependent operations, and the lack of clarity about the management of reserves and the rights and responsibilities of various market participants in the network.

The potential for 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.

Central bank digital currencies

Even before the advent of stablecoins, the rapid migration of payments to digital systems prompted interest in the issuance of central bank digital currencies. In some jurisdictions, there has already been a pronounced migration from cash to digital payments, which naturally prompts monetary authorities to explore moving to digital issuance of their own.

The potential for global stablecoin systems has intensified the interest in central bank digital currencies. 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[16]. For instance, Markus Brunnermeier, Harold James, and Jean-Pierre Landau provide important arguments[17].

Of course, the Federal Reserve and other central banks already provide money digitally in the form of central bank deposits in traditional reserve or settlement accounts. However, in the current context, 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.

Under this definition, central bank digital currency could be a flexible form of central bank money that could differ from traditional reserves along three dimensions: a much broader set of institutions and individuals could access it, some types of balances might not pay interest, and it might entail greater government visibility into end users' transactions.

In the United States, there are compelling advantages to the current system. First, physical cash in circulation for the US dollar continues to rise, suggesting robust demand[18]. Second, the dollar is an important reserve currency globally, and maintaining public trust in the sovereign currency is paramount. Third, we have a robust banking system that meets the needs of consumers: our banks are many in number, diverse in size, and geographically dispersed. Finally, we have a widely available and expanding variety of digital payment options that build on the existing institutional framework and the applicable safeguards.

Moreover, central bank digital currency for general purpose use—that is, for individual consumer use—would raise profound legal, policy, and operational questions[19].

Let's consider the balance between privacy and illicit activity. If it is designed to be financially transparent and provide safeguards against illicit activity, a central bank digital currency for consumer use could conceivably require the central bank to keep a running record of all payment data using the digital currency—a stark difference from cash, for instance.

A system in which individual payments information would be recorded by a government entity would mark a dramatic shift. A related question is whether the Federal Reserve has the authority to issue currency in digital form and, if necessary, to establish digital wallets for the public.

There could also be profound monetary policy implications. Some economists have argued that a central bank digital currency could address the problems posed by the zero lower bound by potentially transmitting monetary policy directly to the public. Executing monetary policy in such a manner would effectively imply the elimination of all physical cash and the power to impose a negative rate, or a tax, on households' holdings of digital money. My own strong preference is to address the effective lower bound by using our existing tools vigorously, since I view the cost-benefit assessment of negative rates as unattractive for the current US context.

Financial stability considerations are also important. The ability to convert commercial bank deposits into central bank digital currency with a simple swipe surely has the potential to be a run accelerant. Here, too, the role of banks in providing financial intermediation services could be fundamentally altered.

Finally, there could be operational risks to introducing a central bank digital currency. For starters, this might require the Federal Reserve to develop the operating capacity to access or manage individual accounts, which could number in the hundreds of millions. A myriad of other operational challenges would need to be addressed, including electronic counterfeiting and cyber risks.

It is worth noting that the technologies used currently for private-sector digital currencies do not provide the same level of information technology reliability, integrity, and scalability as central bank systems in use today. Many of these technologies do not provide for clear, predictable, and final settlement, which is a core tenet of payment systems[20].

That said, some jurisdictions may move in this direction faster than others, based on the particular attributes of their payments and currency systems. At the Federal Reserve, we will continue to analyze the potential benefits and costs of central bank digital currencies and look forward to learning from other central banks.

Supporting payments innovation

While prudence cautions against rushing into untested approaches to central bank digital currencies, we are actively investing in our payments infrastructure, so that everyone has access to real-time payments. Every day, US payment and securities settlement systems turn over roughly $12.5 trillion[21]. The Federal Reserve is committed to working closely with the private sector to promote a safer and more efficient payments system[22].

This summer, we announced that the Federal Reserve will launch the first new payment service in more than 40 years to help make real-time payments available to everyone[23]. The Federal Reserve will develop the FedNowSM Service as a platform for consumers and businesses to send and receive payments immediately and securely 24 hours a day, 7 days a week, 365 days a year. This initiative is intended to provide a neutral platform for new private-sector innovation in faster payment services.

In addition to FedNow, we are exploring enhancements to same-day settlement of automated clearinghouse (ACH) transactions and expansion of Fedwire® Funds Service and National Settlement System operating hours. We are working with the industry to improve the security of the payments system by, for example, increasing understanding of synthetic identity fraud and identifying a fraud classification approach to improve information sharing.

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. Intermediation chains for cross-border payments are long, slow,

cumbersome, and opaque. Technology enables e-commerce to transcend national borders, but current cross-border payments solutions often represent complicated workarounds rather than seamless end-to-end solutions.

Authorities in different jurisdictions recognize the importance of cooperating across borders with each other and the private sector to address the very real cross-border frictions that exist today.

Concluding thoughts

Our nation has rich and varied experiences to draw on as we assess various proposals for private money, from the period in our history when the colonial states each issued their own currencies to the many decades when the circulation of private commercial banknotes stood in for a national currency.

The Federal Reserve was created in part to respond to the inability of many of these banks to make good on their obligations for the banknotes they issued and the panics and runs that ensued. Those experiences will help inform us as we potentially enter another phase in the evolution of money and payments.

Today, consumers and businesses have a variety of payment options, including physical cash, checks, ACH transfers, debit cards and credit cards, and mobile-based payment solutions, to name a few. These tend to have clearly defined legal rights and responsibilities. We will likely see far-reaching innovation in payments in the coming years, with a plethora of new and emerging options, including stablecoins.

The Federal Reserve remains confident in the power of technology and innovation to transform the financial system and reduce frictions and delays, while preserving consumer protections, data privacy and security, financial stability, and monetary policy transmission and guarding against illicit activity and cyber risks.

Given the stakes, global stablecoin networks should be expected to meet a high threshold of legal and regulatory safeguards before launching operations. We are monitoring new technologies closely to ensure that the innovations that arise fit with our operational responsibilities and broader public policy goals, as reflected in the Federal Reserve Act.

At the same time, we are upgrading our services to support innovation in new ways. And, we will continue to foster a safe and efficient payments system, including where money in all its myriad forms—present and future—is concerned, as we have for over a century. ■

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Endnotes

1. I am grateful to Paul Wong and Jean Flemming 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. This article is based on a speech delivered at The Future of Money in the Digital Age, sponsored by the Peterson Institute for International Economics and Princeton University's Bendheim Center for Finance, Washington, DC, October 16, 2019

2. See https://libra.org/en-US/

3. In many jurisdictions, the term money is defined narrowly by the law as only sovereign currency.

4. See, eg. Lael Brainard, "Distributed Ledger Technology: Implications for Payments, Clearing, and Settlement" (speech delivered at the Institute of International Finance Annual Meeting Panel on Blockchain, Washington, October 7, 2016); "The Use of Distributed Ledger Technologies in Payment, Clearing, and Settlement" (speech delivered at the Institute of

International Finance Blockchain Roundtable, Washington, April 14, 2016); and Committee on Payments and Market Infrastructures (CPMI), Distributed Ledger Technology in Payment, Clearing, and Settlement (PDF), February 2017.

5. See, eg. Lael Brainard, "Cryptocurrencies, Digital Currencies, and Distributed Ledger Technologies: What Are We Learning?" (speech delivered at the Decoding Digital Currency Conference sponsored by the Federal Reserve Bank of San Francisco, San Francisco, May 15, 2018).

6. Statistics (October 15, 2019), retrieved from https://newsroom.fb.com/company-info/

7. Committee on Payment and Settlement Systems, The Role of Central Bank Money in Payment Systems (PDF) (Basel: Bank for International Settlements, August 2003).

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9. Frank Tang and Doug Palmer, "U.S.-China Trade War Deal Could Be Too Late for the Likes of Mastercard, American Express and Visa," South China Morning Post, April 2, 2019.

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11. See Benoît Coeuré, "Digital Challenges to the International Monetary and Financial System," (speech at the Future of the International Monetary System at the Banque Centrale du Luxembourg-Toulouse School of Economics, Luxembourg, September 17, 2019).

12. See Swiss Financial Market Supervisory Authority, "Guidelines for Enquiries Regarding the Regulatory Framework for Initial Coin Offerings (ICOs)," February 16, 2018.

13. See https://www.dfs.ny.gov/apps_and_licensing/virtual_currency_businesses

14. See, eg. https://www.jpmorgan.com/global/news/digital-coin-payments and https://newsroom.wf.com/press-release/innovation-and-technology/wells-fargo-pilot-internal-settlement-service-using

15. See, eg. Christine Lagarde, "Central Banking and Fintech—A Brave New World?" (speech delivered at the Bank of

England conference, London, September 29, 2017).
16. See, eg. Martin Sandbu, "How Facebook's Libra Fuelled Push for Central Bank-Run Digital Currencies," Financial Times, September 23, 2019; and Dave Michaels and Paul Vigna, "The Coming Currency War: Digital Money vs. the Dollar," The Wall Street Journal, September 22, 2019,
17. See eg. Markus K Brunnermeier, Harold James, and Jean-Pierre Landau, "The Digitalization of Money (PDF)," Working Paper, August 2019.
18. See https://www.federalreserve.gov/paymentsystems/coin_data.htm
19. See, eg. CPMI and Markets Committee, Central Bank Digital Currencies (PDF), March 2018.
20. Many distributed ledgers in existence today rely on probabilistic settlement, meaning that the more times a transaction is confirmed on the ledger, the less likely it will be revoked, but a non-zero risk of settlement failure persists.
21. Based on staff estimates.
22. See, eg. https://fedpaymentsimprovement.org/
23. Lael Brainard, "Delivering Fast Payments for All" (speech delivered at the Federal Reserve Bank of Kansas City, Kansas City, Missouri, August 5, 2019); Lael Brainard, "Supporting Fast Payments for All," (speech delivered at the Fed Payments Improvement Community Forum, Chicago, October 3, 2018).

A digital euro to save EMU

Relaunching the euro as digital central bank currency could help reduce the debt of the euro states and end the sovereign-bank doom loop, Thomas Mayer argues

The desire to avoid credit and investment boom-bust cycles has led some to advocate replacing money creation through bank credit extension with direct money issuance by the central bank or a private entity, or linking money to an existing asset.

This column, part of the Vox debate on euro area reform, argues that relaunching the euro as digital central bank currency could help reduce the debt of the euro states and end the sovereign-bank doom loop. It would also create a formidable competitor for other global digital currencies likely to emerge in the intermediate future.

Since the financial crisis of 2007-08, the role of our monetary order for the emergence of credit and investment cycles has received renewed attention. Based on the work of Knut Wicksell, Ludwig von Mises, and Friedrich von Hayek, an increasing number of financial analysts and economists have identified the creation of money through credit extension by commercial banks under the guidance of central banks as a source of economic instability[1].

When a central bank manages interest rates in the credit markets below the 'natural rate' (at which money savings and investments are in equilibrium), more money is created through credit extension for new investment while money savings are discouraged.

A credit and investment boom ensues, during which investment temporarily exceeds saving. When capacity constraints put a brake on the investment expansion, prices rise, prompting the central bank to induce an increase in credit market rates. Higher interest rates discourage new investment and render some investment undertaken at lower rates economically unviable. As bank loans need to be written off and new investment drops, the boom turns into bust.

Credit and investment boom-bust cycles would of course be avoided if the central bank could stabilise the credit market rate at the level of the natural rate. But as this rate is unobservable, the central bank engages in a process of trial and error to find the correct level for the credit market rate, inducing boom-bust cycles in the process[2].

As a consequence, a number of economists and analysts have proposed replacing money creation through bank credit extension with direct money issuance by the central bank or a private entity, or linking money to an existing asset[3].

But has the unthinkable not become reality with the speed of thought during the global crisis and the euro crisis?

Since the beginning of the euro area crisis in 2010, it has been become clear that the original architecture of European Economic and Monetary Union was unstable. Numerous reforms have been implemented, but political disunity has prevented completion of EMU. Contrary to popular belief, EMU is still only a cash union, because only the banknotes issued by the ECB (and the coins issued by the member states alongside) are of the same credit quality in all the member states of the euro area.

Bank deposits, on the other hand, differ according to the quality of the loans with which they were created and – in particular – according to the financial capacity of the states to protect these deposits in the event of bankruptcy of banks. A uniform European deposit insurance scheme (EDIS) is to be created in order to ensure the uniform quality of bank deposit money, but political resistance to the pooling of bank risks has so far prevented this.

For the same reason, the creation of a 'safe asset' in the form of a government bond without default risk, urgently demanded by financial market participants, has remained elusive.

History has shown again and again that monetary union in the credit money system needs political union as its guarantor. But political union seems more distant today than at the time of the launch of EMU more than two decades ago. Even if we succeed in completing EMU by creating a political union against all odds, we would have established the euro as credit money with all the problems mentioned above.

Against this background, and in view of the challenges and opportunities of digitalisation in the financial sector, I propose to relaunch the euro as digital central bank money. My proposal draws on all three of the above-mentioned ideas for monetary reform: the 100% money concept of the Chicago Plan; the crypto money technique pioneered by Nakamoto; and the asset backing of money suggested by economists of the Austrian school.

A more detailed comparison of the various ideas for monetary reform and exposition of how they change the balance sheets of money issuing entities and commercial banks is given in Mayer (2018). I believe that a digital euro offers four important advantages: (1) a safe European common currency without the need to create political union; (2) a monetary order less prone to investment boom-bust cycles; (3) an end to the sovereign-bank doom loop; and (4) the establishment of the euro as a key international currency.

Introducing the secure deposit

The first step towards the euro as digital central bank money would be to create a euro bank deposit which is fully backed with central bank money. The ECB could create the central bank money necessary for covering the deposit by purchasing government bonds (as proposed in the Chicago Plan)[4]. Thus, a secure deposit and asset as safe as banknotes would be created without any form of state backing needed[5].

In a second step, the secure euro deposit could be consolidated on the ECB's balance sheet and set up as digital central bank money that can be transferred peer-to-peer using distributed ledger (ie. blockchain) technology. Thus, the euro would become an 'asset token', backed solely by government bonds.

Embedded in the token could be a 'smart contract' stipulating the nature of its backing and rules for the creation of new tokens (see below). The smart contract would be tantamount to a digital watermark identifying the token as a valid euro. Entities tasked with proofing transfers of tokens in the blockchain (ie. 'nodes') would only validate a transfer if the token under review were created according to the rules laid down in the smart contract.

A token found in a proof of a transaction not to have been created according to the rules embedded in the smart contract would be treated as counterfeit money. Only the ECB – not the commercial banks as in the credit money

system – would be responsible for issuing digital euro tokens. For users accustomed to paper money, the ECB could of course exchange digital euros at parity into bank notes.

A rules-based increase in the money supply

The future increase in the money supply would take the form of additional purchases of government bonds by the ECB. Purchases would have to be decided by the ECB Governing Council independently of political influence and from a long-term perspective.

For instance, in the spirit of Milton Friedman's 'k-percent rule', growth of the digital euro money supply could be geared to the expected long-term growth rate of real GDP (the growth potential of the euro area economy)[6]. Contrary to conventional wisdom and in line with the experience in Japan, I do not see inflation expectations of zero as a problem, but a small rate of depreciation of money could be added to the money growth rule if actual developments proved me wrong.

Instead of through bank lending, money supply would be expanded by increasing ECB holdings of government bonds. To avoid money creation for fiscal policy purposes (as proposed by modern monetary theory), governments would be obliged to distribute the money they receive from the bond sales directly to their citizens as a 'money dividend'.

Any government violating this obligation (stipulated in the smart contract embedded in the euro) would engage in distributing counterfeit money, automatically no longer qualify for bond sales to the ECB, and hence not receive new money for distribution to its citizens.

Banks as intermediators

Commercial banks would now have to broker their customers' savings deposits in the form of digital euros to investors, and interest rates would be determined by the demand for funds for investment purposes and the supply of money savings in the credit market.

Banks would resemble an investment fund whose assets are protected against first loss by an equity cushion. Savers could choose the bank that suits them according to their preferences for returns and first-loss protection. The central bank would no longer manipulate interest rates to control banks' credit money creation.

Commercial banks could of course continue to create private debt money through lending, but there would be no state guarantee for conversion at parity into digital euros. Money would no longer be an instrument for discretionary economic policy. But in view of the new impotence of monetary policy, this would hardly matter.

An end to the sovereign–bank doom loop

Since government debt would be used for backing money with an asset, digitalisation of the euro offers the possibility to reduce the debt of the euro states and end the sovereign-bank doom loop.

Recall that the central bank buys government bonds to create the central bank money for the secure deposit, which can be transferred peer-to-peer in the blockchain. Thus, bonds on the central bank's balance sheet to back the outstanding (digital) central bank money are permanently taken out of the market. At the end of 2018, euro area government debt amounted to €9.9 trillion, or 85% of GDP. Sight deposits amounted to €7.1 trillion.

In order to back sight deposits with reserve money, the ECB could acquire €7.1 trillion government bonds against reserve money in total (ie. some €5 trillion in addition to its existing holdings) and keep these bonds on its balance

sheet. Since the stock of bonds is permanently required as cover for the money stock, repayment would be suspended.

Moreover, as interest income from the bonds would be returned to governments anyway, coupons could be reset to zero. With a zero coupon and infinite maturity the bonds would cease to count as government debt. Hence, outstanding market debt of euro area governments would fall to €2.8 trillion, or 24.3% of GDP.

Digitalisation could be combined with a 'New Deal for the euro': the fiscally conservative countries in the North with lower debt levels would agree to the one-off monetisation of old debt on the balance sheet of the ECB for the creation of the secure deposit.

In return, the more highly indebted countries in the South would accept that after the one-off monetisation of their old debts, a renewed monetisation of national debts would be impossible. Thus, the ECB would buy government bonds in amounts to reduce the debt ratio of each EMU country to the same level of 24.3% of GDP (in my example, based on end-2018 data).

The more indebted Southern countries would receive a larger amount of debt relief than the fiscally conservative Northern countries with lower debt levels. For instance, to bring the debt ratio for all countries to 24.3% of GDP, the debt ratio of Germany would be reduced by 37.6% of GDP, while the reduction for France and Italy would amount to 74.1% and 100.5% of GDP, respectively. But as all euro member countries would benefit from new room for prudent fiscal policy, the Northern countries could afford to be generous.

With the rules for establishing the digital euro and augmenting the money supply embedded in the smart contract of the asset token, it would be impossible for governments to force the ECB to monetise future debt. Governments

in payment difficulties could of course issue their own fiscal money (as has been contemplated by the governments of Greece and Italy at various points in time). But any money issued in breach of the contract and called euro would simply be counterfeit money (like issuing counterfeit central bank notes).

The euro as an international currency

Europeans use American platform companies to communicate and shop on the internet. They use the US dollar for a large part of their international payments. They may in future have to use a cryptocurrency managed predominantly by American platform companies with global reach when they want to pay with digital money; there is hardly a European company suitable to join the association created by Facebook to issue and manage Libra, the envisaged private cryptocurrency capable of attracting a global community of users.

Or they may have to use a digital currency issued on behalf of the Chinese government, as China has announced to develop a digital currency which it may well roll out on a global scale. A digital euro would significantly reduce Europe's dependence on the US dollar as a means for international payments and create a formidable competitor for other global digital currencies likely to emerge in the intermediate future[7]. All global users would benefit when several currencies compete for their favour.

Conclusion

I am fully aware that my proposal will be regarded as provocative by many economists and central bankers. Many will argue that there will be no more room for discretionary monetary policy. But have we not exhausted this room already? Others will argue that digitalisation of money will create new financial risks. But is not the existence of the present financial system already at risk?

A third (presumably mostly academic) group of economists will argue that I am reviving old-fashioned theories completely out of synch with the present state of macroeconomic theory. But has this theory not failed us in the global financial crisis? And a fourth group (presumably mostly employed by governments and central banks) will argue that my proposal is politically unthinkable.

But has the unthinkable not become reality with the speed of thought during the global crisis and the euro crisis? If the past decade has taught economists anything, in my view it is that we should keep an open mind and should not take established wisdom for granted. It is in this spirit that I would welcome a critical discussion of this proposal by fellow economists. ■

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Endnotes

1. For a comprehensive exposition of the theory, see Huerta de Soto (2012) and Mayer (2018).

2. The search for the 'correct' rate is described in the Taylor Rule, which explains actual central bank policy relatively well.

3. An early proposal for direct money issuance by the central bank was the Chicago Plan of 1933, explained in Fisher (1935). A more recent project of direct money issuance by a private entity is Bitcoin, described in Nakamoto (2008). For a proposal to back money fully with gold see, for example, Huerta de Soto (2012).

4. When the central bank wants to buy a bond, it pays a commercial bank central bank money in its account to create a deposit, with which the commercial bank can buy the bond in the market. When the bond has been bought and delivered to the central bank, the latter has a claim in the form of the bond and a liability in the form of central bank money. The commercial bank has a claim in the form of central bank money and a liability in the form of deposit money. Thus, the

latter can now be fully backed with central bank money. The previous bond holder has exchanged his bond against a bank deposit.
5. Note that this looks similar but is different from the idea of 'narrow banking'. There, banks are supposed to invest existing deposits in safe and liquid assets. Nothing is said about how these deposits come into existence (eg. Acharya 2003). Here, we are concerned with the way safe deposits can be created in the first place.
6. This would differ from the concept of Nakamoto (2008), where the Bitcoin money supply has a ceiling.
7. Mark Carney, governor of the Bank of England, has recently proposed digital central bank currencies as competitors to the US dollar (Carney 2019).

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Payments: a platform for innovation

Victoria Cleland writes about the work of the Banking, Payments and Innovation team at the Bank of England, in particular looking at what they are doing in response to the recommendations of the Future of Finance report

This year's Sibos event is exciting for two reasons. First, it's National Inclusion week here in the UK. And, it's a great coincidence that Sibos has fallen during this week: at the heart of its agenda are discussions around how change and diversification in payments could lead to a more inclusive financial system. Second, this is the first Sibos conference to be held in London – and it is certainly an exciting time for so many global payments experts and innovators to be here.

London has a long history at the heart of the global financial system. It continues to build on this expertise and is one of the leading fintech hubs in the world. It is home to an incredible pool of the world's best and brightest talent, with 44,000 people already working in fintech, more than in Silicon Valley or New York. Investment into the UK's fintech sector continues to grow and reached a record level of $2.9 billion in the first half of 2019, which was nearly 85% of the 2018 total. And we can see that the UK fintech sector is maturing, evidenced by the size of increased investments.

Payments are vital to any real economy and in total nearly 40 billion payments were made in the UK in 2018. They are also at the heart of the financial system. This makes London the perfect location for a payments conference, which is focused on 'thriving in a hyper-connected world'. Payments are innovating, fast. From the infrastructure and the messages that support each transaction, to new players entering the market and consumers seeking new ways to pay for goods and services.

Future of finance, future of payments

While the core mission for the Bank of England is maintaining monetary and financial stability, we also seek to enable innovation and empower competition in the financial system. To support our forward looking and dynamic approach we recently commissioned and responded to the *Future of Finance* report. It considered how financial

services might evolve over the next decade, and what this could mean for each of us: for users, the system and the Bank itself.

The report highlighted that a new economy and new demographics demand a new financial system. This system must be resilient, fair and dynamic. We have prioritised five areas of work: we are enhancing the payments system for the digital age; we will champion a platform to boost access to finance for small businesses; we will support the transition to a carbon-neutral economy; we will develop a world-class regtech and data strategy; and we will facilitate firms' use of technology.

We are on track against our plan and we need firms to develop theirs – so the payments industry is ready to transition safely to the new service and maximise the opportunities for innovation and transformation promised

I will focus on how the Bank will support a more resilient, innovative and competitive payments system for UK households and businesses: we have a vision that payments will become cheaper, instantaneous and more seamless, including across borders. At the heart of this is the UK's Real-Time Gross Settlement (RTGS) service which settles around £650 billion of payments each working day, close to a third of the UK's annual GDP.

Not much business can be done without it, and most consumers are ultimately reliant on it. I will tell you shortly about our leading-edge work to renew this service, but this is not all we are doing. We are also pursuing a number of even more far-reaching strands which together have the potential to transform the current payments landscape. I want to share a few of these with you.

First, cross border payment is for many a long-standing frustration - often badged as slow; inefficient and expensive for both financial institutions and end users. In 2018 we published a summary of our joint collaboration with the Monetary Authority of Singapore and the Bank of Canada to explore opportunities to make cross-border payments more efficient.

But we want to take this further and play a leading role in supporting effective change in this area. We have started new work to understand what the frictions are and how we can work with our central banking colleagues globally to push forward this agenda, to deliver prompt settlement in different currencies and empower private innovations in cross-border finance.

Second, we will continue to champion the Legal Entity Identifier (LEI) as a globally recognised and unique identifier for all businesses. The global LEI system contributes to many financial stability objectives such as improved risk management in firms, better assessment of micro and macro prudential risks, facilitation of orderly resolution, and enables higher quality and accuracy of financial data overall.

In addition to financial stability benefits, LEIs provide valuable data and support anti-money laundering and combating the financing of terrorism efforts. They could, if linked to portable credit files, improve access to the domestic and global financial system, support greater choice and competition for business finance. The LEI could also act as the unique identifier for a digital ID, which could help the two-step verification process required for a more secure system.

For all these reasons, the Bank is supporting the specific recommendation on the use of LEI in payment messages made by the Financial Stability Board in its May 2019 report on LEI implementation. In this context, we welcome the report issued by the PMPG on adoption of LEI in payments messages and its recommendations that firms should adapt their business processes to ensure that LEIs are captured whenever a new counterparty or customer record is set up. And importantly we are integrating the LEI in the ISO 20022 messages used in CHAPS (the Bank-operated High-Value Payment System).

Third, we will consult in 2020 on the appropriate level of access for payments service providers to the Bank's infrastructure and balance sheet, including necessary safeguards. This is important to ensure that the right balance is struck between access, maintaining financial and monetary stability and protecting public money from undue risks.

We will reach out to key firms and the users of payments services in the next couple of months, to understand the needs of market participants and the barriers that still exist to competition and innovation. This dialogue – along with detailed analysis of the potential benefits and impacts for monetary and financial stability - will feed into a consultation paper in 2020. We look forward to learning from the industry and will welcome your engagement in this process.

RTGS renewal

Crucially, to deliver these priorities, and to facilitate innovation, we need strong, resilient foundations. That is why the Bank is undertaking an ambitious and exciting Programme to renew RTGS. For those not familiar with RTGS, it is a critical piece of national infrastructure and the backbone of UK payments.

Our vision is to develop an RTGS service which is fit for the future, increasing resilience and access, and offering wider interoperability, improved user functionality and strengthened end-to-end risk management of the UK's High-Value Payment System. This is a challenging but necessary Programme which is a key priority not just for the Bank but for the UK payments industry as a whole.

The way payments are made has changed dramatically in recent years, reflecting changes in the demands of households and companies, changes in technology, and an evolving regulatory landscape. We need to respond to this and, in collaboration with the industry, develop the next generation of RTGS that delivers a world-leading payments service.

Innovation can only thrive when firms and end users are confident they are operating in a safe and secure environment. So at the heart of the Programme is the desire to make the new service materially stronger and more resilient to an increasingly complex and sophisticated environment.

Our current system has, and meets, targets of 99.95% availability. This must continue regardless of the shocks, whether traditional BCP or cyber. We are building a system that will be flexible to protect against the threats we understand today and the ones we will need to withstand in the future.

The renewed service will provide a platform for private sector innovation and one which can respond to and shape a fast-changing environment. We will harness leading edge technology to deliver this, coupled with changes to our policies to support growth and resilience. Key features will include:

- The renewed service will have a flexible and modular architecture, making it easier to change components of the service or add new components. This will enable us to respond quickly to market changes and continued innovation in payment technologies both from new fintechs and established players. Ultimately, we want to future-proof RTGS to interface with firms and technology that may not exist today.

- The renewed service will not be built on a Distributed Ledger Technology (DLT) but firms who use DLT will be able to connect to the service. We have completed a Proof of Concept to understand whether our renewed service could be capable of supporting settlement in systems operating on innovative payment technologies. The punchline was that it could. We continue to engage with fintech firms to maintain our understanding of technology developments.

- While we currently plan to start operating the new service with the existing hours for CHAPS, the new service will have near 24x7 capability, and so when there is clear demand we expect, in consultation with industry, to extend operating hours. This flexibility means we can respond quickly to changing demands and an increasingly globalised economy.

- We will also provide Application Programming Interface (API) access to users to enable read and write of payments data. The Bank has committed to providing an exposed API to allow external participants to develop sophisticated and automated real-time tools for accessing RTGS transactional and liquidity data. We plan to announce in a few months our initial thoughts on the approach and implementation.

And with a visionary new system, we want more participants to be able to benefit from it. In 2018 we expanded direct access to non-bank payment service providers, making it possible for a broader set of firms to compete with banks.

Five non-bank payment service providers currently hold accounts in RTGS and many more firms are exploring the possibility of joining. In addition, the renewed RTGS service will further reduce barriers to entry for new players – for example on-boarding will be quicker and testing will be streamlined making joining speedy and efficient. For CHAPS, we expect to be able to meet demand from dozens of new participants a year, rather than a handful as currently.

There are two clear benefits from expanding access. First, increasing the number and diversity of firms that can directly access central bank money helps to reduce financial stability risk from events such as market wide shocks or a single firm failure. Second, it promotes competition and innovation in payments. Firms that have direct access to payment systems can benefit from faster transaction times and reduced individual transaction costs.

By extending these benefits to a wider range of firms, the Bank hopes to encourage a greater diversity of players in the payments market, thereby encouraging innovation and competition through development of new business models, new products and services and ultimately cheaper and more efficient payments.

This is an ambitious Programme - and rightly so. The Bank is on track against published milestones. Having defined the Programme scope, with input from the payments industry, we are now running a competitive procurement process under the Official Journal of the European Union to appoint a Technology Delivery Partner. They will work with the Bank on the design and build of the core settlement engine. We plan to enter the contract with the Technology Delivery Partner in May 2020.

We then move to delivery, with the first technology changes in the first half of 2022. In light of other international migration plans, the Bank is revisiting its approach to the introductory phase of ISO 20022 implementation in 2022 – in particular on how we can support early adopters of enhanced ISO 20022 data. We are conducting industry engagement to inform our decision and would welcome input from interested parties. And the most significant moment is when we replace the core RTGS service, planned for 2023.

Additional functionality will be delivered in 2024, to further drive innovation and change. For example, we will introduce read/write APIs and are exploring the ability to synchronise the settlement of a payment in sterling central bank money to be coordinated with the transfer of one or more assets. The Programme is expected to close in 2025. It will be an exciting few years!

ISO 20022

One way in which RTGS Renewal can promote resilience and efficiency is through greater interoperability across payment systems. Could, for example, CHAPS be used as a contingency mechanism in the event of a retail payment system outage? Key to this is the introduction of a new payment messaging standard for UK payments, ISO 20022: the emerging global standard.

Following a consultation in 2018, the Bank and Pay.UK will introduce a Common Credit Message across CHAPS, Bacs and FPS which will bring greater message harmonisation for the UK's main interbank payment systems. The Bank is also engaging with other High Value Payment System operators to ensure the standard is compatible with the emerging international consensus. This is an exciting and important initiative which will bring significant and long-term benefits for a wide range of firms.

A recent key milestones towards implementing ISO 20022 in the UK was the publication of the CHAPS ISO 20022 draft messages schemas and market guidance for making CHAPS payments. Draft messages and market guidance have been provided for the expected implementation phase of the ISO 20022 migration and we are seeking comments, via the Bank's website, until 3 October 2019. And I would encourage all firms with an interest to review and comment to inform the final schema specification.

Final specifications for the implementation phase of the ISO 20022 migration will be available by the end of 2019 – allowing firms to kick start their planning and preparations for ISO 20022 implementation in CHAPS.

RTGS renewal – engagement with the payments industry

We have from the very start of the Programme – even before it could be described as a Programme - been working with industry to design and prepare for this change. This input is vital so we can shape and deliver the change industry want to see. We have a number of strategic and working level channels that allow us to seek input and advice from across the payments industry.

These include the RTGS Renewal External Advisory Body, the Standards Advisory Panel and the CHAPS Strategic Advisory Forum. Membership spans current CHAPS direct and indirect participants (and not just the traditional large banks) and trade bodies, UK authorities, software vendors and corporate end users.

We also work closely with some of the organisations sharing the stage with me today, aiming to get the best result and to minimise the burden on industry. We work extensively with Pay.UK who are working to deliver change across the retail payment schemes through their New Payments Architecture Programme.

Together, we are tackling issues such as whether we could build a shared Public Key Infrastructure (PKI) for UK payments. And of course payments globally continue to change apace, so we thrive on our engagement with other central banks on key topics such as standards harmonisation, where our close collaboration is a crucial part of how we can collectively transform the payments landscape. Working together provides the opportunity to learn, share insights and collaborate on common challenges.

Conclusion

Just as payment systems are at the heart of the economy, industry engagement must remain at the heart of the Programme. User input enables us to create the platform and capability that industry needs to innovate: the building blocks to transform the payments landscape. But as we mobilise delivery at the Bank, we need industry to mobilise too.

We are on track against our plan and we need firms to develop theirs – so the payments industry is ready to transition safely to the new service and maximise the opportunities for innovation and transformation promised.

We are developing a strategy to work closely with Direct Participants to provide information, monitor key milestone completion, undertake testing and seek assurance that they are each ready to implement changes.

Together, we can build and promote a resilient and thriving financial system, and so I look forward to continuing to engage with users, end users, suppliers, innovators, peers to help shape and deliver a resilient and innovative payment ecosystem. ■

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Financial innovation for inclusive growth

The benefits of financial innovation should be available for all. Luis de Guindos outlines a European approach that is fit for the global challenges ahead

Introduction

The benefits of technological innovation are tangible: we can see them and experience them in our everyday lives. Financial services are an integral part of our daily activities and are deeply affected by advances in technology. Payment services have changed considerably in recent years, driven by new technologies and shifts in consumer preferences.

Instant person-to-person (P2P) retail payment solutions are now a reality in many countries[1] and are increasingly available for consumers and businesses to use around the clock. Mobile P2P payment solutions allow people to simply use a smartphone to transfer money and only require the phone number or email address of the recipient to complete a transaction.

At the point-of-sale, large global schemes such as Google Pay and Apple Pay use contactless technologies to enable quick and easy payments. In some markets, Quick Response (QR) codes mean making a payment as easy as taking a picture with a smartphone. Meanwhile, new service providers piggyback on existing banking and payment infrastructures to offer online payment solutions that cater to our digital lifestyle.

While I am convinced that technological progress needs to be fostered and not hindered, I can't but notice that its benefits have failed to reach all corners of our societies – in particular underprivileged populations and vulnerable groups, for whom financial innovation has not yet made a difference.

And while in certain regions mobile money has given millions of customers access to our financial systems, more work is needed to ensure access for the 1.7 billion adults who currently do not have a transaction account[2].

Furthermore, in stark contrast to other ubiquitous technologies, existing cross-border payments are not always 'up to speed' and cost-efficient. In fact, while the global average cost of remittances has decreased, it is still well above the 3% target indicator for sustainable development by 2030[3].

At the same time, the importance of remittances has grown: they have overtaken foreign direct investment as the largest source of external financing to emerging economies[4]. These facts and figures should not come as a surprise to anyone reading this article. Yet they caused quite a stir earlier this year, and rightly so, when global stablecoin initiatives made headlines by pledging to address these long-standing issues.

European stakeholders should join forces or brace themselves for external disruption with potentially far-reaching implications for public policy

"Same business, same risk, same rules"

So can stablecoins deliver on their promises? Retail stablecoins could be accessed and used for making payments irrespective of whether their users have a bank account. In principle, retail stablecoins could provide a functional means of payment and even serve as a gateway for other financial services[5] – two of the three fundamental functions of transaction accounts[6]. The third is to safely store value, but I will cover that separately.

Global stablecoin initiatives are built on a sufficiently broad network to maximise acceptance for a wide range of use cases and are designed to work across country borders. Stablecoin ecosystems could also potentially integrate additional financial products offered by financial institutions acting as partners, should the latter decide to play an important role in this area.

However, to increase financial inclusion, retail stablecoins must successfully address outstanding issues such as high costs, a cash-in/cash-out infrastructure, identification and know-your-customer requirements. These are formidable barriers to overcome. Moreover, stablecoins must be designed and implemented so that they do not compromise other public objectives such as anti-money laundering and consumer protection –to name just two.

We must also recognise that a stablecoin's business model is based, first and foremost, on its ability to minimise fluctuations in its price relative to fiat currencies. Stablecoins therefore promise users a stable value and the possibility to exchange their holdings at all times[7].

But these are not bank deposits in your fiat currency. The value of a stablecoin will crucially depend on its governance, risk management and the value of the underlying assets or funds portfolio. A mere promise that proceeds from the sales of coins will be invested in low-risk financial instruments will not be enough to ensure the stability of the coin.

The industry should therefore responsibly manage users' expectations, making it clear that losses could occur and they would not be covered by the traditional financial stability net, which includes deposit guarantee schemes and central banks' role as lenders of last resort. In this respect, the term stablecoin is a misnomer. They are not stable and they are not coins, for that matter.

So it is far from certain that stablecoins can deliver on their promises, and it is clear that they could pose risks to consumers and the financial system. It is therefore understandable that authorities around the world are calling for stablecoins to be regulated[8].

The same rules must be applied to all activities that give rise to the same risks, irrespective of the technologies used or the identity of the service providers. In other words, we should uphold the principle of *"same business, same risk, same rules",* which is at the core of technology-neutral regulation. Providers of innovative services should not be penalised just because they use new technologies.

Similarly, portraying existing financial products as something new by using innovative technologies to circumvent regulation must not be rewarded.

Challenges for both private and public sectors

The announcement of the 'Libra' global stablecoin initiative was a wake-up call for both the private and the public sectors to press ahead and make further progress on issues such as cross-border payments. We must admit that there is indeed an unmet consumer demand for payment services that are faster, cheaper and easier to use and that can work across borders.

The combination of rapid technological progress and the entrance into the market of large global digital firms is putting established banks and payment service providers under pressure to innovate and compete on scale and user convenience.

For instance, the combined volume of new credit provided by fintech and bigtech in 2017 exceeded 500 billion US dollars – a tenfold increase from 2014[9]. Financial institutions will need to rise to the challenge. However, to date, European payment service providers have struggled to develop a common solution that can match up to large global digital firms' initiatives in terms of immediacy, convenience, scale and branding power. In particular, the European instant payments landscape remains fragmented, with no European solution emerging for point-of-sale and online payments[10].

The public sector is already responding to the advent of stablecoins in a coordinated manner. Work is underway under the umbrella of the G20 to assess their risks, examine the applicability of the existing rules, and identify gaps in the current regulatory and oversight framework.

Given the cross-border nature of global stablecoin arrangements, such international coordination is crucial to ensure consistency across borders and prevent regulatory arbitrage. Otherwise, providers of stablecoins, or any new financial services for that matter, will have every incentive to operate in the most lenient regulatory environment.

We have to make sure that there is no scope for regulatory arbitrage. For this reason, we need to have information-sharing arrangements in place and rely on cooperative oversight where appropriate.

Putting the response to stablecoins aside, there is no shortage of initiatives from central banks' and standard-setting bodies to increase their knowledge of technological innovations and their implications for the financial sector.

Indeed, a number of internationally coordinated efforts have tackled issues related to financial inclusion and remittances. Nevertheless, I have to admit that the latest developments have raised more fundamental questions about the suitability of existing forms of money for meeting the new and emerging needs of economic actors, the role of the public sector and, more recently, the possibility that central banks could issue their own digital currencies.

In this environment, fulfilling the central bank's mandate has taken on a new dimension and requires an active role in driving change.

Eurosystem initiatives

The ECB is not the only driver of change in this field, but we are determined to play a proactive role. Our efforts, are focused on four main areas:

- First, we are investing in instant payments infrastructure. Since 2014, the ECB has fostered the development of a pan-European instant payments scheme under the European Payments Council. The Euro Retail Payments Board – a high-level strategic body tasked with fostering integration, innovation and competitiveness of euro retail payments – continues to build momentum on instant payments, by identifying outstanding challenges to adoption and recommending measures to overcome these challenges.

Last year, the ECB launched TARGET Instant Payment Settlement (TIPS), a platform that enables payment service providers to transfer funds to their customers in real time, on a 24/7/365 basis – and that settles in central bank money.

- Second, we are treading new ground. The ECB has been exploring how to apply new technologies, particularly distributed ledger technologies, to financial market infrastructures both within the European central banking community and globally through 'Stella' – our joint research project with the Bank of Japan.

We are also assessing the value of central bank digital currencies (CBDC) for European citizens and the economy. We are analysing the forms CBDC could take with a view to fulfilling its underlying motivations while mitigating possible negative consequences for monetary stability and financial intermediation.

- Third, we are reviewing our oversight of payments. The aim is to future-proof the existing Eurosystem oversight frameworks for payment instruments, schemes and arrangements by applying a holistic, agile and functional approach. In accordance with its mandate the ECB, together with Eurosystem central banks, is preparing to apply its oversight framework for payment systems to innovative projects, including stablecoin arrangements.

As the payments landscape continues to evolve, we will work with other international authorities to ensure that the Eurosystem requirements remain relevant by closing any gaps that innovative solutions might create. We also support the creation of cooperative oversight frameworks whenever a payment arrangement is relevant to multiple jurisdictions.

- Fourth and finally, we are reforming the European retail payments strategy. Earlier this month the ECB's Governing Council decided to relaunch its retail payments strategy. One of our aims is to actively foster pan-European market initiatives for retail payments at the location of the purchase or interaction[11].

Conclusion

The benefits of financial innovation should be available for all to see and experience. Financial institutions have a window of opportunity to leverage technological advances to deliver innovative payment and financial solutions that meet consumers' expectations of convenience, affordability, safety and global acceptance.

European stakeholders should join forces or brace themselves for external disruption with potentially far-reaching implications for public policy.

There is strong political momentum to make the financial system more inclusive – starting with access to transaction accounts and cross-border payments. Central banks have an important role to play both individually and collectively in the international community.

The ECB is drawing on this momentum to give new impetus to a European strategy on retail payments that is fit for the global challenges ahead.

As a central bank, we will continue to monitor how new technologies are changing payment behaviour and project the potential of innovative ways of making payments cheaper, more efficient and more inclusive onto our tasks and activities to the benefit of the European people and beyond. ■

Luis de Guindos is Vice-President of the ECB

Endnotes

1. Currently, fast retail payment systems operate in 45 jurisdictions. This is projected to rise towards 60 in the near future. Source: CPMI statistics, October 2019.

2. Source: The Global Findex Database 2017.

3. According to the United Nations Member States' Sustainable Development Goals to be achieved by 2030. See Remittance Prices Worldwide.

4. Excluding China. Source: World Bank.

5. See G7 Working Group on Stablecoins (2019), "Investigating the impact of global stablecoins", October.

6. See Committee on Payments and Market Infrastructures and World Bank Group (2016), "Payment aspects of financial inclusion", April.

7. Ibid.

8. Ibid. See also "Joint statement by the Council and the Commission on 'stablecoins'", 5 December 2019.

9. See Frost, J, Gambacorta, L, Huang Y, Shin, H and Zbinden, P (2019), "BigTech and the changing structure of financial intermediation", BIS Working Papers, No 779, Bank for International Settlements, April.

10. See Cœuré, B (2019), "Towards the retail payments of tomorrow: a European strategy", speech at the Joint Conference of the ECB and the National Bank of Belgium on "Crossing the chasm to the retail payments of tomorrow", Brussels, 26 November.

11.Ibid

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The emergence of big tech in financial intermediation

Big tech firms are entering finance. Jon Frost, Leonardo Gambacorta, Yi Huang, Hyun Song Shin and Pablo Zbinden assess the economic forces behind the adoption of big tech services in finance

Big tech firms are entering finance, and their access to massive amounts of information may give them an edge in areas like credit assessment and beyond. This column assesses the economic forces behind the adoption of big tech services in finance. It shows that big tech lenders thrive in countries with less competitive banks and less strict regulation, and that they have an information advantage from the use of big data and machine learning.

Big tech firms – large technology firms whose primary business is digital services – are entering finance (Zetzsche *et al*. 2017, Carstens 2018). Facebook's Libra proposal is just one recent example of a much broader trend.

In China, big tech firms like Ant Financial and Tencent offer a range of financial services (Xie *et al*. 2018, *Luohan Academy Report 2019*) and this is being seen increasingly in other markets, particularly in other parts of Asia, East Africa, and Latin America.

The entry of these firms into finance has usually started with payments. After that, many have followed a well-worn path of broadening their activities into the provision of credit, insurance, and toward savings products, either directly or in partnership with incumbent financial institutions.

The main advantage of big tech firms is their ability to exploit their existing networks and the massive quantities of data generated by their existing business lines. Their entry raises a number of important questions.

For instance, what are the economic forces that best explain the adoption of big tech services in finance? Do big tech lenders have an information advantage from their access to users' data or from technological advantages arising from innovations in processing methods, particularly in relation to credit scoring?

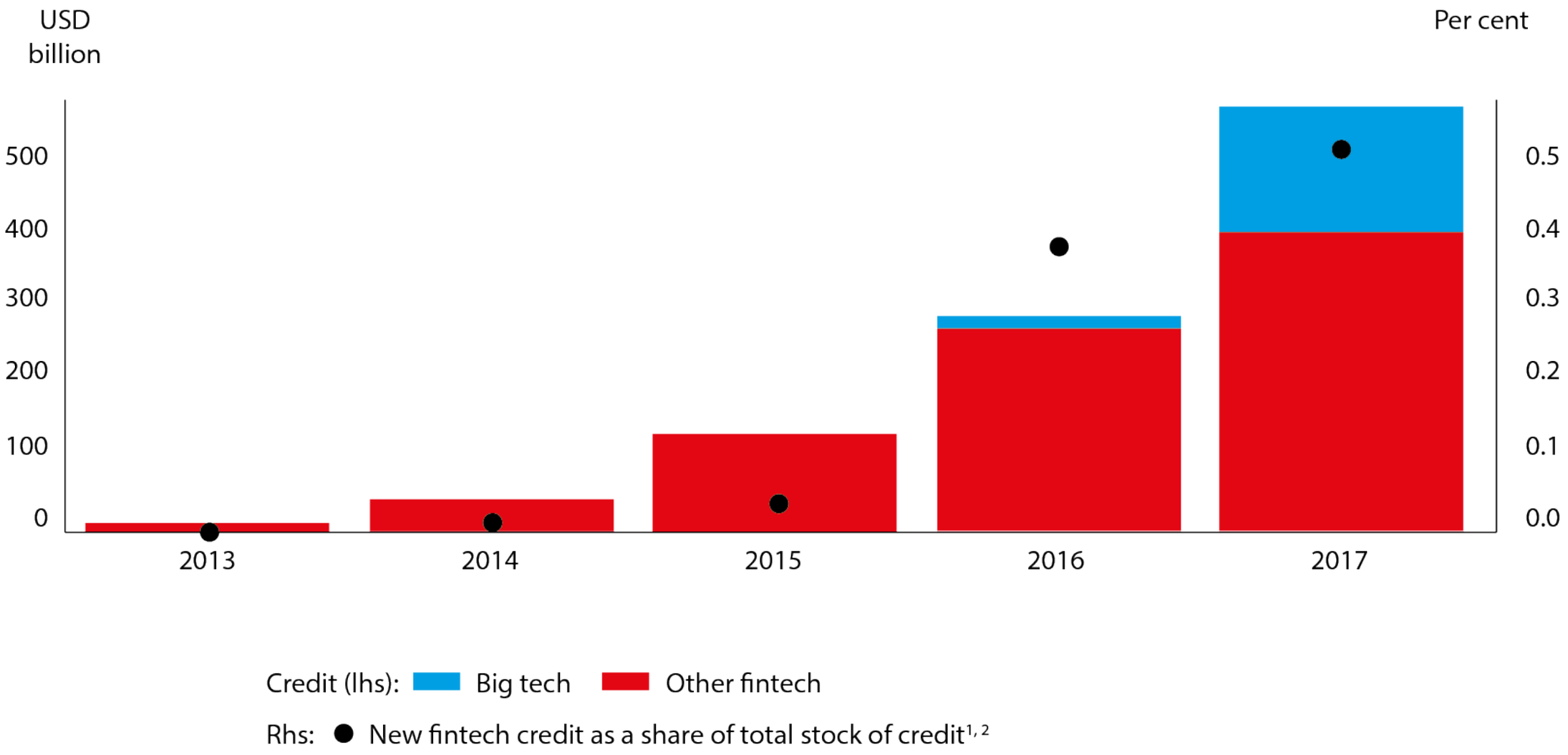
Drivers of big tech entry into credit markets

Our new research (Frost *et al*. 2019) addresses these questions. It shows that fintech firms extend less than 1% of global private sector credit, but their footprint is growing (Figure 1). In a number of countries in Asia, Latin America, Europe, and North America, big tech firms now lend to millions of small and medium firms.

Big tech firms differ from banks in at least two key ways. First, they have a loyal client base in users of their e-commerce platforms, messaging services, or search engine. Second, they use advanced technology, for example artificial intelligence, to parse massive volumes of data.

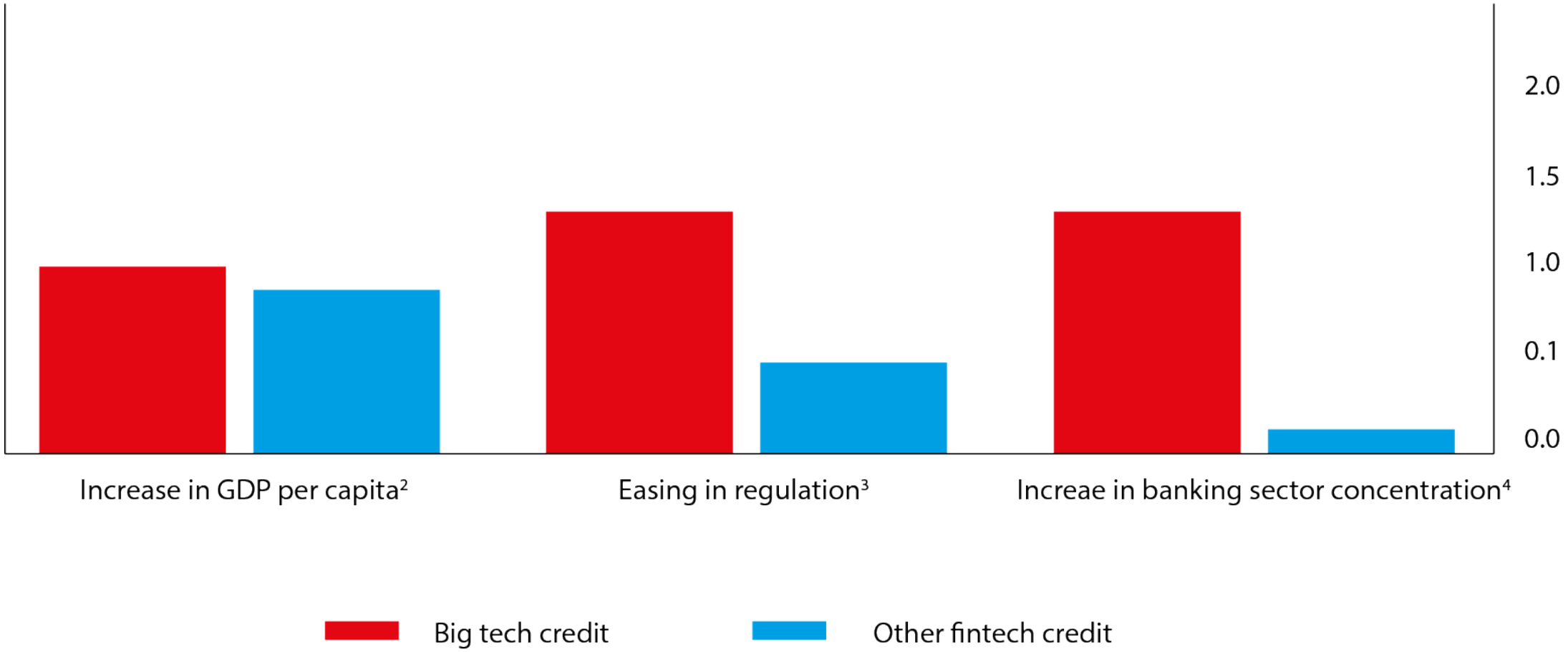
... it is important to understand how big tech firms fit within the current framework of financial regulation, and under which principles regulation should be organised

Figure 1. Global volume of new Big Tech and other fintech credit



Sources: Cambridge Centre for Alternative Finance and research partners, big tech companies' financial statements, authors' calculations.
Note: The bars indicate annual global lending flows by big tech and other fintech firms over 2013-2017. Figure includes estimates. 1 Total fintech credit is defined as the sum of the flow of big tech and other fintech credit. This is then divided by the stock of total credit to the private non-financial sector. 2 Calculated for countries for which data were available for 2013–2017.

Figure 2. Drivers of big tech and other fintech credit volumes across jurisdictions



Source: Authors' calculations.
Note: The bars visualise the estimated change in Big Tech and other fintech credit volumes from a change in the respective variables, based on the estimated coefficients displayed in the fifth column of Table 3. 1 Change in Big Tech credit and other fintech credit per capita given a one-standard deviation change in the selected variables. 2 Nominal GDP in USD over total population. Given the non-linearity of the relationship, the change is calculated at the average GDP per capita level. 3 Regulatory stringency is constructed as an index based on the World Bank's Bank Regulation and Supervision Survey. The index takes a value between 0 (least stringent) and 1 (most stringent) based on 18 questions about bank capital requirements, the legal powers of supervisory agencies, etc. 4 One-standard deviation increase in the banking Sector Lerner index (an indicator of bank mark-ups and hence market power).

Big tech lenders can exploit the data generated by their networks and machine learning to tailor prices and distribute financial services. Credit and other services are typically provided without human intervention.

Using data on fintech credit from the Cambridge Centre for Alternative Finance (Rau 2017, Claessens *et al*. 2018) and hand-collected data on large technological firms, we construct a unique dataset that includes big tech credit as an additional category in the broader universe of fintech credit.

We find that the differences in the development of total FinTech credit reflect differences in income and financial market structure – the higher a country's income and the less competitive its banking system, the larger the fintech credit activity. Big Tech credit benefits even more from these factors (Figure 2).

Big tech credit assessment: big data and artificial intelligence

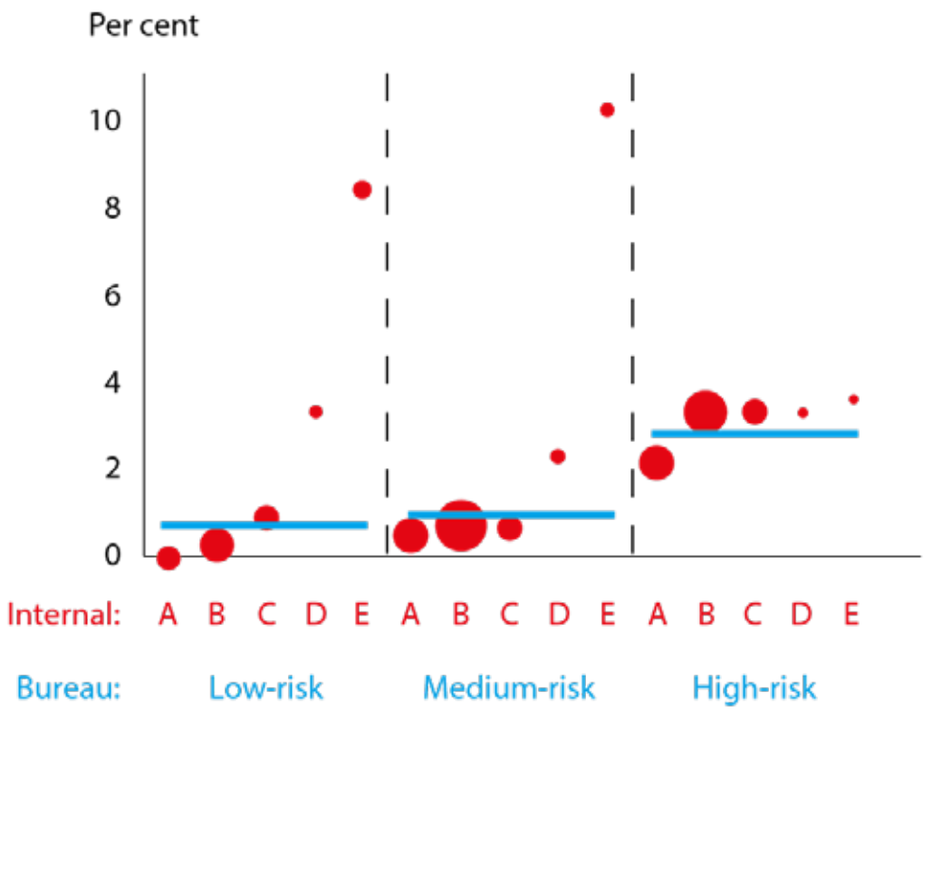
However, in order to better understand more specific drivers, including the competitive and comparative advantages of big tech, it is necessary to understand the lending model in more detail.

In particular, we need to understand how lending decisions based on machine learning and the processing of large quantities of information (big data) alter credit assessment. Using data from Mercado Libre, and its lending product Mercado Crédito, we compare the defaults of firms based on their credit score with machine learning and big data from the e-commerce platform ('internal rating') and a traditional credit bureau score (Figure 3, left panel).

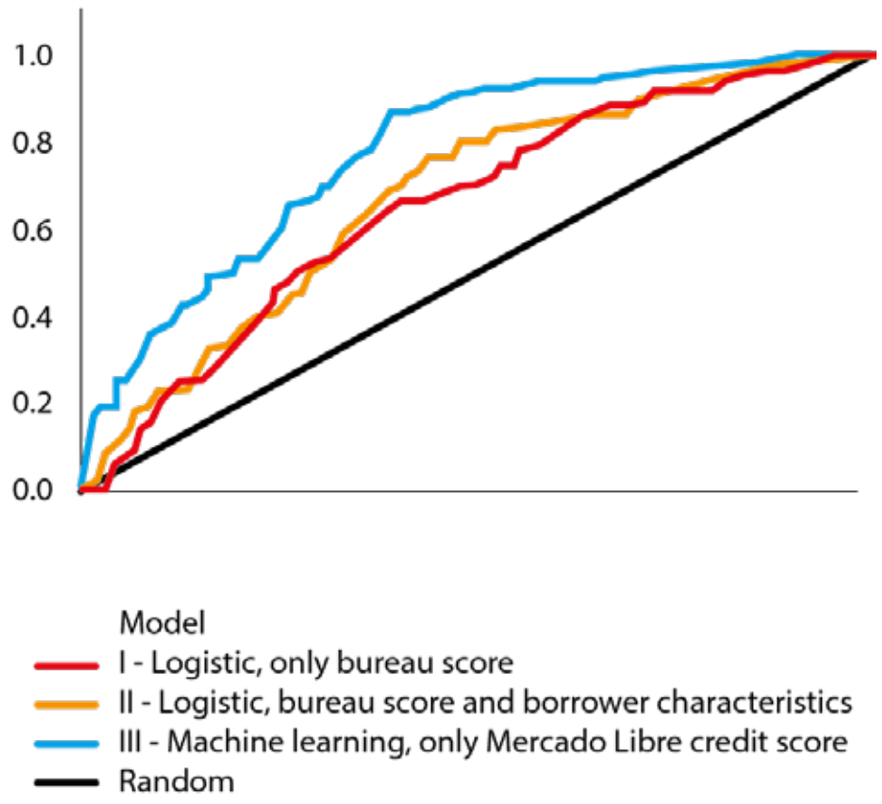
To date, the internal rating has been superior to the credit bureau in predicting defaults (Figure 3, right panel). However, the jury is still out. Any judgement on the ability of big tech credit scoring to better pinpoint creditworthiness should be based on a complete cycle, evaluating the probability of default in stress situations.

Figure 3. Loss rates by internal ratings of Mercado Libre versus credit bureau

Loss rates by Mercado Libre internal rating vs. credit bureau rating[1]



Receiver operating characteristics (ROC) curve for Mercado Libre internal rating and credit bureau rating[2]



Source: authors' calculations based on Mercado Libre data.
Note: 1 The loss rate is the volume of loans more than 30 days past due relative to the origination volume. In its use to date, the internal rating of Mercado Libre is better able to predict such losses. It segments the originations into five different risk groups as compared to the three clusters identified by the credit bureau. The size of the dots is proportional to the share of the firms in the rating distribution. 2 True positive rates versus false positive rates for borrowers at different thresholds for a logistic model with only the credit bureau score (I), a logistic model with the bureau score and borrowers' characteristics (II), and a machine learning model with the Mercado Libre credit score (III). A random model is included for comparison purposes. The ROC curve shows that the machine learning model has superior predictive power to both the credit bureau score only and the credit bureau score with borrower characteristics.

Conclusions

The rapid growth of big tech in finance will bring both benefits and risks to the future banking system. Big tech firms may enhance competition and financial inclusion and contribute to the efficiency of financial services. Conversely, such firms may further concentrate market power or give rise to new systemic risks (BIS 2019).

Overall, it is important to understand how big tech firms fit within the current framework of financial regulation, and under which principles regulation should be organised. All these are relevant aspects for future research in this area. ■

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Introduction

A number of high-profile cases of the alleged systematic use of banks for money laundering have been reported over the last two years, along with reports of investigations and other follow-up measures being taken by national authorities. This has put anti-money laundering (AML) and combating the financing of terrorism (CFT). The European Commission, EU legislators and other authorities all rightly agree that misuse of the financial system cannot be tolerated. They have started to strengthen the EU's AML/CFT framework, and further changes are in the pipeline.

So let us take a closer look at three things. First, what are the objectives of combating money laundering and terrorist financing? Second, what is it that the ECB can – and cannot – do in this area? And third, how might the European AML/CFT framework develop in the future?

Objectives of combating money laundering and terrorist financing

The EU's current AML/CFT framework largely follows the international standards established by the Financial Action Task Force. The framework has two main objectives. The first is to protect society from crime. And the second is to protect the stability and integrity of the European financial system.

EU legislators recognise that money laundering, terrorist financing and organised crime are significant problems that are damaging the integrity, stability and reputation of the financial sector and threatening the Internal Market and the internal security of the Union.

They also acknowledge that acts of terrorism are one of the most serious violations of the universal values of human dignity, freedom, equality and solidarity, and of the enjoyment of human rights and fundamental freedoms on which the Union is founded.

Efforts to combat money laundering and terrorist financing concern two areas of EU law: the establishment and functioning of the Internal Market and judicial cooperation in criminal matters. These two areas differ in the level of harmonisation which can be pursued under the current Treaties.

Even though the AML/CFT framework has been harmonised to a significant extent at the EU level, it remains strongly connected to the national legal frameworks, particularly to the criminal law of individual member states and the crimes defined therein, which differ considerably.

The battle can only be won through cooperation. All authorities involved need to cooperate – both within and across national borders

More precisely, both the AML Directive and the Directive on combating money laundering by criminal law contain minimum lists of the predicate offences to money laundering; that is, the types of underlying criminal activity which generate the property that need to be laundered. These lists highlight the link to the national laws of member states.

First, they rely on national criminal law by referring to offences that can be punished with deprivation of liberty for a maximum of more than one year. And second, they do not define the actual content of the individual predicate offences; this again is regulated by national law.

Effectively combating money laundering and terrorist financing requires a coordinated approach from legislators, AML/CFT supervisors, law enforcement authorities, judicial authorities, financial intelligence agencies, banks and other financial institutions, and many others.

Information sharing between all these bodies has often been insufficient, particularly across borders. That being said, we must always be mindful of the rule of law and protect people's fundamental rights. Public allegations of a bank being involved in money laundering or terrorist financing could lead to serious financial difficulties, or even cause the bank to fail, even if the allegations are later found to be exaggerated or completely unjustified.

What the ECB can (and cannot) do to fight money laundering

Now what is the role of the ECB? It is important to clarify that our mandate is purely prudential. In 2013, supervisory tasks were conferred on the ECB on the basis of Article 127(6) of the Treaty on the Functioning of the European Union (TFEU).

This Article limits the tasks that can be conferred on the ECB to those that concern policies that relate to the prudential supervision of credit institutions and other financial institutions – with the exception of insurance undertakings.

This provision, in turn, was duly reflected in the SSM Regulation which further limited the scope to banks only. There, the legislator explicitly confirmed, in recital 28, that the task of AML/CFT supervision remained with the national authorities.

That said, there is still a role for prudential supervisors to contribute to combating money laundering and terrorist financing. This is reflected in recital 29 of the SSM Regulation, which states that *"the ECB should cooperate, as appropriate, fully with the national authorities which are competent to ensure a high level of consumer protection and the fight against money laundering."*

Indeed, prudential supervisors might come across information that could help to uncover money laundering or terrorist financing. For instance, they may obtain insights into the quality of a banks' general internal governance, with potential implications for the functioning of the bank's AML/CFT measures. Our supervisors might detect information of this sort during an on-site inspection, and they can share it with the competent authorities.

At the same time, the prudential supervisor can use the insights gained by AML/CFT supervisors and reflect the AML/CFT-related concerns in its prudential tasks. It does so, for instance, when it grants authorisations to credit institutions; when it assess whether bank managers are fit and proper for their job; when it assesses acquisitions of qualifying holdings; and when it engages in ongoing supervision and the Supervisory Review and Evaluation Process (the so-called SREP).

The job of AML/CFT supervisors, on the other hand, is to monitor and enforce the compliance of credit institutions and other obliged entities with the AML/CFT requirements that are set out in the applicable laws. We must therefore acknowledge that the two sets of supervisors play very different roles, and synergies are limited.

In order to improve cooperation between both sets of supervisors, the latest amendment to the AML Directive required the ECB to sign an agreement setting out the practical modalities for exchanging information with the AML/CFT supervisors of credit and financial institutions within the European Economic Area.

This agreement was signed in January this year. And ever since, the ECB has been exchanging information under this framework. Our initial experience has shown that it is particularly important to put in place robust formal procedures and exchange information in secure ways only when there is strong justification for doing so and based on well-defined relevance criteria.

All this is necessary to ensure the rights of the supervised banks are protected. There is a narrow line between enabling the appropriate flow of information and ensuring the confidentiality of this information.

Aside from the ad hoc exchange of information, the ECB's approach requires receiving assessments from AML/CFT supervisory authorities at least once a year to support its annual SREP, which is its main off-site supervision tool. In exchange, the ECB shares relevant excerpts of SREP decision letters with AML/CFT supervisors on an annual basis.

Going into more detail, the ECB has also developed an approach to identify and reflect AML/CFT concerns in prudential supervision.

First, as a primary information source, we factor the assessments from AML/CFT supervisory authorities into our prudential SREP assessment. We are also looking into possible prudential warning signals that would complement the assessments received from the AML/CFT supervisors by using our available supervisory data to highlight patterns that might indicate wrongdoing.

And second, we take the necessary action when required. This could range from sharing our concerns with the AML/CFT authorities to imposing supervisory measures to address prudential concerns. We could, for instance, require a bank to strengthen its general governance arrangements or reassess its board members and key function holders. We could even withdraw a bank's licence as a last resort.

Through performing these supervisory tasks, we can, to a certain degree, indirectly contribute to the goals of the Single Market.

And there's more. Following on from the most recent enhancements to EU law, such as CRD V and the AML Action Plan, we are working together with the European Commission and the European Banking Authority, which is tasked with developing technical standards and guidelines to enhance and complement the amended regulatory framework.

At the same time, we have actively contributed to the revision of the guidelines on the sound management of AML/CFT-related risks within the AML Expert Group of the Basel Committee on Banking Supervision.

How to strengthen the EU's institutional setup

While much has already been done, weaknesses in the European AML/CFT framework still represent a risk to the integrity and resilience of the European banking sector. The current supervisory fragmentation and differences in

supervisory practices in the area of AML/CFT can severely undermine the integrity and stability of EU banks and thereby the ECB's supervisory effectiveness, particularly in a cross-border context.

The steps taken so far might not be enough to effectively prevent money laundering and terrorist financing in the banking sector. Thus, further steps might be considered by the political authorities to make the AML/CFT framework more effective, particularly for cross-border activities.

We therefore welcome the ongoing discussion on what steps to take, and we stand ready to provide support in our areas of competence. However, the ECB cannot take over the role of an AML/CFT supervisor; this is ruled out by the Treaty. Furthermore, there are also only limited synergies between prudential supervision and AML/CFT supervision.

From our perspective, a strategy to strengthen the EU AML/CFT framework could comprise at least two elements.

First, a further harmonisation of the AML/CFT rulebook could address possible divergences and shortcomings in the way the rulebook was transposed in different member states. It could also strengthen enforcement of AML/CFT compliance through AML/CFT supervisors by providing clear regulatory guidance and harmonised, stronger supervisory powers.

This could be achieved by transforming the AML Directive into an EU regulation, which would have the potential of defining a harmonised anti-money laundering framework that is directly applicable throughout the European Union. To be effective, the scope of a future regulation should be as broad and encompassing as the legal base would allow, also with a view to moving towards a more rule-based approach, while fully respecting the legal

constraints and the remaining variety of national institutional setups[1], particularly in the area of criminal law and justice systems[2].

Second, supervisory fragmentation should also be addressed, especially in relation to coordination and cooperation procedures. This could be achieved by charging an EU body or a new authority with AML/CFT tasks.

This EU body or authority should be independent to allow it to act decisively in addressing ML/TF risks. It could detail a single AML/CFT rulebook via technical standards and/or guidelines, coordinate its implementation and ensure strict and harmonised AML/CFT supervisory practices in the EU and across member states, leveraging on the experience and expertise of national supervisors.

The EU AML/CFT body should make sure that accurate and timely assessments on possible irregularities and ML/TF risks are proactively provided to prudential supervisors, including the ECB in its supervisory role[3], so these risks can be factored into their prudential assessments.

Finally, if supported by co-legislators and primary law, the EU AML/CFT authority could be equipped with direct AML/CFT supervisory powers.

Conclusion

Anti-money laundering and combating the financing of terrorism are challenging endeavours. First, they involve several areas of law at both the EU level and national levels. Changes that lead to an efficient distribution of competences might imply the transfer of sovereignty from national to EU level within the existing Treaty framework.

Second, several types of authority play a role, including AML/CFT authorities and prudential supervisors. There is a broad heterogeneity of institutional setups among member states, involving judicial authorities limited to cooperation and implementation, as well as surveillance authorities attached either to the executive or judicial branch, and their interaction with prudential supervisors.

In other words, we need to reflect on the most effective way to manage the institutional and functional fragmentation in this area given its inherent cross-border nature.

All of this makes combating money laundering and terrorist financing complicated from both a legal and a practical point of view. The battle can only be won through cooperation. All authorities involved need to cooperate – both within and across national borders.

So I welcome the ongoing debates about a review of the regulatory framework and the possibility of establishing an EU AML/CFT body. Within the limits of its mandate, the ECB will continue to contribute to this debate.

Important as this debate is, let's not forget the responsibilities that supervised entities already have: to put in place and maintain internal systems and controls to ensure that they properly manage the risks to which they are exposed. ■

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Endnotes

1. For example, national setups of financial intelligence units.

2. Such as in the case of predicate offences for money laundering where, in line with Article 83(1) TFEU, the European Parliament and the Council only may, by means of directives, establish minimum rules concerning the definition of criminal offences and sanctions.

3. Information should be provided by the EU AML/CFT body to the coordination function in the SSM for SSM related AML/CFT tasks, acting as central point of contact

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A major step toward combating money laundering

Combating money laundering in Europe took a momentous step with finance ministers putting forward a joint proposal. Nicolas Véron and Joshua Kirschenbaum say that this paves the way for strong EU legislation

The struggle to combat money laundering in Europe took a momentous step forward on November 8 when the finance ministers of France, Germany, Italy, Latvia, the Netherlands, and Spain put forward a joint position paper. Their proposal is likely to pave the way for strong European Union legislation, buttressing the credibility of the new European Commission led by Ursula von der Leyen.

Adopting this proposal would create, for the first time, a centralised anti–money laundering (AML) supervisor with EU-wide authority in Europe. It is an apt response to a recent series of embarrassing revelations of AML failures. These highly publicised lapses started with the collapse of Latvia's ABLV Bank after US Treasury determined in February 2018 that it was *"of primary money laundering concern."*

Following that wake-up call, other AML shortcomings have emerged involving European banks. These include large ones like ABN Amro, Danske Bank, ING, Raiffeisen, and Swedbank, and smaller banks in Cyprus, Estonia, Malta, and Latvia, among others.

Momentum supporting a centralised AML supervisor has been building

The six countries' joint paper came after an initial policy response that was quick by EU standards, but sadly underwhelming. In September 2018, the European Commission president Jean-Claude Juncker proposed strengthening the AML coordinating role of the European Banking Authority (EBA), an EU agency that brings together banking supervisors of all EU member states. The corresponding legislation was approved a few months later.

But it left two major flaws uncorrected. First, the EBA is a 'supervisor of supervisors' that only steps in (if at all) after national supervision failures become evident, too late to deter misbehaviour, and that offers national supervisors little incentive to cooperate.

Second, the EBA's intergovernmental governance is weak when it comes to remedial action, as the EBA's board of supervisors demonstrated when it rejected in April 2019 a staff recommendation to pursue the Danske Bank case.

That episode strengthened the backbone of several key participants. The Dutch government led by proposing a European AML supervisor in July 2019—the joint paper borrows substantially from this proposal. Later in July, the European Commission candidly reported recent AML failures and hinted at further reform.

Given the impetus from the joint paper, EU member states can and probably will formalise a strong European AML supervisory mechanism before year-end, and the European Commission could make a legislative proposal in the first half of 2020

Meanwhile, senior policymakers including then-ECB President Mario Draghi, top ECB banking supervisor Andrea Enria, and European Commissioner Valdis Dombrovskis have called for a European AML supervisor.

As we argued in a *Policy Contribution* last year, an authoritative AML supervisor at the European level is a necessity if the EU is to be effective and credible in this area.

A European AML supervisor could be either a new EU agency or the EBA, more likely the former

The combined political heft of the EU's largest countries, other than the United Kingdom, now adds to this momentum with the finance ministers' joint paper. Its main thrust is to call for a *"supervisory mechanism,"* akin to the Single Supervisory Mechanism (SSM) that exists for the prudential supervision of banks, and thus *"featuring a European central supervisor cooperating with national supervisory authorities."*

That European AML supervisor could be either a new EU agency, with Article 114 of the Treaty on the Functioning of the European Union (TFEU) its presumed legal basis, or the EBA. In the latter option, however, the joint paper makes it clear that a comprehensive overhaul of the EBA's governance would be needed *"to guarantee the required level of independence"* as the paper delicately puts it—a task arguably as complex as a new institutional creation.

The political issue underlying the choice between the two options, as with any EU agency, is location. The EBA would presumably remain in Paris, while a new agency could be in any member state.

Finance ministers propose new AML supervisor have direct authority

As with the SSM, the EU supervisor would have direct authority over some financial firms and would thus not be a mere supervisor-of-supervisors on the current EBA model. The joint paper states that:

> *"Establishing a central supervisor that can supersede national supervisors and can independently conduct supervision is necessary to ensure consistent and effective European [AML] supervision. […] the European supervisor, having performed a thorough risk assessment in cooperation with the national supervisors, would concentrate its direct supervision, resources and efforts on the riskiest institutions as well as on the member states and areas where national supervision is apparently insufficient or inappropriate."*

As this text makes clear despite the convoluted syntax, the EU supervisor itself would choose which firms are supervised directly. Importantly, it would therefore not have to rely on the crippling process of achieving consensus with national authorities or on uniform criteria easily circumvented by bad actors.

On the latter point, the joint paper improves on the Dutch contribution in July, which called for *"objective criteria"* to characterise risk. Observable metrics should of course enter the assessment, but the decision on which entities to supervise should rest on the European supervisor's judgement.

The context is very different from the SSM's, where smaller banks are generally left to national supervision. A proportionality-based approach that may be apt for prudential supervision cannot apply in AML supervision, because major AML violations often happen in smaller firms that have otherwise no systemic relevance. Prudential supervisors look at the haystack, but AML supervisors have to look for the needles.

Direct supervisory authority also implies that the EU supervisor could impose administrative fines for violations of the AML framework, big enough to dissuade bad behaviour, though the joint paper does not state that explicitly. There is established precedent: the European Securities and Market Authority (ESMA) imposes fines on entities it supervises, based on the same Article 114 TFEU[1].

The joint paper also suggests further harmonisation of the AML regulatory framework in EU law. A directly applicable EU regulation would replace some legislation that currently requires transposition into national law. This step makes sense, but it should not be used to delay the establishment of the European central supervisor. Both tasks would be best addressed together.

These actions will not be a panacea. Later endeavours could include more coordination of the financial-intelligence-unit function at the EU level, and linkages between AML and EU sanctions. These must be preceded by improvements of the police, judiciary, security, and intelligence capabilities at the EU level. The establishment of a European AML supervisor will help pave the way for such future, more complex changes.

As for the UK, for as long as it stays in the single market it must be included in the EU AML supervisory mechanism. If and when it leaves the single market, a lower probability than leaving the EU, tailored arrangements will be needed. Unfortunately, the UK did not co-sign the joint paper, but one hopes it will play a constructive role in the next steps.

EU member states likely to move fast to formalise a strong European AML supervisory mechanism

Given the impetus from the joint paper, EU member states can and probably will formalise a strong European AML supervisory mechanism before year-end, and the European Commission could make a legislative proposal in the first half of 2020.

Since AML supervision is as much a security challenge for the European Union as a regulatory one, it will buttress the von-der-Leyen-led European Commission's credibility as a 'geopolitical Commission'. It may also help create momentum for further shoring up the EU financial supervisory architecture, including the reform of ESMA to

transform it into a truly independent supervisor and the completion of the banking union. The joint paper is bad news for money launderers and good news for Europe. ■

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Endnote

1. Note: one of the authors (Véron) is an independent non-executive director at DTCC Derivatives Repository plc, an entity under the direct supervision of ESMA.

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