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Embracing fintech. Mark Carney highlights the opportunities offered by innovation in finance

Christine Lagarde discusses creating a stronger economic ecosystem in the euro area

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. ■

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What reforms are still needed, and why?

In January 2018 CEPR published a Policy Insight recommending euro area reforms. Agnès Bénassy-Quéré et al identify priorities that should be at the centre of discussions on euro area architecture

In this column, the authors argue that the problems that prompted their paper are still there, new problems are on the horizon, and the current state of the policy conversation on euro area reform is disappointing. They also identify priorities that should be at the centre of discussions on reform.

In January 2018, we published a paper recommending euro area reforms to the French and German governments (Bénassy-Quéré *et al*. 2018). The motivation for the paper was the continued financial and political fragility in the euro area, notwithstanding the economic recovery and important reforms such as common banking supervision, the creation of the European Stability Mechanism and the broadening of the ECB's policy toolkit.

The financial system remains fragile because of the continued exposure of sovereigns to domestic banks, as well as banks to their national sovereigns, and limited room for manoeuvre by the ECB. Political fragility prevails because the key grievances of the crisis remain unaddressed.

Crisis countries feel that excessive austerity was imposed on them, and that the euro area does not provide a level playing field for their banks and corporations, whose access to credit is relatively expensive. Creditor countries feel that they live in a system that does not ultimately enforce the no-bailout clause of the European treaties, exposing them to large fiscal liabilities.

As a solution to these problems, we proposed a set of reforms that would both increase risk sharing and strengthen market discipline in the euro area. The key idea was that risk-sharing mechanisms, such as European deposit insurance (EDIS) and a European unemployment re-insurance, could actually strengthen discipline, provided that first losses would continue to be borne at national level, and provided insurance premia were aligned with risk.

The reason for this is that, in the presence of stronger safety nets, it becomes possible to solve severe fiscal crises through orderly debt restructuring, obviating the need for both self-defeating austerity and enormous crisis loans that might not be repaid.

We also argued for regulatory 'concentration charges' that would reduce the domestic sovereign exposures of banks, and for a reform of EU fiscal rules to ensure that they provided enough discipline in good times, while not

Leaders and ministers seem to lack the sense of urgency and the sense of purpose that would be needed in the current situation. They do not seem to appreciate the lingering fragility of the euro area, the proximity of the economic risks, and the danger of relying excessively on the ECB for addressing problems magnifying economic downturns. And we argued for better enforcement mechanisms; imposing fines on nations is rarely credible. A better approach would be to require countries that spend more than the ceiling allowed under the rules to finance the extra expenditure by issuing subordinated bonds, raising the costs of such issuance, and protecting incumbent bondholders.

What is new?

Since we wrote our paper, four things have happened that are relevant to our initial worries, the proposed solutions, and economic reform in the EU more broadly.

First, we received broad support both for the general strategy proposed in our paper and for some of the proposals, along with some criticism (Pisani-Ferry 2018). For example, IMF authors published a paper advocating a very similar approach (Berger *et al*. 2018). There seems to be consensus among policy economists on how to reform the Stability and Growth Pact, namely, to focus on expenditure ceilings set to slowly reduce the debt ratios of overindebted countries[1].

Most importantly, the Meseberg declaration by German Chancellor Angela Merkel and French President Emanuel Macron of June 2018, and a subsequent EU summit, seemed to take some of our concerns and solutions on board[2].

Fixing the euro area's banking system was recognized as a high priority, leading to a reaffirmed commitment to a backstop from the (ESM) for bank crisis resolution, as well as explicit reference to a European Deposit Insurance Scheme. Referring to a prior letter by the Eurogroup's president, political leaders also signalled openness to more flexible forms of ESM lending to countries that do not experience a full-blown crisis as well as bond clauses to allow for orderly sovereign debt restructuring and the bail-in of private creditors, without automaticity.

Second, despite these promising signals, the implementation and follow-through of euro area reform have been largely disappointing. There was an agreement on implementing the ESM backstop to the common resolution mechanism, but it may be too small, especially when faced with liquidity issues, and is subject to national vetoes. EDIS and sovereign concentration charges are still largely considered taboos in the political debate.

The very principle that a common currency area may need a fiscal component, such as a common unemployment re-insurance, continues to be rejected by some euro area members. As of April 2019, a consensus may be emerging for a small budget within the EU's regular multi-year budget, possibly in an order of magnitude of around €20 to €30 billion, earmarked for specific support for member states in the area of innovation and in the form of loans.

While such a budget may constitute a first step, it would not fulfil any euro area macroeconomic stabilisation function, nor would it be a suitable tool to support national fiscal policies in case of an economic slowdown or recession.

On other key issues there has been virtually no progress. Despite the intellectual consensus there seems to be no appetite to change common fiscal rules to make them more transparent and less intrusive, but rather to give national governments more flexibility to use national fiscal policies.

Third, the economic outlook for the euro area has darkened. The slowdown of major euro area economies, including Germany, in the second half of 2018 has led the ECB to put the normalisation of interest rates on hold. Protectionism in the US is a significant concern, both because the trade war with China undermines investor confidence and may be contributing to the cooling of the Chinese and US economies, and because of concerns about at trade war between the US and Europe.

With interest rates already near zero and government bond holdings close to the limits that the ECB had set itself in order to avoid pushing private lenders to the sidelines, the ECB's room for stopping the next recession is limited. Any new instruments may be increasingly controversial. At the same time, the EU lacks fiscal stabilisation mechanisms. Unless the next recession disproportionately hits the stronger members – those that have fiscal room to respond – the euro area will be short of instruments to contain the crisis.

Fourth, the discussion on economic policies in the EU and the euro area has recently broadened, in part in reaction to economic nationalism in China and the US. Germany's Economy Minister Peter Altmaier published a National Industrial Strategy 2030 in February 2019, which was followed by a joint *Franco-German Manifesto for a European industrial policy fit for the 21st century*.

President Macron made a new push for European reforms in early March 2019, which abstained from returning to euro area issues but contained additional proposals in the area of EU trade and public procurement policies, and argued for a revision of European competition policies.

While the new focus of these policymakers on raising productivity growth and innovation maintaining EU economic sovereignty in the face of external challenges is welcome, some of the proposals that have been floated – in particular, promoting national and European champions and weakening EU competition policies – raise major concerns (Feld *et al*. 2016, Fratzscher and Duso 2019, Pisani-Ferry 2019, Zettelmeyer 2019).

To summarise, the problems that prompted our January 2018 paper are still there, new problems are on the horizon, and the current state of the policy conversation on euro area reform is disappointing. Leaders and ministers seem to lack the sense of urgency and the sense of purpose that would be needed in the current situation. They do not seem to appreciate the lingering fragility of the euro area, the proximity of the economic risks, and the danger of relying excessively on the ECB for addressing problems that political leaders are unwilling to solve.

Priorities going forward

In light of the weakening economic cycle, the deficiencies of the euro area architecture may thus come to the fore sooner than we had expected a year ago. Four priorities on euro area reform should be at the centre of the discussion.

First, euro area leaders must finish the job started in 2012 of breaking the vicious circle between banks and national governments. This requires making EDIS a reality but also breaking another important taboo, namely the lack of meaningful regulation of bank exposures to sovereigns. This could be achieved by limiting how much domestic sovereign debt banks can hold (for example, through sovereign concentration charges).

Moreover, the creation of a safe asset for the euro area, without mutualising sovereign risk, should be explored further. This would contribute to severing the financial link between national governments and banks and reduce the costs of restructuring government debt in cases where debt is unsustainable. It could also prevent destabilising cross-border flights to safety.

Second, there should be a discussion both on the reforms of the fiscal framework for the euro area, but also about the appropriate fiscal policy amid the economic slowdown and the substantial downside risks facing Europe at the moment. The current fiscal rules have proven to be overly complex, hard to enforce, and procyclical. The EU should move towards simple public expenditure rules guided by a long-term debt reduction target.

Third, priority should be given to the creation of a proper macroeconomic stabilisation tool for the euro area. An important reason why some countries experienced crises that were far more severe than necessary over the past ten years was the lack of fiscal stabilisation. The Eurogroup had raised the possibility of introducing an unemployment insurance scheme that might fulfil such a stabilisation function – irrespective of whether or not it is labelled a 'euro area budget'.

Such a scheme could play an important role in helping countries avoid a deep recession and crisis. It can be set up without creating a 'transfer union, thus addressing concerns of Germany and other northern European countries. The objective now should be to better explain the economic benefits of such a stabilisation mechanism.

Fourth, the EU should focus on completing the Single Market, including through Banking Union and Capital Market Union, and an integrated research and investment strategy (in particular, to fight climate change). The reforms of the euro area emphasised in our previous work make a contribution towards this objective. A particularly important dimension is the integration of the banking market.

Beyond technicalities, euro area countries share a common interest in having banks that diversify risk rather than concentrating it along national lines. The tendency towards within-country concentration of the banking market is not a sound development.

The push by the French president and other EU politicians to strengthen other economic dimensions of the European Union in the areas of climate change, external security, competition, trade, and industrial policy is important and timely. However, these initiatives should not undermine European competition policy.

These priorities, which concern the euro area as a whole, are a vital complement to reform efforts aiming at enhancing productivity, growth and fiscal consolidation at national level. Without stronger efforts both at the euro area and the EU level, Europe will not prosper. ■

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Endnotes

1. Changes in tax revenue would not affect the expenditure ceiling unless they are the result of tax policy (eg. via a tax cut). A collapse in revenue in a downturn would hence be fully absorbed by an increase in the fiscal deficit. Conversely, during a boom, expenditures would remain constrained by the ceiling, leading to high fiscal surpluses. As a result, automatic stabilisers would be more effective than they are today (Beetsma et al. 2018, Feld et al. 2018, Darvas et al. 2018).

2. See https://www.elysee.fr/emmanuel-macron/2018/06/19/meseberg-declaration-renewing-europes-promises-of-security-and-prosperity.en, as well the EU Commission roadmap for EMU reform at https://ec.europa.eu/commission/sites/beta-political/files/euco-emu-booklet-june2018_en.pdf

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The euro area: creating a stronger economic ecosystem

Europe has been slow to produce a fully developed financial ecosystem. Christine Lagarde argues that the time is ripe for the euro area to show new resolve and complete the banking and capital markets unions

As we celebrate the 20th anniversary of the euro—and as we think about the next 20 years—it is fitting that we should honor the courage, creativity, and perseverance of those who inspired this unique European project. That spirit reminds me of a story that was once told by a great friend of Europe—President John F Kennedy. Addressing students at UC Berkeley in 1962, he said the following:

> *"The great French Marshall Lyautey once asked his gardener to plant a tree. The gardener objected that the tree was slow growing and would not reach maturity for 100 years. The Marshall replied, 'In that case, there is no time to lose; plant it this afternoon!"* [1]

Twenty years ago, European countries did not just plant one tree, they planted an entire forest—creating a new economic ecosystem known as the euro area. The fundamental strength of that system lies in its interconnectedness and diversity—a combination that can help Europe to fully unlock its immense economic potential.

With its 19 member countries, the currency union represents the world's second-largest economy[2]. The euro is the world's second-most traded currency, making it an important reserve asset for other countries' central banks and financial institutions.

Above all, the single currency has played a central role in boosting European integration, which in turn has raised living standards across the continent. Real GDP per person in the euro area has increased by more than 60 percent over the past two decades.

It is not surprising, therefore, to see strong public support for the single currency. Three in five euro area residents say that the euro is good for their country, and three-quarters say that the euro is good for the European Union[3].

And yet, this is still a relatively young and incomplete ecosystem. It braved a massive storm during the global financial crisis, and another a short while later in the euro area sovereign debt crisis. These events left painful economic scars on many households and companies, sowing the seeds of economic disparity across member countries and within.

Today, one in four young people in the euro area is at risk of being in poverty, casting a dark shadow over the continent's next generation[4]. A related challenge is the rise of populist movements in several countries, calling into question the very idea of European integration.

The relative success of the Single Market in goods and services in increasing economic integration serves as a reminder of the failure to achieve a similar degree of financial integration

Like any ecosystem, Europe continues to face good times and bad. After a formidable run of relatively strong growth over the last few years, economic activity in the euro area is now once again slowing, and risks are rising.

In many ways the weaker economic outlook raises an important question: is the euro area better prepared for unexpected economic storms? The short answer is yes, the currency union is more resilient than ten years ago. But it is not resilient enough. Its banking system is safer, but not safe enough. Its economic well-being is greater overall, but the benefits of growth are not shared enough.

In other words, now is the time to strengthen this unique economic ecosystem. How? By improving financial interconnectedness in a way that truly serves all Europeans.

The current state of the financial system

The relative success of the Single Market in goods and services in increasing economic integration serves as a reminder of the failure to achieve a similar degree of financial integration.

There once was a vision that monetary union would serve as the foundation of a financial union—that just as there is a Single Market in goods and services, there would eventually be a single market in banking and non-bank finance as well.

We all recognize that finance is the lifeblood of commerce. At its best, it waters the seeds of innovation and facilitates the churning that every healthy ecosystem needs. At its worst, it becomes a deluge that sweeps away all that stands in its path—we saw this during the global financial crisis. And somewhere in the middle, finance can simply be an underdeveloped irrigation system, delivering some nutrients but not enough, something that prevents the green shoots of growth from reaching their full potential.

I would put Europe's financial system in this middle category. Unfortunately, political priorities seem to have moved to other areas. I, for one, do not view this as acceptable. With the economic slowdown on everyone's minds, let me say this clearly: now is the time to give euro area finance another big push.

So I will focus on the areas of financial integration where making progress is critical: the Banking Union and the Capital Markets Union.

Pushing forward on banking union

Let me start with the banking union. Before the crisis, financial integration in the euro area saw plenty of cross-border lending, especially between banks. But it was also a time of national supervision and neglect of proper underwriting standards, especially if the risks were far from home. Inevitably, what followed were sharp rises in asset prices in some countries, creating housing bubbles and fiscal bubbles. We know how that ended.

When the global financial crisis hit, the large so-called 'core' banks abruptly pulled their liquidity back to the perceived safety of home, precipitating credit crunches where once they had fueled credit booms. Asset prices collapsed. This retrenchment was an important contributor to the emergence of the euro area debt crisis just a few years later. Today, cross-border lending between banks in the euro area is back at 2005 levels.

So, should we be worried? Yes. Firms in some euro area countries pay more than twice as much for credit than comparable firms in other euro area countries. There is a similar situation for households. And this dispersion in borrowing costs has increased since 2009. It is the cost of fragmentation in finance.

Now, it is not that nothing has been done to address the problem. Far from it. In the midst of the crisis, policymakers recognized that the institutional architecture—the plumbing system—had not held up to the storms. They realized that, to be strong and to thrive, a monetary union needs a banking union, one where risk-taking is subject to proper checks and balances.

Astounding progress was made in a very short amount of time. The creation of a single supervisor for banks, higher capital buffers inside banks, the introduction of a new framework for handling bank failures and crises. These new tools became critical elements of a new system of checks and balances.

The good news for taxpayers is that, as a result, they are now less likely to be on the hook for massive bank bailouts than a decade ago. But that is not the whole story. Not only is 'home bias' still pervasive in European banking, as banks choose to lend and invest domestically, but banks are facing new challenges from new angles.

Higher capital at banks has meant lower returns on equity, implying a need to pursue leaner and more efficient business models. New entrants such as fintech firms mean new sources of competition, bringing new pressures on bank profitability and, if not carefully managed, new incentives to ease lending standards.

In sum, we need a European banking system that can bend in a storm without breaking, we need a banking system that will truly diversify risks across the ecosystem and irrigate growth. It is clear what is left to be done: establish common deposit insurance. We can find ways to resolve our legitimate national concerns and plant that vital shade-tree.

I want to emphasize that this system will be funded by banks, not taxpayers. To get this done, member countries will need to agree on a mutually acceptable balance between risk-sharing and risk-reduction—between trust and accountability. This will not be easy.

I urge euro area leaders to reignite the discussion, to negotiate in good faith and make the difficult compromises, to unlock the full potential of the banking union.

Unlocking the potential of capital markets

In parallel, we have to pursue the essential complement to the banking union: a thriving and integrated single European capital market. Just as a forest ecosystem is made more resilient by greater diversity, so Europe's financial system would be more resilient with more diversified sources of financing.

Let me give you just one data point: in the United States, the corporate bond market accounts for more than two-fifths of GDP, compared with only one-tenth in the euro area. Former Federal Reserve Chairman Alan Greenspan once referred to capital markets as the 'spare tire' of the financial system[5].

European finance also needs a spare tire. This is why Europe has chosen to chart a course to capital markets union. This major endeavour, like the banking union, is ultimately about broadening the range of domestic and cross-border financing options for firms and households. Why should people care?

Currently, euro area households store 40 percent of their financial assets as bank deposits. This leaves them very exposed to the banking sector. As long as this is the case, Europe will be overly reliant on banks for savings instruments and investment financing. Not only would an integrated capital market across the EU help companies and households reduce their reliance on banks, it would also make the ecosystem more resilient to shocks.

It would help achieve a more uniform cost of funding for firms across countries. Think of similar firms in Italy and Austria, just across the border from each other. Why should they face sharply different costs of financing when they are just a few kilometers apart?

It would also help boost people's returns on savings and help buffer domestic shocks to their incomes, as they include other countries' stocks and bonds in their portfolios. Think of Italian savers having an easier ability to invest in something besides Italian banks. Think of German savers desperate to earn something more than zero on their bank deposits. There is a long way to go.

So, how should policymakers unlock the full potential of the capital markets? While a number of reforms are needed to achieve more integrated European capital markets, let me highlight three key areas. First, transparency of information. Capital markets are all about arms-length transactions. You buy debt or equity claims on someone you've never met. Here, you rely on public information, information you can trust. The beating heart is transparency. Information on firms and financial instruments needs to be widely available, at low cost, based on strong audits, and presented in readily comparable ways.

A good example is the recently developed standard for securitization, which will give preferential regulatory treatment to simple, transparent, and standardized (STS) instruments. After a transition period, only these standardized securitizations will be eligible as ECB collateral. Securitization developed a bad reputation during the global financial crisis, but if properly done it can be used to broaden the investor base and increase funding options for small businesses.

Investors would also greatly benefit from more efficient insolvency regimes. This is my second key area. The faster and smoother the insolvency process can play out, the better. This would help free up capital that could be invested more productively elsewhere. Of course, the need for reform varies widely across Europe and insolvency procedures are deeply rooted in national traditions. Resolving a corporate insolvency in Greece takes about nine times longer than in Ireland, for example.

So yes, these reforms tend to be politically difficult and take time, but they are worth doing. The same is true when it comes to my final area—taxation of cross-border investments. One reason financial investors may be discouraged from venturing far from home is the different rules and procedures each country has on withholding taxes.

Ideally, investments in other euro area countries would be treated in the same way as domestic investments. At the very least, withholding tax rules should be simplified and harmonized to encourage greater diversification in financial portfolios.

The bottom line is that planting new trees in the capital markets could help promote a Single Market in finance and transform Europe into a more vibrant and more robust economy. It is time to replicate in finance what has been achieved in creating the Single Market for goods and services—a project that has raised GDP in the EU by an estimated 9 percent[6].

Is this overly ambitious? A fully integrated EU financial market, really? Time will tell—but my money is on Europe's courage, creativity, and perseverance.

Conclusion

Let me conclude with a quote from Molière, who once said: *"The trees that are slow to grow bear the best fruit."*[7] Some can rightfully argue that Europe has been slow to produce a fully developed financial ecosystem. Going on 20 years, the time is ripe for the euro area to show new resolve and complete the banking and capital markets unions—so it can harvest the benefits now and in the future. ■

Christine Lagarde is the IMF Managing Director

Endnotes

1. John F Kennedy's address at the University of California at Berkeley, March 23, 1962

2. When measured by market-exchange rates.

3. Eurobarometer survey, November 2018.

4. IMF Staff Discussion Note (2019): "Inequality and Poverty across Generations in the European Union."

5. Alan Greenspan (1999): "Do efficient financial markets mitigate financial crises?", Remarks at the 1999 Financial Markets Conference of the Federal Reserve Bank of Atlanta, Sea Island, Georgia.

6. Veld, J (2019), "Quantifying the Economic Effects of the Single Market in a Structural Macromodel", European Economy Discussion Paper, No 094, European Commission.

7. Molière, Le Malade Imaginaire, Acte II, Scène V, "Les arbres tardifs sont ceux qui portent les meilleurs fruits."

This article is based on a speech delivered at the 34th SUERF Colloquium and Banque de France Symposium, Banque de France Conference Centre, Paris, March 28, 2019

Reforming the global reserve system

The IMF will turn 75 next year. José Antonio Ocampo believes updating and reforming some aspects of its core functions should be considered

This column analyses the IMF's global reserve system, identifying three issues and suggesting two alternatives. Ultimately, greater use of the Fund's Special Drawing Rights would mitigate several problems in the current system. The 75th anniversary of the Bretton Woods agreement is a good time to rethink the role the institutions created at the time should play in today's world. In the case of the IMF, there are four central issues to consider:

- the global reserve system (the way international liquidity is provided);
- managing the macroeconomic linkages among different economies, including the exchange rate system;
- balance-of-payments crisis prevention and resolution, including in the first case rules for capital account management; and
- improving governance of the international monetary system, to develop a more inclusive system and appropriate links between the IMF and regional and interregional monetary arrangements (ie. the design of the Global Financial Safety Net).

Reforms efforts in all of these areas should take into account the asymmetries that characterise the global economy, and particularly the vulnerabilities that emerging and developing countries (hereafter just 'developing countries') face. In this column, I look at the first of these issues. The broader agenda has been discussed by Eichengreen (2008), Kenen (2001), Williamson (2007, 2010), among others, and in my recent book (Ocampo 2017), from which this column borrows.

As we know, the original Bretton Woods monetary system collapsed in the early 1970s when the US unilaterally abandoned the dual gold-US dollar (hereafter just 'dollar') standard, the major developed countries failed to adopt a new stable system of exchange rate parities, and IMF members were unable to agree on a new international monetary system in the Committee of Twenty negotiations that took place in 1972–74 (Williamson 1977).

The system that evolved, in an ad-hoc manner (as a 'non-system', to use the terminology of the 1970s), had a global reserve system essentially based on an inconvertible (fiduciary) dollar but open in principle to competition from other reserve currencies, and the freedom for each country to choose the exchange rate regime they chose, as long as they avoided 'manipulating' their exchange rates – a term that has never been clearly defined.

The most ambitious reform in this area would be to finance all IMF lending with SDRs, thus making global monetary creation similar to how central banks create domestic money

The basic deficiencies of this system have been identified in a sequential way in the global policy debate. The first, underscored by Keynes (1942-43), is the *asymmetric adjustment problem* – the strong pressure that deficit countries face to reduce their payment imbalances versus the weak pressure that surplus countries experience to do so. This generates a global recessionary effect during crises.

The second problem is associated with the use of a national currency as the major *international* currency. This is widely known as the *Triffin dilemma* (Triffin 1961, 1968). The essential problem, according to his original formulation, is that the provision of international liquidity requires that the country supplying the reserve currency run balance-of-payments deficits, a fact that could eventually erode the confidence in that currency.

Additional implications of the current dependence on the fiduciary dollar is that the stability of the system may be inconsistent with the monetary policy objectives of the major reserve-issuing country (Padoa-Schioppa 2011), and that the currency at the centre of the system has an unstable value.

The third flaw is the inequity bias generated by the need of developing countries to 'self-insure' against the volatility in external financing through the accumulation of foreign exchange reserves. This generates an inequity because reserves are invested in safe industrial countries' assets – ie. they are nothing else than lending to rich countries at low interest rates. Furthermore, it contributes to the generation of global imbalances.

There are two alternative ways to reform this system. The first and, in a sense, inertial solution is to let the system evolve into what it potentially could be, namely, a multicurrency arrangement. The basic advantage of this route is that it allows reserve holders to diversify the composition of their foreign exchange reserve assets, and thus to counteract the instability that characterises all individual currencies.

However, diversification has been limited in practice, as the 'network externalities' have continued to favour the use of the dollar as the major international currency, largely as a result of the fact that there is no alternative to the market for US Treasury securities in terms of liquidity and depth (Prasad 2014). Furthermore, aside from diversification, a multicurrency arrangement would not address any of the other deficiencies of the system.

This arrangement can be improved by introducing elements that enhance the capacity of exchange rates to contribute to correcting global imbalances and to provide a reasonable level of stability. The best suggestion in this regard would be a system of reference rates among major currencies, which was initially suggested by Ethier and Bloomfield (1975) and later on by Williamson (2007), among others.

This implies that currencies, and particularly major currencies, would be subject to some form of managed floating around multilaterally agreed parities or bands. Interventions in foreign exchange markets and other macroeconomic policies would reinforce depreciation if the currency is perceived to be overvalued and appreciation if it is undervalued. Such an intervention rule would provide an implicit definition of what 'manipulating' the exchange rate means – ie. encouraging exchange rate movements in the opposite direction to the agreed rate or band.

The second reform route would be to enhance the role of the only truly global reserve asset that the world has created, the Special Drawing Rights (SDRs), at least partially approaching the aspirations that were included in the reform of the IMF Articles of Agreement in 1969 of *"making the special drawing right the principle reserve asset in the international monetary system"* (Article VIII, Section 7, and Article XXII).

A more active use of this instrument should preferably make SDR allocations in a counter-cyclical way (Camdessus 2000, Ocampo 2017: Chapter 2). This was the criterion followed in the last and largest issue in history, that of 2009, by the equivalent of 250 billion dollars. The amounts issued through time should, of course, be proportional to the global demand for reserves.

Most estimates indicate that average allocations for the equivalent of $200-300 billion a year would be reasonable, but even this size of allocation would only marginally increase the share of SDRs in non-gold reserves. This indicates that SDRs would still largely complement other reserve assets. This is why this alternative would be complementary with a multicurrency standard.

A more active use of SDRs would mitigate several problems in the current system. First, the seignorage would accrue to all IMF members. Second, by issuing SDRs in a counter-cyclical way, it can contribute to reducing the recessionary bias associated with the asymmetric adjustment problem. Third, SDR allocations could reduce the need for precautionary reserve accumulation by developing countries.

The most ambitious reform in this area would be to finance *all* IMF lending with SDRs, thus making global monetary creation similar to how central banks create domestic money. This would involve counter-cyclical *allocations* of SDRs that help fund counter-cyclical IMF *financing*. This would follow the proposals made by the IMF economist Jacques Polak (1979) of making the IMF a fully SDR-based institution.

The simplest alternative would be to treat the SDRs not used by countries as deposits in (or lending to) the IMF that could then be used by the institution to lend to countries in need (Ocampo 2017: Chapters 2 and 7). This would require eliminating the division in the IMF between what 'general resources' and the SDR accounts (Polak 2005, Part II).

Following the discussions of the 1960s, there are also ways of including a 'development link' in SDR allocations, which would take into account the fact that developing countries have to accumulate reserves as 'self-insurance'. Williamson (2010) has proposed allocating a certain proportion to developing countries (around 80%), and then assigning the shares in the allocation among individual developing and high-income countries according to IMF quotas.

Many authors have also suggested that there could also be a broader use of SDRs in international capital markets (Cooper 2010, Eichengreen 2007). But, as the IMF has recently underscored, the market SDRs are less important than the more active use of them as reserve assets (IMF 2018).

For these reasons, it may be better again to think of a mixed system in which national or regional currencies continue to play the major role in private transactions, and the SDRs continue to perform the functions of reserve asset and medium of exchange in transactions among central banks. A mixed system would be politically more acceptable for the issuers of reserve currencies, particularly to the US.

Under a system that mixes SDRs with a multicurrency arrangement, a substitution account should be created, allowing central banks to exchange for SDRs other reserve assets they do not want to hold. This alternative was suggested by Bergsten (2007) before the 2008-09 global crisis, going back to proposals that have been made since the 1970s.

This instrument could also be seen as a transition mechanism of an ambitious reform effort (Kenen 2010). The essential issue is how to distribute the potential costs of this mechanism, the problem that blocked its adoption three decades ago.

The use of SDRs to finance IMF programmes would also help consolidate the reforms of the credit lines that have been introduced during the recent global crisis, particularly the creation of contingency credit lines (especially the Flexible Credit Line), including the Short-term Liquidity Swap recently proposed by the IMF (IMF 2017).

It would also eliminate the need for the IMF to get financing from its members in the form of 'arrangements to borrow' or bilateral credit lines. In fact, it would equally eliminate the need to make additional quota increases – though quotas would still have to be agreed to determine the size of access to IMF facilities as well as voting rights. ■

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The euro – a tale of 20 years

The financial crisis has laid bare the weaknesses. Marco Buti, Maya Jollès, and Matteo Salto consider the priorities going forward to complete the EMU

The launch of the Economic and Monetary Union in 1999 was a considerable challenge and a historic milestone. The first decade of its existence firmly established the euro as a credible construction. As this column describes, however, from 2008 onwards the economic and financial crisis in Europe laid bare the weaknesses of its initial construct. Some assumptions behind the EMU institutional setting had to be reconsidered and, in the following years, considerable efforts were made to strengthen the EMU. To complete the job, we need to rebuild trust and overcome the creditors/debtors divide.

Coming of age: EMU@20

Flashback to January 1999. On 2 May 1998, European leaders agree to start the third and ultimate stage of the Economic and Monetary Union (EMU) on 1 January 1999. As of 1999, the exchange rates towards the common currency are fixed and the ECB becomes responsible for the monetary policy of a currency union made up of eleven countries and 293 million people. Three years later, the first euro coins and banknotes enter in circulation. The culmination of decades of European economic integration, the euro represents a historic milestone and much more than a monetary reform.

Fast-forward to January 2019. Nineteen countries belong to the euro area with a total population of 340 million. The euro has become the second currency used in world markets under any metric.

In spite of the existential crisis in 2011-13, membership to the euro area has continued to grow. In its short life span, the euro has become an anchor of economic and financial integration. In late 2018, the Eurobarometer survey (Eurobarometer 2018) showed that around two-thirds (64%) of euro area citizens think that having the euro is a good thing for their country and about three quarters (74%) think that having the euro is a good thing for the EU, the highest level since the question was first asked in 2004. At the same time, more than two-thirds (69%) in the euro area also think that there should be more economic policy coordination.

The 20th anniversary provides a good occasion to reflect on what the EMU has achieved and what remains to be done. This requires first recalling the initial objectives set for the euro and how these have changed over time, notably due to the weaknesses which came to the fore throughout the recent crisis. This also puts into question the policy taken during the crisis and the priorities going forward.

The Maastricht assignment

The original motivations for creating a common currency in Europe were both economic and political in nature. These are rooted in the collapse of the Bretton Woods world in the 1970s. From an economic standpoint, the common currency was considered a necessary complement to the Single Market that would remove exchange rate risks and conversion costs. As early as June 1982, Tommaso Padoa-Schioppa identified an 'impossible quartet': free capital movements, free trade, and exchange rate stability are jointly incompatible with independent national monetary policies.

While important reforms were undertaken during the European sovereign-debt crisis, this does not mean that the job is completed. The deepening of the euro area is an unfinished business

The *Delors Report* (Delors 1989) laid down the operational ground to build the Economic and Monetary Union and realise Tommaso Padoa-Schioppa's vision. Shortly after, the *One Market, One Money* study commissioned by the European Commission evaluated the benefits and costs of forming an economic and monetary union (European Commission 1990). These economic arguments were soon reinforced by political imperatives: the reunified Germany had to be firmly anchored in the EU (Buti *et al*. 2010).

The EMU institutional setting was based on a 'strong' version of the policymaking consensus that prevailed in the 1980s (Buti and Sapir 1998) and considered macroeconomic stability as the overarching goal. A centralised and independent monetary policy would credibly bring down inflation (Barro and Gordon 1983, Rogoff 1985) and keep output close to potential. In order to avoid 'fiscal dominance' and possible government bailout (Sargent and Wallace 1981), excessive government deficits and monetary financing of government deficit would have to be banned.

Moreover, in line with the tax smoothing theory (Barro 1979), tax rates would be held constant over the business cycle. Hence, fiscal policy was to be limited to automatic stabilisation during normal cycles. Financial markets were expected to allocate resources efficiently within and across member states.

Finally, the EU competencies in competition and trade policies, as well as the progress in the internal market (European Commission 1988) would suffice to increase market efficiency gains, notably through increased competition. These were expected to spread across the economies while trade integration was set to make the euro area eventually satisfy the optimum currency area (OCA) criteria endogenously (Frankel and Rose 1998).

These principles were enshrined the Maastricht Treaty, which notably set the convergence criteria required for member states to join the common currency. These criteria focus on price stability, government budget deficits, government debt-to-GDP ratios, exchange rate stability and long-term interest rates. While the convergence criteria ensured euro area member states would nominally converge prior to adopting the euro, the Stability and Growth Pact, adopted in 1997, aims at maintaining and enforcing fiscal discipline in the EMU over time.

The independence of the European system of central banks (the ECB and the national central banks of member states) and its focus on the primary objective of price stability aimed to achieve macroeconomic stability. Finally, competition policy, with its unicum of state aid policy, was meant to ensure efficiency and, together with macroeconomic stability, economic convergence.

The euro area throughout the crisis: weaknesses of EMU's architecture come to the fore

During its first ten years, the euro area grew on average at par with the US in terms of GDP per capita and the ECB quickly gained credibility and was able to bring inflation in line with its target of 'below but close to 2%'. At the same time, structural reforms stalled and the benefits of lower interest rates and easier access to credit – both in the public and private sector – gave rise to an 'anaesthetic effect', slowing down reform efforts and fiscal consolidation in peripheral countries (for more details, see Buti 2018).

The financial crisis which started in the summer 2007 stands as the first major test case for the euro area. The crisis, at least in Europe, was triggered by a conjunction of factors and unfolded through many channels: current-account imbalances, sometimes related to productivity developments, banking sector shocks and their relation with sovereign debt. It was thus a strong catalyst to test the solidity of the Maastricht institutions and revisit the validity of the underlying assumptions. The financial crisis brought to the surface the weaknesses of the initial EMU architecture and the policy divergences of the first ten years of the euro.

First, in the absence of exchange-rate risks, investors did not take into account country-specific risks both in the banking and in the government sector. Second, economies in the periphery (like Ireland, Portugal, Spain, or Greece) were expected to rapidly converge with core euro area countries thanks to capital and credit inflows (Baldwin and Giavazzi 2015), as counterparts of sustained current account deficits.

However, part of those inflows went into government sovereigns and in non-tradeable sectors (Figure 1), driving prices up, eventually resulting in an appreciation of their real exchange rates (Buti and Turrini 2015). While at the euro area level, the current account was broadly in balance, divergences between creditors and debtors aggravated.

In relative terms, the periphery became more intensive in non-tradeable while core countries gained competitiveness. The resulting changes in industrial structure resulted in agglomeration effects and, over time, contributed to diverging social and political preferences.

During the crisis, the negative effects of capital misallocation and excessive debt levels built over the preceding years came to the fore with the sudden stops of capital flows towards the periphery. These countries corrected their external accounts, but the adjustment was asymmetric as surplus countries did not boost domestic demand.

As a result, the current account rebalancing proved considerably more painful in terms of output losses. The collapse in flows among banks gave rise to a sovereign problem, while, in the opposite direction, tensions on the sovereign weighed on banks' balance sheets. The sovereign-bank 'doom loop' amplified financial distress and was responsible for deepening the recession, notably through worsened lending conditions in the economy.

Upon sudden stops, the only institution that had the mandate and the means to intervene – namely, the ECB – did take action and inter-banking short-term flows were replaced by central bank lending (Figure 2). This provided the space for EMU governments to create the institutions necessary to deal with members faced with extreme difficulties.

Figure 1. Imbalances and resource allocation. a) Increasing imbalances

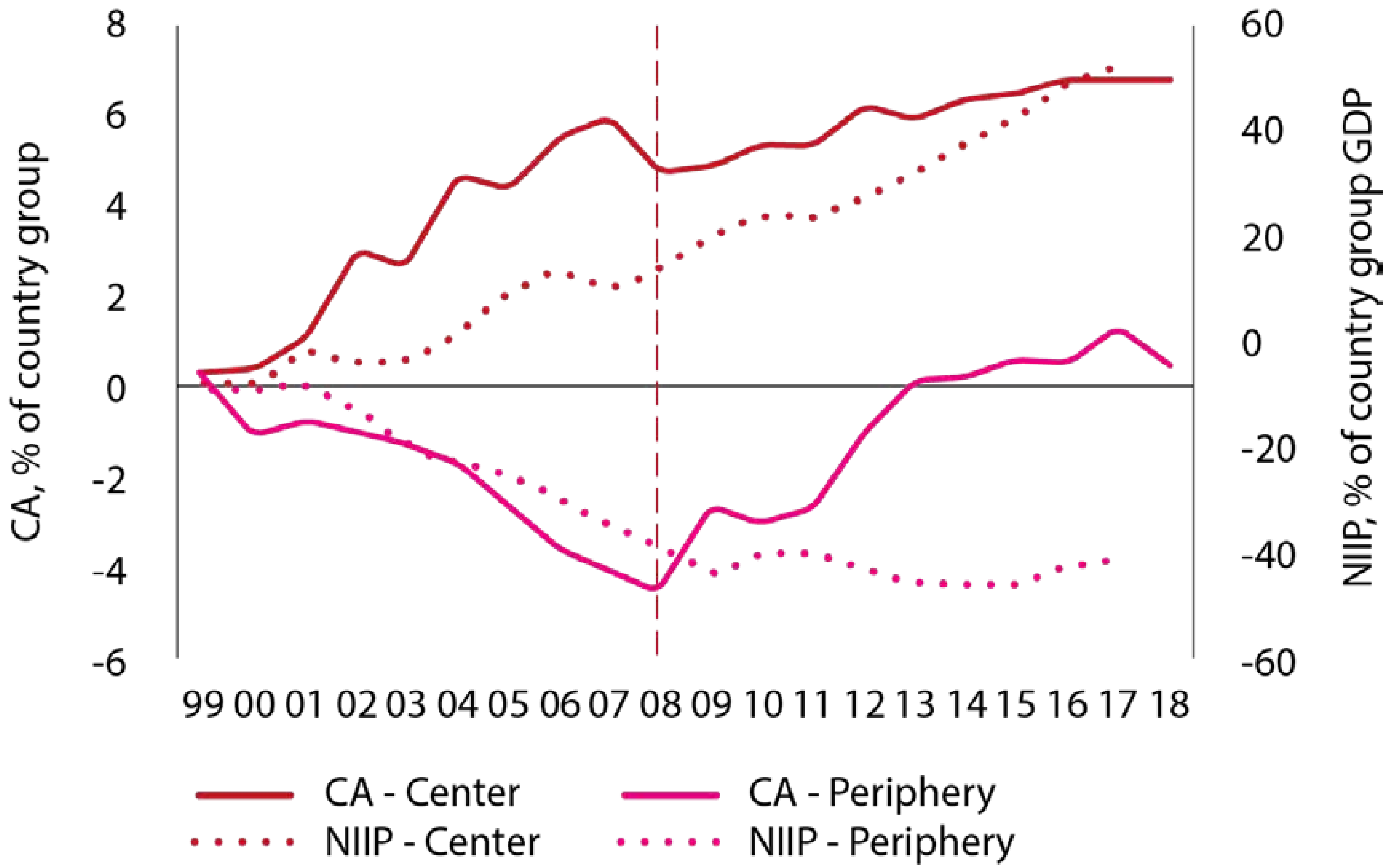
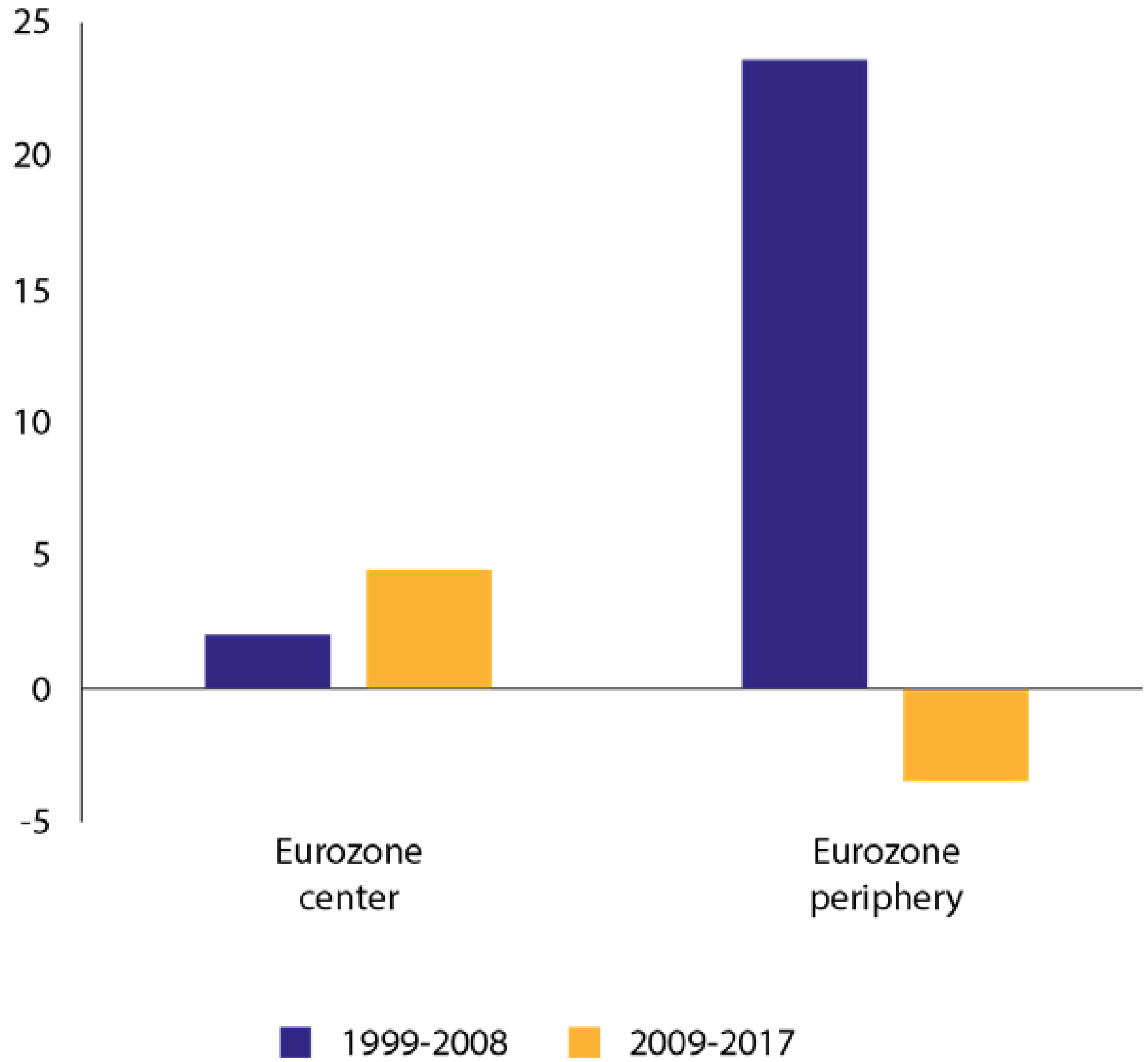
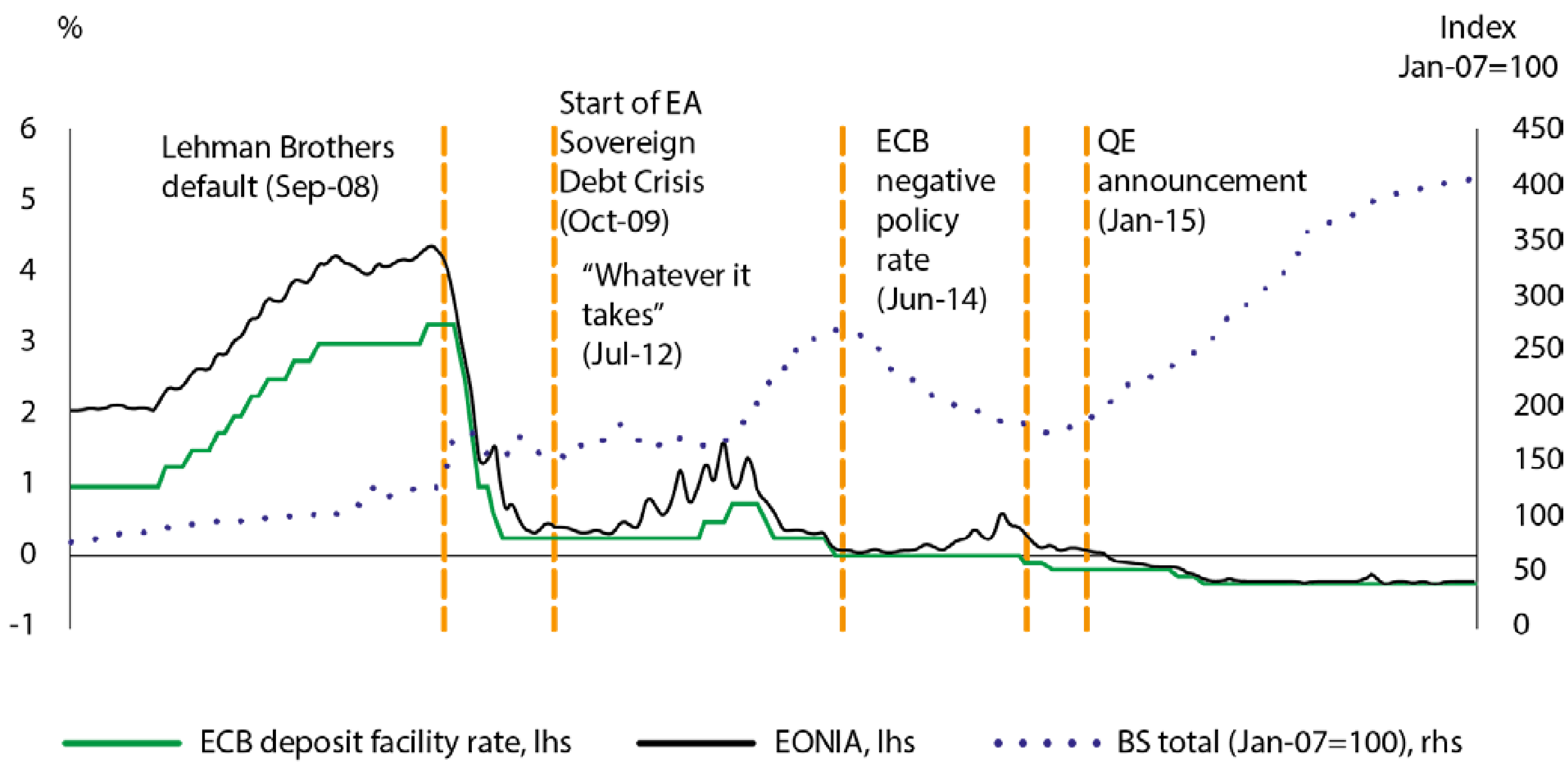


Figure 1. Imbalances and resource allocation. b) Cumulative growth rate of non-tradeable/tradeable value added



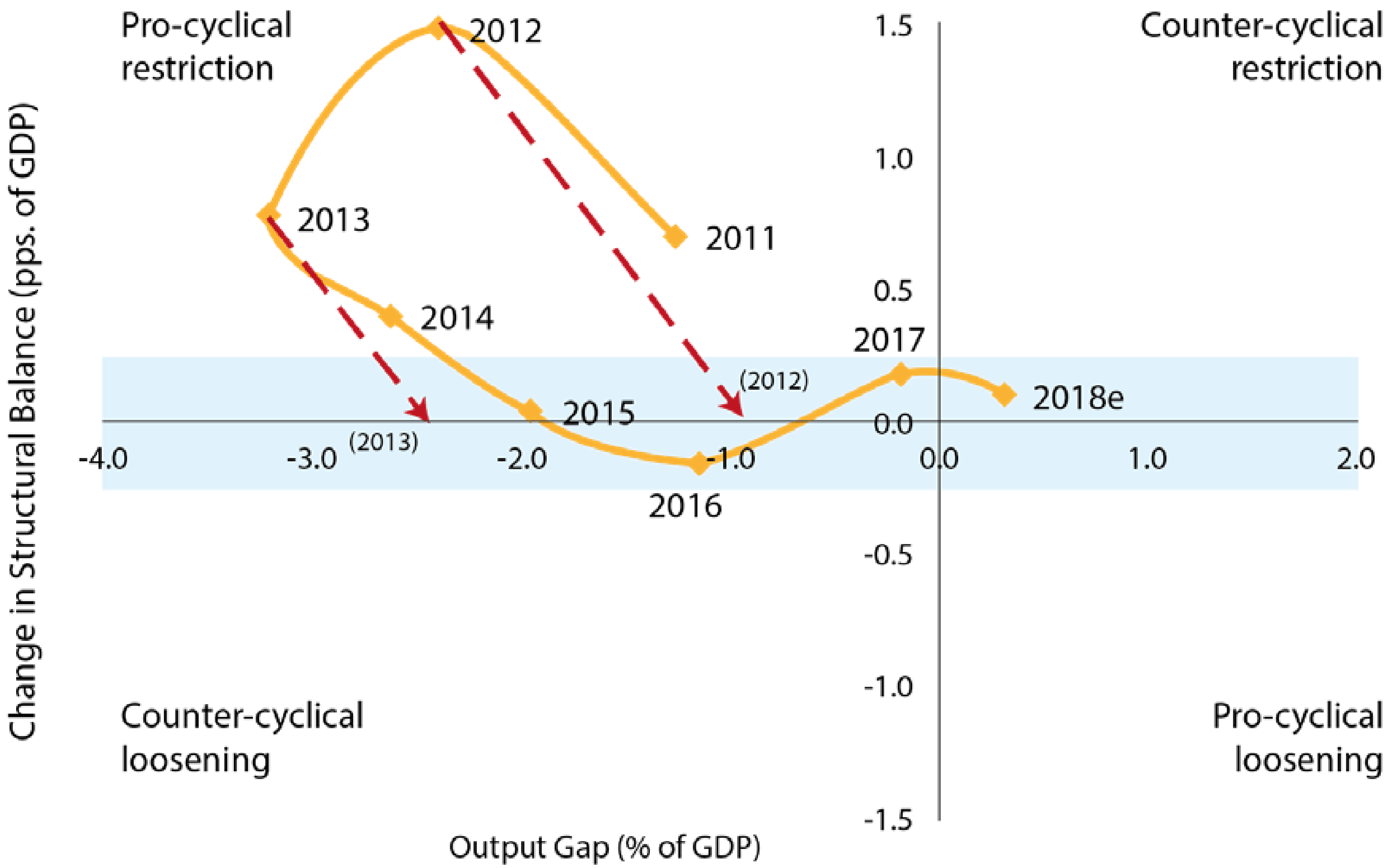
Notes: Centre includes Austria, Belgium, Finland, Germany, Luxembourg and the Netherlands. The periphery includes Cyprus, Estonia, Greece, France, Ireland, Italy, Latvia, Lithuania, Malta, Portugal, Slovakia, Slovenia, and Spain. Centre and periphery euro area countries grouped according to their external position. Updated from Buti and Turrini (2012).
Source: Commission calculations based on AMECO

Figure 2. ECB policy and euro overnight rates, Eurosystem Balance Sheet size



Source: Macrobond, ECB

Figure 3. Fiscal stance over the economic cycle, euro area, 2011-2018



Note: This is computed with a multiplier equal to 1, with monetary policy at zero lower bound, large underutilized capacity and high private debt.
Source: Commission calculations based on Autumn 2018 Commission forecast

However, the absence of a lender of last resort in the EMU construction made it impossible to prevent the geographically contained sovereign crisis to morph into a general crisis of the euro area. It was only in July 2012, when monetary policy transmission was completely impaired by the sovereign crisis, that, in order to restore market confidence, ECB President Mario Draghi announced: *"Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough."*

The pre-conditions for such a statement were laid out in the European Council conclusions of June 2012, in which leaders committed *"to do what is necessary to ensure the financial stability of the euro area"* and agreed to set up the Banking Union with the ultimate objective of tackling the negative loop between sovereign and bank risks.

Whilst the financial crisis was not fiscal in origin (apart from Greece), the lost opportunity of reducing public debt in the first ten years of EMU and the lack of central fiscal stabilisation contributed to aggravate the slump.

After the initial coordinated fiscal expansion in 2008, the lack of fiscal buffers at national level meant that, in many countries, fiscal policy was no longer available to respond effectively to the demand shortfall.

As a result, the aggregate euro area fiscal adjustment became pro-cyclical from 2011 to 2014 (Figure 3). In such a context, a common stabilisation fiscal instrument for the currency union could have played an important role.

Indeed, the presence of a euro area fiscal capacity allowing to fully compensate for the contractionary policy made by member states in 2012 and 2013 (represented by the red dashed lines in Figure 3) would have sensibly reduced the output gap during the crisis leading to almost reach the output gap levels of 2016 three years in advance.

Reforms during the crisis, but job still not completed

Because of shortcomings in the construction of the EMU, countries in the euro area entered the financial crisis with too high government debt and excessive bank leverage, and without the institutions or mechanisms to manage shocks. Since then, reforms have aimed at preventing the repetition of this crisis and have led to overhauling the toolbox of EMU (European Commission 2017a).

Efforts have notably been made to detect and correct macroeconomic imbalances, to better coordinate economic and fiscal policies and to provide financial assistance to member states in financial difficulties through the European Stability Mechanism.

One of the salient actions was to initiate a Banking Union in 2012. The Single Supervisory Mechanism became responsible for supervision of banks throughout the euro area.

The Single Resolution Mechanism was set to sever the links between bank and sovereign stress by unifying the bank resolution and restructuring frameworks across countries and providing a common, industry-funded backstop. These two pillars of the Banking Union rest on the foundation of the single rulebook, which applies to all EU countries. The completion of the Banking Union requires a credible backstop and a common deposit guarantee (European Commission 2017c).

Progress towards private risk-sharing requires the completion of the Banking Union, overcoming the remaining fragmentation, and the advancement in the Capital Markets Union. The latter will allow the excess savings in some euro area members to be recycled via equity rather than via debt, which will considerably reduce the risks we witnessed in the pre-crisis period. In the medium term, a genuine euro area safe asset will also need to be considered (Buti *et al*. 2017).

On the fiscal side, more reforms to improve the stabilisation capacity of the euro area economies are needed (Buti and Carnot 2018). A central investment scheme could provide enough liquidity to compensate the effort made by the euro area members. To help monetary policy, some insurance mechanism would be necessary to manage the impact of large shocks and ensure that euro area member states are not constrained to carry out pro-cyclical fiscal policies in a downturn. (European Commission 2017a).

The first concrete proposal for a euro area fiscal capacity in the context of a multi-annual financial framework (2021-2027) came in May 2017 (European Commission 2017b).

Conclusion

Europe's currency union is still in its teenage years. The foundations of the EMU were laid down in the Treaty of Maastricht in 1992 and, in 2019, the euro celebrates its 20th year of existence.

While important reforms were undertaken during the European sovereign-debt crisis, this does not mean that the job is completed. The deepening of the euro area is an unfinished business. Two Euro summits took place in 2018 (in June and then in December).

Leaders have endorsed the terms of reference for the common backstop to the Single Resolution Fund and the term sheet on the reform of the European Stability Mechanism. They have agreed on next steps to pursue the work on a European deposit insurance scheme.

They also mandated the Eurogroup to work on the design, modalities of implementation, and timing of a budgetary instrument for convergence and competitiveness for the euro area going forward. While such reforms are important steps, a unified approach on EMU's 'final equilibrium' is still missing.

To bridge competing visions on the way forward, mutual trust has to be rebuilt. In order to move to a genuine EMU, we need to restore the veil of ignorance (Rawls 1999) under the consideration that the creditors (and debtors) of today are not necessarily the creditors (and debtors) of tomorrow.

This will require policy authorities to develop a vision of the common interest and a low discount rate in the decision-making. The upcoming campaign for the European Parliament election is an opportunity for a mature debate on the euro's next frontier. ■

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Authors' note: The authors are writing in their personal capacity and their opinions should not be attributed to the European Commission.

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The euro: from monetary independence to monetary sovereignty

The euro is the second-most important global currency. Lourdes Acedo Montoya and Marco Buti argue that Europe should boost the international role of the euro

Although the euro instantly became the second-most important global currency upon its creation, its internationalisation was not a primary concern for policymakers at the time. This column argues that while the euro area has full 'monetary independence', 'monetary sovereignty' needs to be built on the basis of a reassessment of the benefits and costs attached to the international role of the euro.

It also argues that the former outweigh the latter. There is no silver bullet, however, that would rapidly increase use of the euro abroad. This requires a comprehensive package of measures and time.

Twenty years ago, the creation of the euro brought a major change to the international monetary system (Bénassy-Quéré *et al*. 1998). At the beginning, the ECB and the European Commission focused on building the necessary structures to ensure the smooth functioning of the 'new born' currency at home, in the euro area.

Although Europe's common currency instantly became the second-most important global currency upon its creation, the internationalisation of the euro was not a primary concern for policymakers at the time. The ECB and the Commission were therefore content to follow a policy to 'neither hinder nor promote' the internationalisation of the euro.

Twenty years later, however, much has changed and it is time to revisit Europe's traditional 'benign neglect' towards the international use of the euro. We argue that the balance between the benefits of having a widely used international currency and the costs that arise from the responsibilities involved has shifted in the direction of the former.

On the cost side, some originally feared that a greater internationalisation of the euro would weaken Europe's 'monetary independence'. Two arguments supported this position: the first is a variant of the so-called 'Triffin dilemma', which posits that a dominant global currency necessarily entails a large current account deficit; the second is based on the loss of control of monetary aggregates when a currency is widely used by non-residents.

If the validity of the Triffin dilemma is today a subject of debate, the tension between short-term domestic priorities and longer-term global interests remains valid, and so is the risk that global demand for safe assets remains dangerously unsatisfied or forces excessive US external debt.

The euro may be a young currency but it is mature enough to take a more decisive international stand to buttress monetary sovereignty

Independent monetary policy is about controlling the path of short-term interest rates, which in turn affects the domestic savings and investment balance as well as monetary developments. Higher foreign demand for euro-denominated assets would likely render monetary policy transmission more difficult as domestic investments would become easier to finance by foreign savings[1]. Monetary aggregates would also increasingly reflect foreign demand for euro bills and bank deposits.

The argument about monetary aggregates is, however, less relevant today than at the time of the launch of the euro. The ECB has, by now, accumulated longer-term experience with monetary analysis and has developed a broad set of tools and instruments to conduct such analysis. These should allow it to extract from the monetary data relevant signals for longer-term inflation developments in the euro area even in the situation when the euro's international role would be further expanded.

Moreover, the way in which the international monetary system works has changed and thus the modalities through which the Triffin dilemma operates with the evolution of global governance towards a more multipolar system (Buti 2017). Bordo and McCauley (2017) consider, in particular, that the view that a currency's reserve role requires current account deficits is flawed. This is because it assumes that *"only US liabilities can provide US dollar reserves"*, while in fact, *"borrowers resident outside the United States widely use the dollar to denominate debts that are in turn largely held by non-resident creditors"*. Moreover, this argument is empirically questionable.

In fact, the current account position reflects other factors beyond the exchange rate, such as the fiscal position, demographics, net external liabilities, GDP per capita, financial development, or current account openness.

In terms of benefits, greater international use of the euro would be positive for the euro area in two mutually reinforcing ways. First of all, it would strengthen 'monetary sovereignty' by making it possible for European companies to trade around the world, without the threat of extraterritorial actions by third-party jurisdictions to disrupt payments.

Another valuable benefit would come from 'scale effects'. Wider global use of the euro by, and between, third countries would improve the liquidity of, and preference for, euro assets. It would thus improve funding and trading costs for the euro area, and enhance the euro area's resilience to financial shocks. A more liquid monetary system improves market efficiency and reduces transaction costs and risks of disruptions (Krugman 1984, ECB 2017).

A larger and more robust monetary system should also be less vulnerable to country- or institution-specific shocks, as it reduces their relative significance. In addition, private agents also stand to benefit from lower exchange rate risk and lower hedging requirements, as they would be able to invoice and settle more trade-related payments in euros.

Wider use of the euro would also imply lower funding costs in euros ('exorbitant privilege') for domestic private and public debt issuers (Gourinchas and Rey 2007). Moreover, domestic financing conditions in euros could become less dependent on global swings in risk sentiment. Fiscal revenues for the public sector (national central banks) would also arise from a broader use of euronotes internationally (ie. seigniorage).

If there is an extensive economic literature on the benefits of scale effects, the importance of monetary sovereignty has only recently come to the forefront. This is because the economic and financial crisis has brought important changes to the global economy and governance. New technologies and economic powers have emerged. The world is more diversified, with some signs pointing to the emergence of a multipolar system of several currencies (Eichengreen *et al*. 2017).

The dominance of the US dollar remains unchallenged, but China in particular has been very active in promoting the internationalisation of its currency[2]. More recently, the US' withdrawal from the Iran nuclear deal and its subsequent reinstatement of sanctions, together with increased strains in global governance and trade, have exposed global vulnerability to the US dollar's international dominance. Thus, greater international use of the euro would also have benefits for the global economic system.

In the first place, a credible alternative to the US dollar system would defeat the purpose of unilateral actions via dollar payment systems, as market operators would have other choices. On the economic side, the presence of a competitor currency would reduce monopolistic rents from global users of dollar-based payment systems, such as by correspondent banks, card payment providers, or reserve asset issuers.

In sum, the first two decades of the euro have shown that there remains an untapped potential for the euro to play a stronger international role. The benefits of such a role are becoming clearer, while the original fears of losing control over monetary aggregates today appear overstated.

The figures on the international use of the euro show that despite its young age, the currency is already an important international player. However, in a changing global context, policymakers can help strengthen Europe's monetary sovereignty by giving the euro the means to play a larger role in the international arena with the support of market participants.

The international role of the euro in figures: untapped potential?

The euro has been the second-most important world currency since its creation, despite the economic and financial crisis somewhat stalling its international progression. It is a currency that matters to the international monetary system and plays a crucial role in our neighbourhood. The robustness of the euro area together with trade and geo-political linkages has led about 60 countries to tie their currencies in one way or the other to the euro.

The euro is used as a global means of exchange and store of value. The role of the euro as a global reserve currency has been broadly stable over the past 20 years at about 20%. This is one third of the US dollar's rate, which has been losing ground since the 9/11 terrorist attacks.

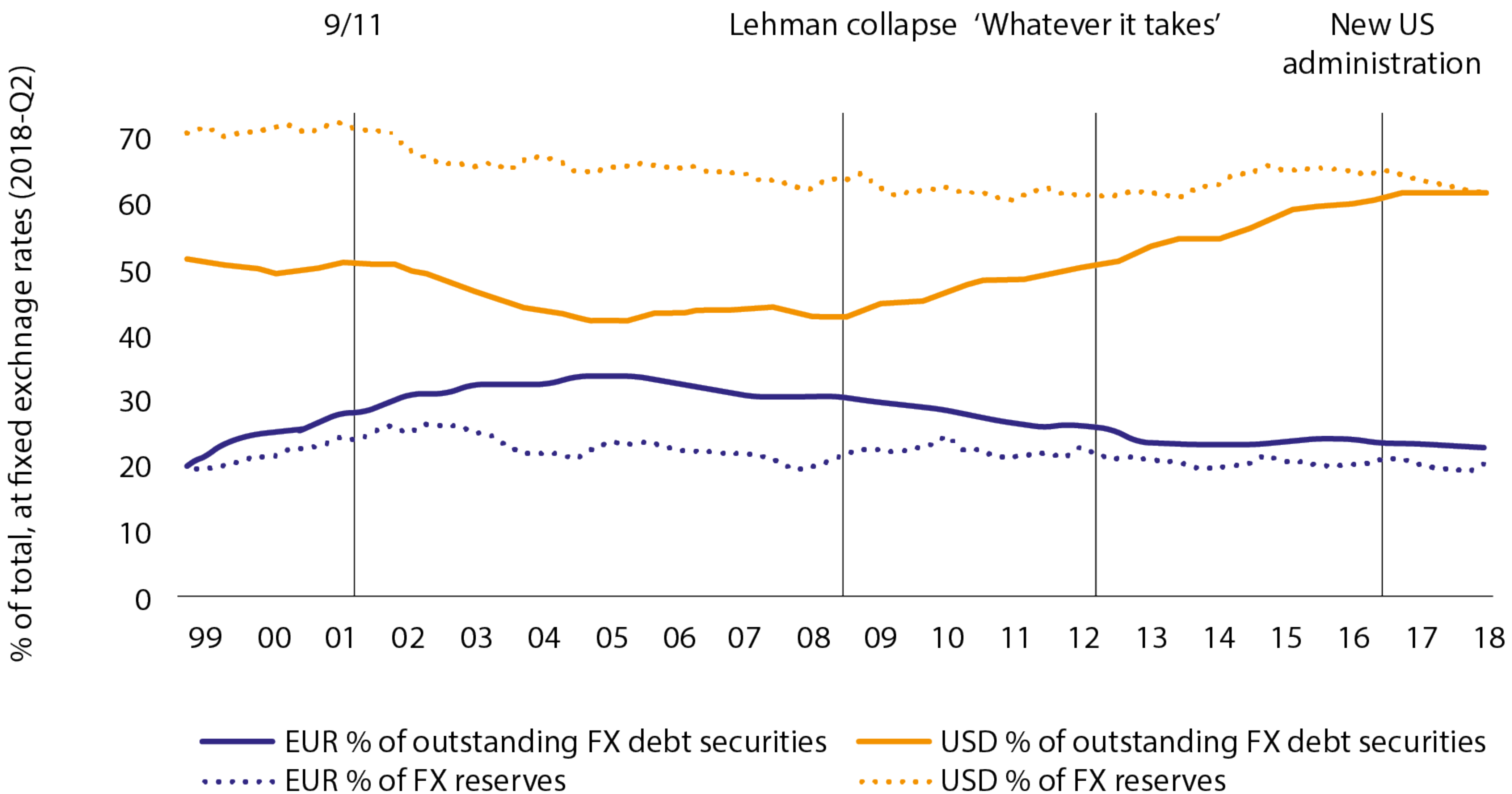
Other currencies, like the Japanese yen, the pound sterling or the Chinese renminbi, are very distant followers to the US dollar and the euro, with only a marginal use as reserve currencies. However, the role of other currencies, notably the Chinese renminbi, is rising as reserve holders diversify their portfolios to reflect, for example, China's growing share of global GDP.

Regarding debt issuance, by end 2017 about 20% of international debt issuance was denominated in euros, well below pre-crisis rates. Debt issuance in US dollars has followed the opposite path over the same period (Figure 1).

Over recent years, the ECB established a number of currency swap lines with major central banks as a liquidity backstop to reassure banks in case of market impairments[3]. Thus, the euro also plays an important role in safeguarding global financial stability.

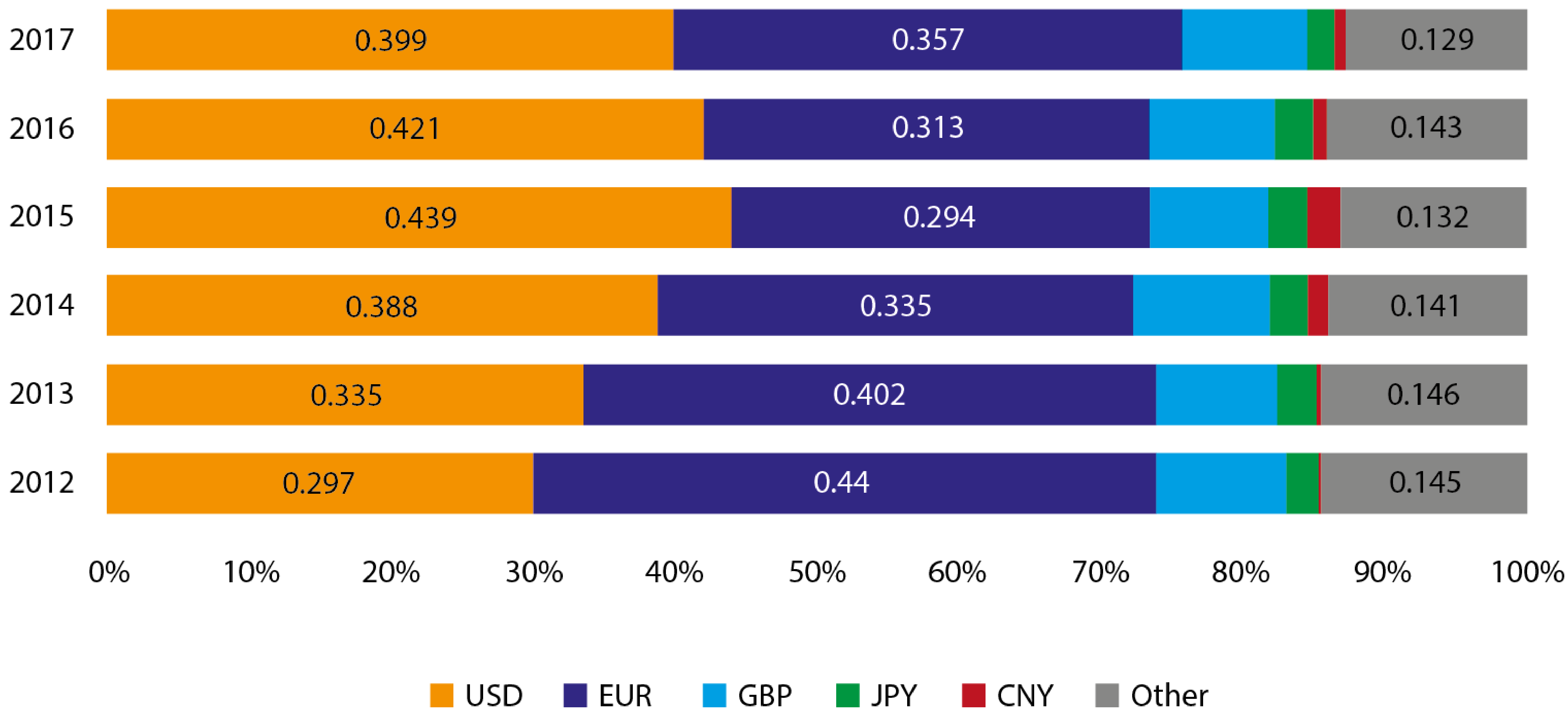
The euro's role in international payments would seem at par with the US dollar (Figure 2), but the data is influenced by intra-EU payments. Moreover, despite its relatively wide use in international payments, less than 60% of the euro area's exports outside the EU are actually invoiced in euros, in contrast with the US where about 90% of exports are invoiced in US dollars.

Figure 1. Currency composition: US dollar and euro shares in foreign currency reserves and outstanding international debt securities



Source: IMF COFER and BIS international debt securities (all issuers, currencies and sectors, international markets)

Figure 2. Currency composition of global payments



Source: SWIFT

Determinants of the global use of a currency: where does the euro stand?

The decision to use a particular currency is made by market participants, in the financial markets, by central banks and by exporters and importers of goods and services. The relative attractiveness of a currency depends on factors such as the size of its domestic economy; the credibility of its institutions; the presence of deep, liquid and free financial markets; well-functioning infrastructures for clearing and settling payments; as well as an established track record of economic and financial stability. The euro scores quite well on many of these criteria, a fact which is reflected in its relatively wide use abroad. However, there are factors that hinder its wider internationalisation.

In particular, there is less liquidity in euros due to macroeconomic, institutional, and market-related factors. The euro is a young currency, the architecture of the Economic and Monetary Union is still incomplete, and there is only a limited pool of safe assets denominated in euros.

Market factors relate to the dominance of US- and UK-based banks and exchanges, as well as underdeveloped payments systems that constrain the euro area's monetary sovereignty. Thus, policymakers can influence the international appeal of the euro by strengthening its underlying economic fundamentals as well as its institutional framework and financial infrastructures.

When market participants choose one currency over another, network effects play a crucial role. The more a currency is used, the more likely it is to be chosen by other market participants. Today the prevailing network effects still favour the US dollar in many cases.

For example, in foreign exchange market transactions the euro plays a strong role on the continent but minor one in other world regions. Outside of the EEA, almost all cross-currency transactions are settled in US dollars (Figure

3). For virtually every currency, bid-ask market spreads vis-à-vis the dollar are tighter than for the euro, reflecting liquidity.

This is especially true in non-interbank trades, leading to persistent dollar 'triangulations' (ie. conversion between two currencies by using the dollar as an intermediary). One practical reason may be the dominance of US- and UK-based banks in the foreign exchange market; as market-makers, they tend to favour the US dollar. These actors also dominate foreign loans in developing countries (in Africa, for example). Therefore, loans granted in local currencies are followed by large forex activity with the US dollar or the British pound in some cases.

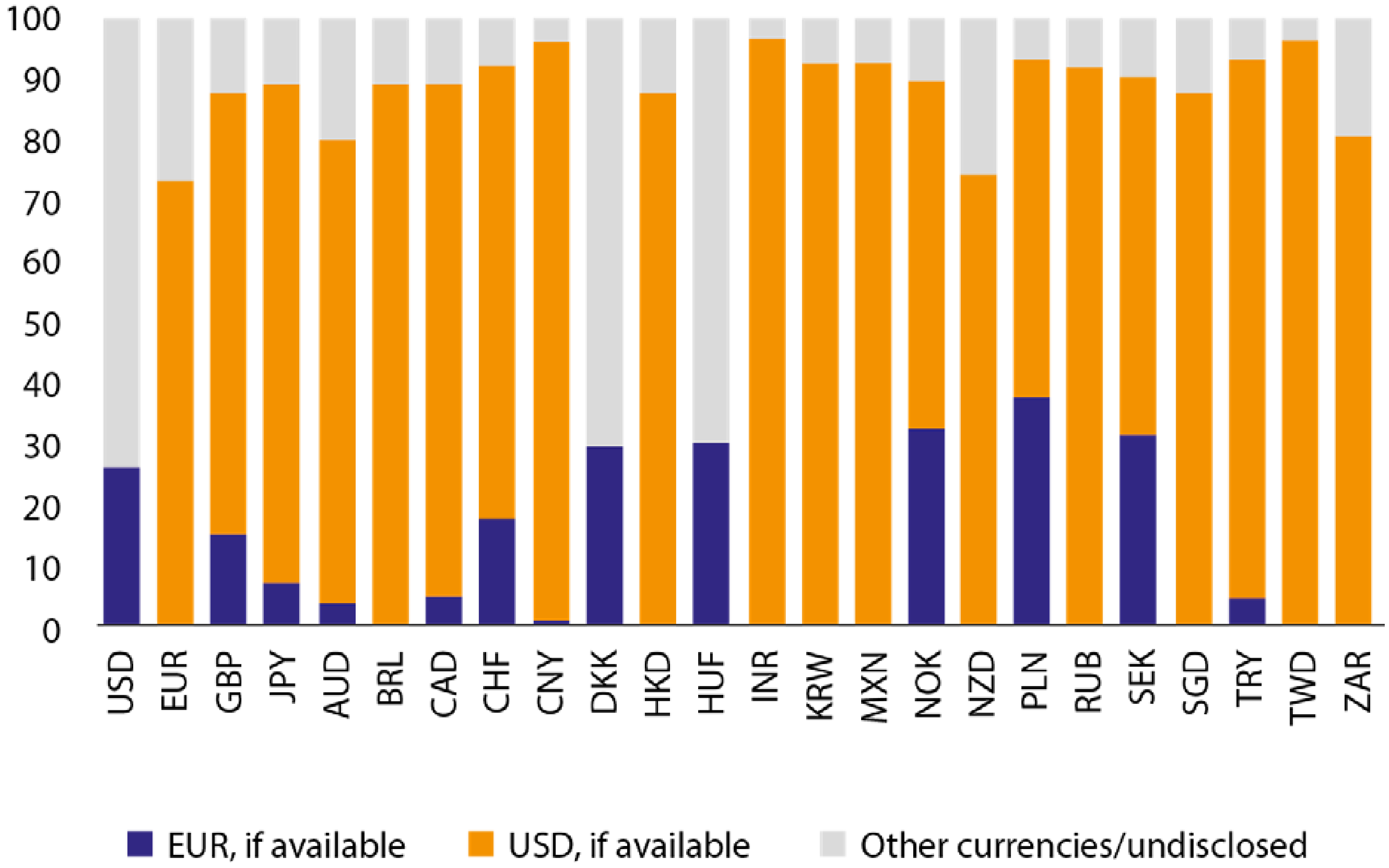
Another example concerns exports (Goldberg and Tille 2016, Gopinath and Stein 2018). A company in the euro area may decide to invoice in a currency other than the euro based on macro considerations, which are linked to the possibility of insuring and hedging against exchange rate movements.

These financial products tend to be more easily available in US dollars, given the liquidity and depth of dollar-denominated financial instruments. Micro and strategic determinants relate to the demand elasticity and the competitive structure of the market, the size of the importers and the competitors, which may push European companies to use their currency instead of the euro.

With no euro area-wide safe asset, the safe-haven status of US treasuries is a permanent feature that raises demand for the dollar, particularly during downturns when there are flight-to-safety capital flows. A temporary factor at present is related to the fact that today's US monetary policy implies that dollar-denominated financial assets provide better returns.

Finally, history/inertia also plays a significant role both at global and sectoral level (Krugman 1984). The prominence of the dollar is sustained by the central role that the US has played over decades in the global financial, trade and

Figure 3. Currency pairs (volume as % of total FX volume, net-net basis 2016)



Source: BIS OTC derivatives statistics monetary system. At the sectoral level, trade in commodities is dominated by the US dollar despite the EU being the largest energy importer, with an annual energy import bill that averaged €300 billion in the last five years, around 85% paid in US dollars. But history is not static, Eichengreen *et al*. (2017) argue that changes in technology, trade and finance structures have a bearing on the international monetary system and that several international reserve currencies can coexist.

Towards a stronger international use of the euro

The first 20 years of the euro has been a remarkable success story. Europe's single currency has brought stable prices, lower transaction costs, more economic integration and competition to all its members. The institutional set-up of the euro area is unique compared to other currency unions, with a centralised monetary policy and decentralised economic and budgetary policies. This makes coordination of its member states' fiscal and economic policies crucial to ensuring the proper functioning of its monetary union.

At the height of the economic and financial crisis, policymakers took decisive actions to strengthen the euro area's architecture and policy coordination. Moreover, the ECB has acquired global renown for its conduct of monetary policy. The euro may be a young currency but it is mature enough to take a more decisive international stand to buttress monetary sovereignty.

There is no silver bullet that would rapidly increase use of the euro abroad. This requires a comprehensive package of measures and time. The Commission proposed on 5 December 2018 a number of avenues to explore and develop together with market participants (European Commission 2018).

Starting at the foundations by completing the Economic and Monetary Union should be a priority as it would cement the credibility of the euro area. The Banking Union, in particular finalising the backstop to the Single

Resolution fund and the European Deposit Insurance Scheme (EDIS), would reinforce financial stability by further reducing the exposure of banks to their national sovereigns. A deepened Capital Markets Union would provide more diversified and liquid financial markets allowing for more private sector risk sharing.

The euro would be more attractive internationally if there were a sufficient supply of euro-denominated safe assets, an important disadvantage today compared to the US. Safe assets allow an efficient functioning of financial systems and the development of capital markets, reducing financing costs for the economy. Euro-denominated safe assets would contribute towards the development of the European financial sector in general and the global relevance of European financial regulation, as well as EU-based payment systems.

Several options for a euro area safe asset have been put forward with different design features (European Commission 2011), ranging from full to partial common issuance, some based on mutualisation and others entailing no joint liabilities, but there has been very limited political traction yet.

Other measures aim to make it easier for market participants to use the euro by insulating against extraterritorial unilateral actions by third country jurisdictions. For instance, the Commission's December Communication proposes to strengthen the liquidity and resilience of European market infrastructures, create a fully integrated instant payment system in the EU, and increase market liquidity for euro currency pairs other than euro/dollar.

Other actions may have a smaller quantitative impact but are qualitatively important, such as encouraging European bodies to increase their share of debt denominated in euros or developing further Europe's economic diplomacy to promote the use of the euro in payments and as a reserve currency. Moreover, the Commission also proposes to provide technical assistance to facilitate developing countries' access to the euro area payments system and, hence, support trade.

Finally, in spite of their position as large buyers or major producers, European businesses still trade in US dollars in key strategic markets (energy, commodities, transport), often even between themselves. This exposes businesses to currency and political risks. Working with market operators is, in this case, essential to identify concrete actions that could be taken to foster the use of the euro.

Conclusion

The euro area has full 'monetary independence', but 'monetary sovereignty' needs to be built on the basis of a reassessment of the benefits and costs attached to the international role of the euro. The world that we have known, characterised by the economic and technological superiority of western countries and the construction of a law-based multilateral order, is changing with the global relevance of China and competing approaches towards multilateralism.

Europe cannot afford to remain on the side-lines if it wants to continue to shape the world according to its values and visions. This implies a larger role for Europe on the international scene, and the euro has a role to play too. The economic costs attached to an international role of the currency should be reassessed.

On the one hand, fears about an outright appreciation of the euro with the corresponding deterioration of the current account should be evaluated against a broader assessment of the balance of payments. On the other hand, fears about losing control over monetary aggregates maybe overstated given the availability of new monetary policy tools.

A greater global role for the euro implies greater global responsibilities. The ECB, for example, would need to consider the impact that its monetary policies could have on countries outside the euro area as well as within, as funding costs in these markets could become more dependent on financing conditions in the euro area (Gourinchas and Rey 2013, Farhi and Maggiori 2016).

Moreover, Europe would have to be ready to provide insurance to the world during crises by ensuring a sufficient supply of its currency to the rest of the world. This 'exorbitant duty' is the corollary of the 'exorbitant privilege' of lower domestic funding costs that comes from having a domineering global currency (Gourinchas *et al*. 2010).

Boosting the international role of the euro will take time and require a combination of measures, of different size and importance. One has to start with the foundations, by reinforcing the monetary union as well as by completing its construction. In this sense, some reforms are already under discussion, others have been proposed by the Commission and are being discussed by member states.

The latter have to be accompanied by more micro, specific reforms. These are necessary, as the use of the euro has many dimensions including diplomacy, improvements in payment systems and favouring the use of the euro in energy and commodities trades. Looking ahead, increasing market liquidity also through the provision of euro-denominated safe assets would be important.

It is true that market participants choose the favoured currency for their trades. However, policymakers can influence the appeal of the euro through concrete actions to reinforce the euro area's architecture and the depth and efficiency of the euro area's financial markets. ■

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Endnotes

1. In February 2005, the US Fed Chairman Alan Greenspan pointed out that long-term interest rates had trended lower despite a 150 basis point increase in the federal funds rate and referred to this phenomenon as a "conundrum".

2. Allowing the use of the renmimbi for foreign trade settlement for Chinese firms, establishing a fully convertible offshore market, concluding more than 30 swap agreements between the People's Bank of China and other central banks including the ECB and, allowing authorised offshore institutional investors to access to the Chinese inter-bank bond market.

3. In 2011 the ECB established currency swap lines with the Bank of England, the Bank of Canada, the Bank of Japan, the Federal Reserve and the Swiss National Bank, and in 2013 with China.

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Sovereignty in a globalised world

Countries need to work together to exercise sovereignty in a globalised world, says Mario Draghi. EU membership helps countries withstand external pressures and achieve policy goals they could not realise alone

There are many examples of the benefits of the close cooperation within the European Union that enjoy widespread popularity. But we know that other elements of European integration are more contested today. At the root of this debate is the inherent tension between the clear gains of economic integration, and the cooperation that is necessary to bring it about, which can sometimes be politically difficult to achieve or explain. I would like to argue that, in many ways, this tension is illusory. Rather than taking away countries' sovereignty, the EU offers them a way to regain it.

This does not mean we need the EU for everything. But in the face of globalisation, the EU is more relevant than ever today. As Jean Monnet said, *"we need a Europe for that which is essential … a Europe for what nations cannot do alone."*[1]

Sovereignty in an interconnected world

On the whole, European citizens appear to welcome the benefits brought about by economic integration through the EU[2]. The free movement of people, goods and services – that is, the Single Market – is routinely seen by citizens as the EU's most positive achievement. In the euro area, 75% of people are in favour of the euro and Monetary Union, and 71% of Europeans support the EU's common trade policy.

Yet at the same time, public attitudes towards the EU's political structures seem to be hardening. Average trust in the EU stands at 42%, down from 57% in 2007. This decline has taken place against the backdrop of a general loss of faith in public institutions. Trust in national governments and parliaments has dropped to just 35%.

This tension between economic integration and political cooperation is fuelled by a powerful belief that there is an inherent trade-off between EU membership and the ability of countries to exercise sovereignty. In this way of thinking, if citizens want to be able to exert more control over their destinies, they have to loosen the EU's political structures. But this belief is wrong.

It is wrong because it conflates *independence* with *sovereignty*.

True sovereignty is reflected not in the power of making laws – as a legal definition would have it – but in the ability to control outcomes and respond to the fundamental needs of the people: what John Locke defines as their *"peace, safety, and public good."*[3] The ability to make independent decisions does not guarantee countries such control. In other words, independence does not guarantee sovereignty.

In today's world, technological, financial and commercial interlinkages are so powerful that only the very largest countries are able to be independent and sovereign at the same time

Countries that are completely shut off from the global economy, to take an extreme but instructive example, are independent but not sovereign in any meaningful sense – often relying on external food aid to feed their people. Yet being connected through globalisation also increases the vulnerability of individual countries in many ways.

They are more exposed to financial spillovers and to the aggressive trade policies of foreign states, while increased competition makes it harder for states to coordinate with one another to enforce regulations and set standards so as to achieve their social goals. This restricts their control over domestic economic conditions.

In this environment, countries need to work together to exercise sovereignty. And this applies even more within the EU. Cooperation within Europe helps *protect* states from external pressures, and it helps *enable* their policy choices.

Working together to protect

Globalisation has profoundly changed the nature of global production and deepened the ties that exist between countries. Cross-border holdings of financial assets are now around 200% of global GDP, compared with about 70% in 1995. Foreign trade has increased from around 43% of global GDP in 1995 to about 70% today. And around 30% of foreign value added is now created through global value chains[4].

At the global level, this process has been driven not just by policy choices, but in large part also by technological progress. Businesses have capitalised on the advances in transportation, telecoms and computing that make it easier to trade globally and fragment production[5].

Previous policy decisions and geographic proximity make the EU by far the most important trading area for European economies. The majority of world trade takes place within three main trading blocs – the EU, the North

American Free Trade Agreement (NAFTA) and Asia – and though linkages have grown between those blocs, they remain relatively closed to one another. The ratio of extra-regional trade to GDP in these regions is below 15%[6].

The EU is the most integrated of these blocs. Two-thirds of EU countries' trade is with other member states, compared with about half for the NAFTA region. Around 50% of euro area cross-border financial holdings are from other euro area countries. Practically speaking, this means that Italy exports more to Spain than to China, and more to Austria than to Russia or Japan. In 2017, German direct investment in Italy was five times higher than that of the United States.

Europe has profited a great deal from this integration: it is estimated that the Single Market raises GDP in the EU by around 9%, taking into account both the direct trade and competition effects[7]. But as countries become more interlinked, they also become more exposed to volatile capital flows, unfair competition or discriminatory actions – and this necessitates greater protection for their citizens.

That protection, which EU countries have created together, has allowed them to garner the benefits of openness while limiting, to some extent, its costs. The EU's common structures and institutions contain spillovers, ensure a level playing field and prevent unjust behaviour – in other words, they respond to the needs of citizens and allow countries to exercise sovereignty.

Thus the Council and the European Parliament set common rules for the whole EU, the Commission ensures they are observed, and the European Court of Justice (ECJ) provides for judicial protection if they are violated. In the euro area, European banking supervision and the Single Resolution Mechanism help to contain the effects of financial instability.

In this interconnected environment, seeking independence from EU institutions presents complex trade-offs. Countries either have to accept rules decided by others to ensure continued access to the European market, which gives them less control over decisions that affect their citizens' interests; or they have to disentwine themselves from their most important trading partners, which gives them less control over their citizens' welfare.

If trade barriers were to be reintroduced within Europe, it is estimated that GDP would be about 8% lower in Germany and 7% lower in Italy[8]. The case for working together to enhance sovereignty also applies to the relationship between the EU and the rest of the world. Few European economies are sizeable enough to withstand spillovers from large economies or to leverage power in external trade negotiations. But cooperating at the EU level increases their potential to do so.

The EU accounts for 16.5% of global economic output[9], second only to China, which gives European countries a large domestic market to fall back on in the event of trade disruptions. EU trade makes up 15% of world trade[10], compared with around 11% for the United States, providing the EU with significant weight in trade negotiations. And the euro is the world's second-most traded international currency, which helps insulate the euro area economy from exchange rate volatility.

Indeed, around 50% of extra-euro area imports are now invoiced in euro[11], which reduces the pass-through of exchange-rate volatility to import prices. That in turn allows monetary policy to focus more on euro area economic developments rather than having to react repeatedly to external shocks[12].

For all these reasons, being outside the EU might lead to more policy independence, but not necessarily to greater sovereignty. The same is true of the single currency.

Most countries would no longer benefit from local currency invoicing, which would exacerbate the effects on inflation if they undertook large exchange rate devaluations. And they would be more exposed to monetary policy spillovers from abroad – not least from the ECB itself – which could constrain their domestic policy autonomy. In recent years, Denmark, Sweden, Switzerland and central and eastern European economies have been affected by spillovers from our policy measures[13].

In fact, spillovers from larger economies were one reason why the euro was created in the first place. Under the European Monetary System that preceded the euro, most central banks had to follow the policy of the Bundesbank. After more than a decade of disappointing, if not devastating, experiences, it was deemed preferable to regain monetary policy sovereignty by launching the single currency together[14].

Cooperation and economic policy

The second way in which globalisation constrains sovereignty is by limiting countries' capacity to set laws and standards that reflect their social goals.

Global trade integration tends to reduce that capacity, because as production fragments through value chains, there is a greater need for countries to agree on common standards. Those standards are mostly set not within the World Trade Organization, but by large economies with dominant positions in the value chain. Smaller economies tend to end up as rule-takers in the international system[15].

Global financial integration can likewise reduce individual countries' power to regulate, tax and uphold labour standards. Multinational firms can influence national regulations through the threat of relocation, as well as arbitrage tax systems by shifting income flows and intangible assets across jurisdictions. There can also be incentives for countries to use labour standards as a tool of international competition – the so-called 'race to the bottom'.

This makes it more difficult for countries to enforce their core values and protect their people. It also leads to corporate tax bases being eroded, which makes it harder to finance welfare states[16]. OECD analysis, for example, estimates global revenue losses from tax avoidance to be in the range of 4% to 10% of corporate income tax revenues[17].

These effects occur when countries are not large enough to exercise regulatory power against mobile capital or cross-border firms. But it is harder for this to happen at the level of the EU, since it represents a market that companies can ill afford to leave. Having regulatory power at the EU level enables EU countries to exercise sovereignty in the areas of taxation, consumer protection and labour standards.

First, the EU gives its members the capacity to prevent multinationals from avoiding corporation tax by exploiting loopholes or extracting subsidies.

This is a complex area, but some recent progress has been made on this front. New European rules have entered into force this year to eliminate the most common corporate tax avoidance practices[18]. And while the ECJ recently ruled against the Commission in a tax exemption case, it also recalled that special tax deals between multinationals and individual countries can constitute illegal state aid, which the Commission has the right to examine[19].

Second, the EU offers much greater possibilities to defend consumers' values and ensure that they are treated fairly within the European market.

This has been visible in the EU's ability to enforce its values concerning privacy through the General Data Protection Regulation[20]. It has been visible too in EU regulations to bring down mobile phone roaming charges for consumers within Europe[21], or to ensure that they cannot be charged more for cross-border payments in euro within the EU than they would be for national transactions[22].

The third advantage is that countries have the possibility to coordinate within the EU to defend social protections without imposing trade restrictions.

Through the Charter of Fundamental Rights, EU law has reduced the possibility of unfair competition from jurisdictions with laxer labour laws. And it has also helped raise labour standards within the EU.

A case in point is the European Directive on Part-time Work in 1997, which reduced certain forms of discrimination that were still in place in 10 of the then 15 EU member states[23], including Italy. OECD analysis finds that, over time, the introduction of equal treatment laws was associated with an increased likelihood of people being awarded permanent contracts[24].

The same protections do not exist at the global level or are much weaker in other regional trading blocs such as NAFTA. The history of the United States itself illustrates the difficulty of aligning the approaches of individual states to improve working conditions.

In the early 20th century, there was a growing concern in several US states about the lack of a social safety net, especially for the elderly. But individual states feared that providing social security would impose, in the words of the time, *"a heavy tax burden on the industries of the state that would put them at a disadvantage in competition with neighbouring states unburdened by a pension system."*[25]

The lack of coordination created a severe underprovision of social security, which was exacerbated by the Great Depression. In 1934, half of the population over 65 were in poverty[26]. This was only resolved through the passing of the federal Social Security Act in 1935, which enabled states to coordinate in providing social security.

In a similar way, the EU provides a powerful coordination function that allows countries to achieve goals that they could not realise alone. And the EU is able in turn to export some of its standards globally.

The EU is the top trading partner of 80 countries, compared with just over 20 for the United States[27]. That allows the EU to insist on higher labour and product standards abroad via trade agreements[28], as well as protecting local producers at home. The recent trade agreement with Canada, for example, protects 143 European geographic indications.

The EU also has regulatory power that goes beyond trade agreements. As exporters to the EU must meet its standards, economies of scale result in the application of those standards to production in all countries. This is known as the 'Brussels effect'[29]. In this way, the EU de facto sets the global rules across a wide range of areas.

All this gives EU countries another unique capacity: to ensure that globalisation is not a race to the bottom on standards. Rather, the EU is able to pull global standards up to its own.

Institutions and rules

In an integrated regional and global economy, the case for European countries to work together to exercise sovereignty is clear. But while many would agree on the need for cooperation, views differ over how best to organise it.

Some would argue that looser, more transactional cooperation led by national governments is sufficient. And there are indeed several historical examples of successful agreements being forged by the coming together of willing states. Where all parties benefit equally, loose cooperation can be sustainable.

One such example is the Bologna Process, which has helped align higher education standards and ensure mutual recognition of university degrees across members of the Council of Europe[30].

But it is also clear that in cases where cooperation is more necessary, the conditions for loose cooperation would not hold. Spillovers between larger and smaller economies are typically asymmetric. Coordination problems arise because there are incentives for countries to free-ride or to undercut one another[31]. In these instances, deeper modes of cooperation are essential to align countries' interests.

The EU has thus far employed two methods of governance to facilitate cooperation. In some cases, we have invested common institutions with executive power – such as the Commission for trade policy or the ECB for monetary policy. In others, executive power remains with national governments, with cooperation through common rules, such as the framework for fiscal and structural policies.

These areas of economic policy were considered too specific to the situation of individual countries to be entrusted to a common body. It was felt that the only possible form of governance was for countries to exercise national sovereignty, thereby respecting their own specific set of circumstances. A rules-based approach was seen to be the only solution that was consistent with this vision. But it is worthwhile to reflect on how successful this choice has been.

For the cases where executive power has been invested with institutions, most would agree that the institutions have performed relatively well. Trade policy has been effective in opening up access to new markets: the EU has in place 36 free trade agreements, compared with 20 for the United States[32]. Monetary policy has successfully fulfilled its mandate.

But for the areas that use a rules-based approach, some shortcomings have been revealed. The fiscal rules have provided a framework for assessing fiscal policies but have at times proven difficult to enforce and hard to explain to the public. In the area of structural policies, the Country Specific Recommendations have had a limited impact, with less than 10% of recommendations being substantially implemented each year[33].

The disparity between the outcomes of the two methods does not stem from any difference in the quality of European and national authorities. Instead, it is a consequence of the inherent difference between rules and institutions. There are two reasons why institutions have proven superior.

First, rules are generally static and require countries to adhere to specific *actions*, whereas institutions are required to achieve prescribed *objectives*. Rules therefore cannot be updated quickly when unforeseen circumstances arise, whereas institutions can be dynamic and employ flexibility in their approaches. That distinction matters hugely when underlying parameters and economic relationships change – as they often do. The distinction also matters for citizens, who ultimately care most about the results of economic policy rather than the actions taken by governments.

The ECB's monetary policy during the crisis is an example of the greater flexibility of action afforded by an institution-based approach.

The ECB was faced with a range of challenges that few could have predicted when our mandate was defined. But the Treaty combines our mandate for price stability with discretion over the tools we could use to achieve it. This allowed us to deploy a range of unconventional policy tools to ensure that inflation remained in line with our aim. Neither operating monetary policy according to a fixed rule nor restricting ourselves to conventional policy tools would have sufficed.

Discretion and flexibility in the use of our tools helped to strengthen our credibility. Flexibility and credibility were, in this instance, mutually reinforcing.

By contrast, rules lose credibility if they are applied with discretion. Rules will be undermined if countries find reasons to circumvent them or rewrite them as soon as they bind. But circumstances will always arise which were not foreseen at the time the rules were written and which call for flexibility. In the case of rules, there is an inevitable trade-off between credibility and flexibility.

This is why there are always tensions when it comes to economic policies that follow the rules-based approach. But the transition to an institutions-based approach requires trust between countries. And trust is based on strict compliance with the existing rules, but also on the ability of governments to reach mutually satisfactory compromises when the circumstances call for flexibility and to explain them adequately to their citizens.

That transition nevertheless remains necessary.

The European Commission's recent initiative on the international role of the euro provides a further example of the need to move from the current framework of various laws and ad hoc rules to a system based on harmonisation and institutions.

Rising trade tensions and the growing use of sanctions as an instrument of foreign policy have meant that the laws of the United States are increasingly being applied outside its jurisdiction. This takes the form of penalties for societies outside the United States and the prevention of access to the US payment system and is based on the central role played by the US financial system and the US dollar in global trade.

Several European governments believe that this situation could be mitigated by increasing the international role of the euro. But if markets are to entertain the possibility of an enhanced role for the euro, we need to consider what the conditions are that underpin the dollar's dominance.

The list is long, but the fact that the dollar is an expression of an integrated capital market is certainly one of those conditions[34]. For the EU to meet that condition – which, at this stage of its development, is more achievable than others – would require a complex programme of legislative and institutional harmonisation, which however could be put in place in short order.

The second reason why an institutional approach can help produce better outcomes is that institutions and their actions can be subject to more clearly defined democratic control. Precisely because those institutions are invested with a mandate and defined powers, it is possible to make a more direct link between decisions and responsibility.

The EU already has many channels through which its citizens can exercise democratic control, via national authorities in the EU Council and Members of the European Parliament, who hold EU institutions accountable on behalf of the people who elected them. In fact, for the first time on record, a majority of Europeans now feel that their voice counts in the EU[35].

It is to be hoped that accountability arrangements to hold EU institutions in check continue to be strengthened, because the perception of the legitimacy of their actions depends on it. The role of the European Parliament is vital here. Of the institutions with a democratic mandate to exercise control, it is the only one with a European perspective.

The European Court of Justice provides a second avenue of democratic control. Its role in ensuring that EU institutions are following their mandates becomes all the more important in the absence of a European government.

Adherence to the judgments of the ECJ is a necessary condition of the rule of law. Consistency and uniformity in the interpretation of EU law across 28 member states are the bedrocks of EU law as an effective and autonomous legal order[36].

A basic function of the law is to stabilise expectations by providing a reliable foundation upon which citizens and companies can organise their activity and plan for the future[37]. And such predictability and certainty is especially important for Economic and Monetary Union today.

Conclusion

In today's world, technological, financial and commercial interlinkages are so powerful that only the very largest countries are able to be independent and sovereign at the same time, and even they cannot do so entirely. For most other nation states, including the European countries, these two characteristics do not coincide.

The European Union is the institutional framework that has allowed the member states to be sovereign in many areas. It is a shared sovereignty, which is preferable to none at all. It is a complementary sovereignty to the one exercised by individual nation states in other areas. It is a sovereignty that Europeans like. The European Union has been a political success built within the international order that emerged after the Second World War. It has been a faithful interpreter of the values of freedom, peace and prosperity on which that order was founded.

The European Union has been an economic success because it has provided an environment in which the energies of its citizens have created widespread and lasting prosperity founded on the Single Market and protected by the single currency. The last decade has dramatically highlighted the shortcomings of national policies and the need for cooperation to evolve both within the EU and beyond.

A long global economic crisis, unprecedented migration flows and inequality exacerbated by large concentrations of wealth resulting from technological progress have given rise to rifts in a political and economic order that was thought to be set.

Change is necessary, but there are different ways of bringing it about. One prospect is that age-old ideas that have shaped most of our history are revived, such that the prosperity of some cannot be achieved without the poverty of others; international and supranational organisations lose their relevance as places for negotiating and finding compromise solutions; the affirmation of the self, of the identity, becomes the first requirement of every policy. In such a world, freedom and peace become accessories which can be dispensed with as needed.

But if we want these values to remain essential, fundamental, the path is a different one: adjusting existing institutions to change. This process of adjustment has so far encountered resistance because the inevitable national political difficulties always seemed to be above such need.

This reluctance has resulted in uncertainty about the capacity of institutions to respond to events and has strengthened the voice of those who want to pull down these institutions.

There should be no doubt: this adjustment will have to be as deep as the phenomena that revealed the fragility of the existing order, and as vast as the dimensions of a geopolitical order that is changing in a way that is not favourable for Europe.

The European Union wanted to create a sovereign where there was not one. It is not surprising that in a world where every point of contact between the great powers is increasingly a point of friction, the external challenges to the existence of the European Union become increasingly threatening. There is only one answer: recovering the unity of vision and action that alone can hold together such different countries.

This is not only a hope, but an aspiration based on political and economic advantage. But there are also internal challenges that have to be faced, which are no less important for the future of the European Union. We need to respond to the perception that it lacks equity, between countries and social classes. We need first to listen, and then to act and explain.

So, unity and equity are needed, above all, as a guide for policymaking in Europe.

I would like to recall in closing the words of Pope Emeritus Benedict XVI in a famous speech held 38 years ago:

> *"To be sober and to do what is possible, and not to claim with a burning heart the impossible has always been difficult; the voice of reason is never as loud as an irrational cry… But the truth is that political morals consist precisely in*

resisting the seductions of magniloquent words… It is not moral the moralism of adventure… It is not the absence of all compromise, but the compromise itself that is the true moral of political activity."[38] ■

Mario Draghi is President of the European Central Bank

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Should the ECB care about the euro's global role?

Are recent shifts in global governance a reason to strengthen the global role of the euro? Benoît Cœuré argues that policies that make the euro more robust make the debate relevant to the ECB

There is a growing debate in Europe as to whether recent shifts in global governance should be seen as a reason to strengthen the global role of the euro. This column explains that while the ECB does not take a view on foreign policy questions, the alignment between policies that will strengthen the euro's global role and policies that are needed to make the euro area more robust, together with the implications for monetary policy that a stronger international role of the euro would have, make the debate relevant to the central bank.

There is a growing debate in Europe as to whether recent shifts in global governance should be seen as a reason to strengthen the global role of the euro (Juncker 2018, European Commission 2018, European Council 2018). According to some, being the issuer of a global reserve currency confers international monetary power, in particular the capacity to 'weaponise' access to the financial and payments systems.

This debate takes place against a gradual decline of the euro's global role from the mid-2000s onwards (see Figure 1). Despite the euro area's economic size and trading heft, the euro lags behind the US dollar by a wide margin for most measures of global standing (see Figure 2).

As a result, the view is that if Europe does not actively promote the use of the euro in global financial markets and in international trade, it will be increasingly exposed to the risk that the monetary power of others is used against its interests (eg. Tooze and Odendahl 2018).

The ECB does not take a view on foreign policy questions. It does not decide on the role of Europe in the world, or on who uses the euro globally or not. But, as central bank, we are not indifferent to the current debate, for two main reasons.

The first reason relates to the alignment between the policies that will strengthen the euro's global role and the policies that are needed to make the euro area more robust. Specifically, three broad shortcomings are likely to have affected the international role of the euro.

First, international currencies need to provide stability and safety during times of global financial stress. This is what some have coined the 'exorbitant duty' of international currency status (Gourinchas *et al*. 2011, Caballero *et al*. 2015). US Treasuries are widely viewed by international investors as such a safe store of value (He *et al*. forthcoming).

...provided the right economic policies are adopted, a stronger global role of the euro could help facilitate the transmission of monetary policy across euro area financial markets and reduce perilous fragmentation

The euro area lacks this common safe asset. Since 2008, the number of AAA-rated euro area sovereigns fell from eight to three. Today, AAA-rated euro area sovereign debt amounts to just 10% of GDP. In the US it is more than 70% (see Figure 3).

Considerable progress has been made in improving the euro area governance framework in recent years. But for the euro to act as a true, effective hedge in times of stress, and therefore to attain and maintain international status, we need to further strengthen the fiscal dimension of Economic and Monetary Union (EMU).

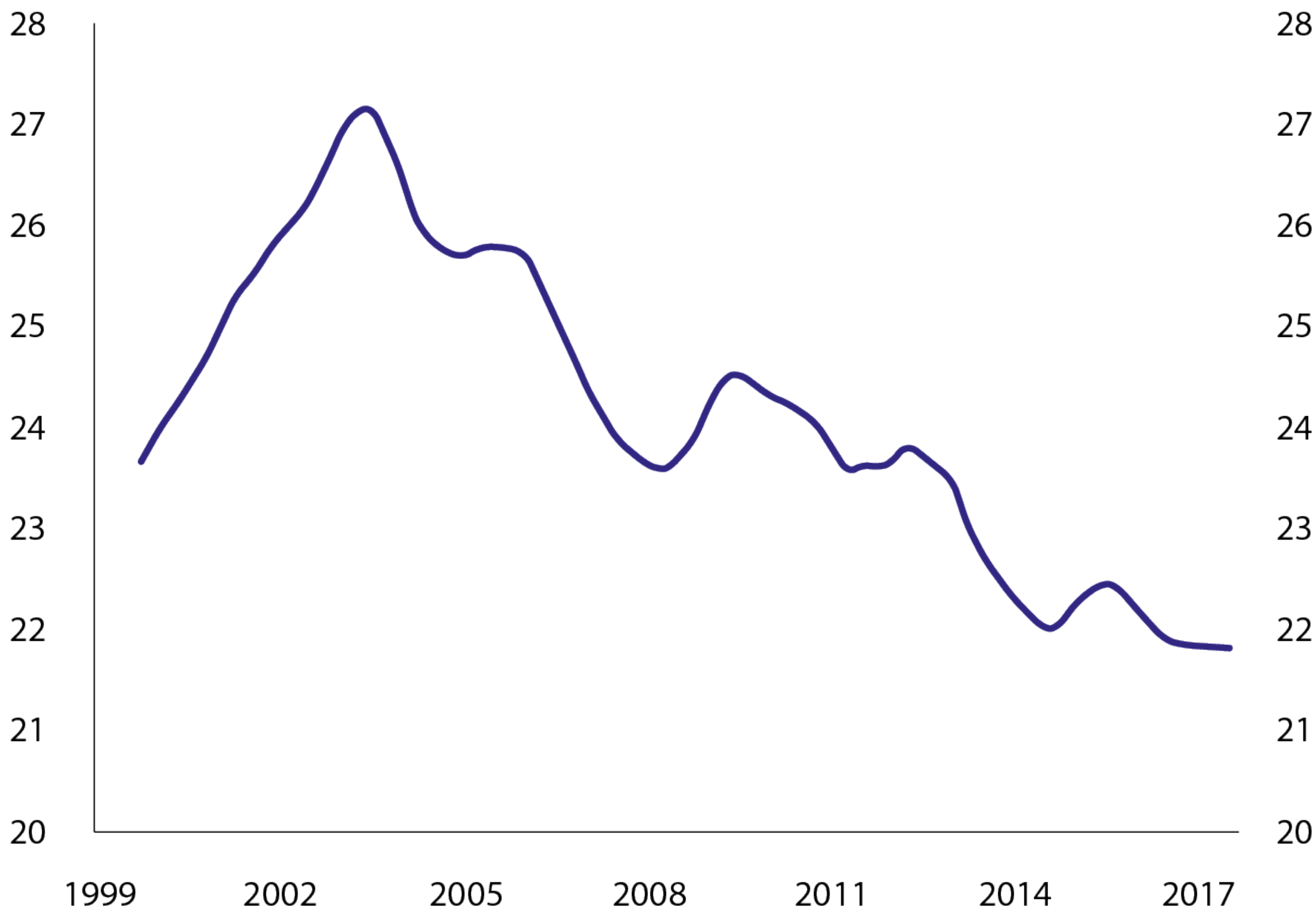
Sound fiscal and structural policies are needed to provide international investors with what they need most: a large and elastic supply of safe assets. And since the journey towards a true European safe asset, one that does not vanish on rainy days, will be long and bumpy, we should also focus our efforts on 'upgrading' the credit quality of outstanding debt by committing to credible fiscal rules.

The second shortcoming of the euro area is the segmentation of its capital markets. Deep and liquid financial markets are key ingredients of an international currency. Financial deepening was an important contributor to helping the dollar dethrone the pound sterling as the leading international currency (Chiţu *et al*. 2014).

Capital markets in Europe are still fragmented along national lines. Various legal and institutional barriers hinder the creation of a single European market. The Capital Markets Union should be a key priority for the next European Commission and Parliament (ECB 2015).

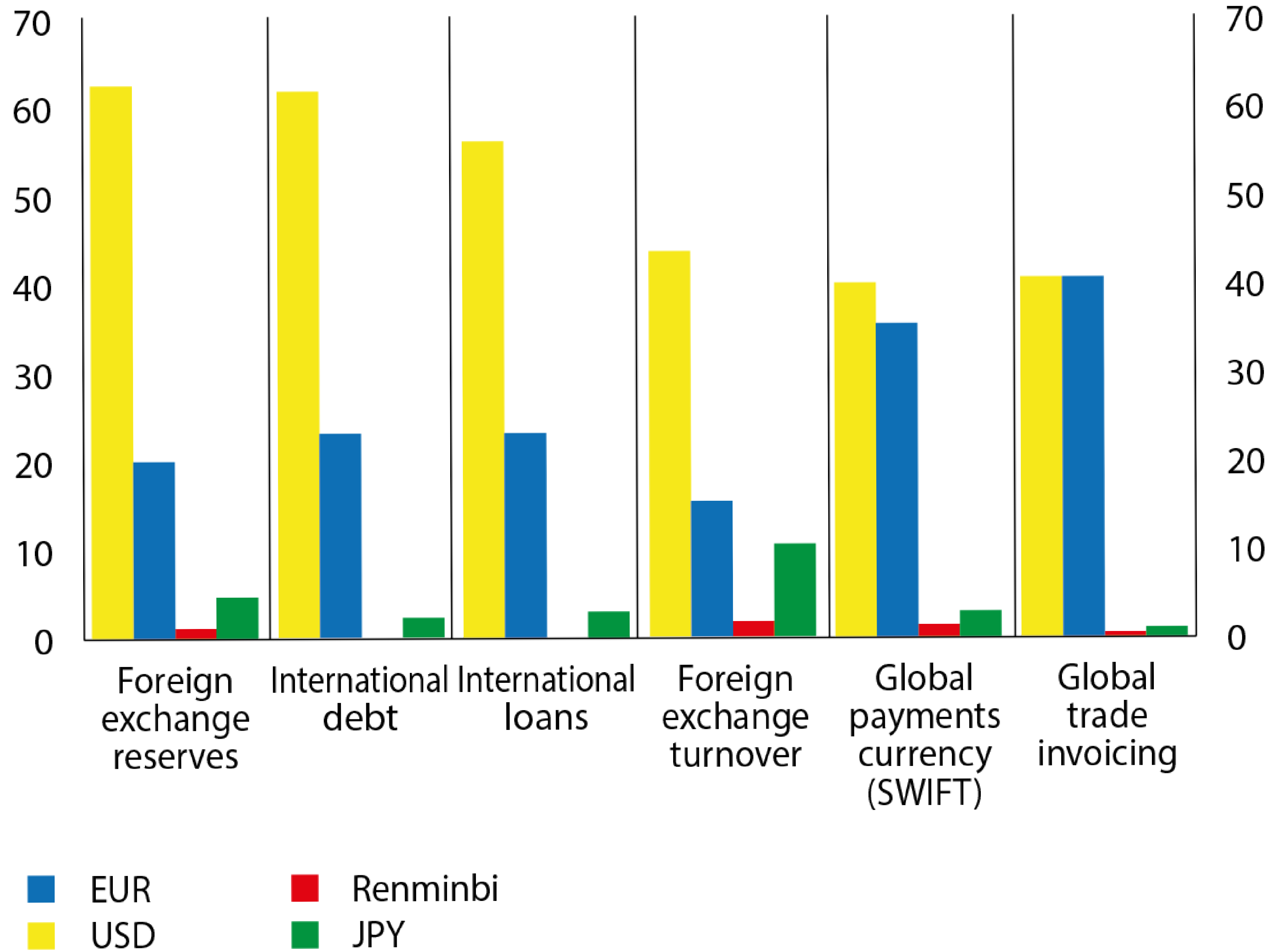
The third and final factor that has likely held back the international role of the euro relates to the ability of Europe to speak with one voice on international affairs. Empirical evidence suggests that nations that depend on the US security umbrella hold a disproportionate share of their foreign reserves in dollars.

Figure 1. Index of the euro's international role (percentages; four-quarter moving averages)



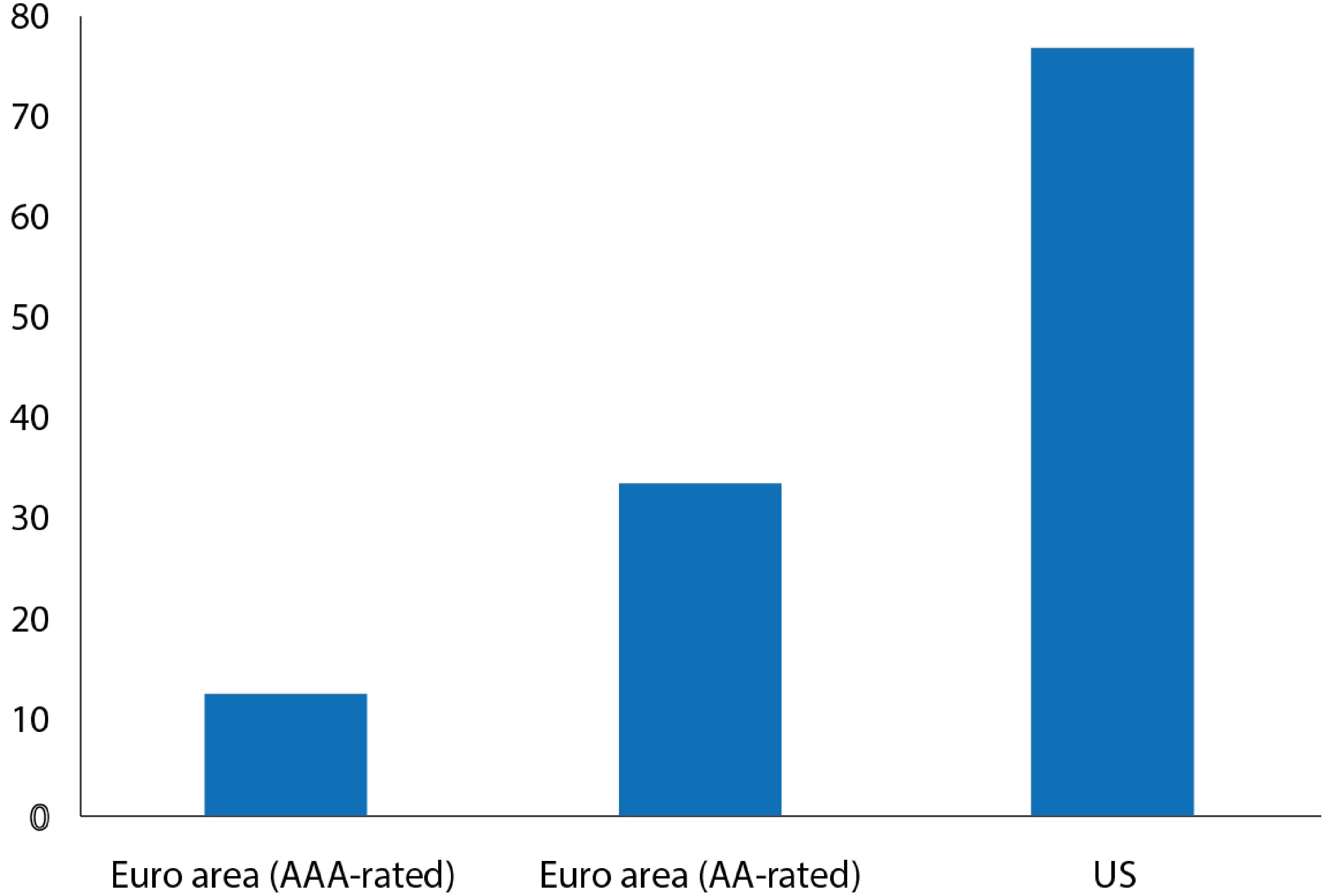
Notes: Arithmetic average of the shares of the euro at constant exchange rates in stocks of international bonds, cross-border loans, cross-border deposits, foreign exchange settlements, global foreign exchange reserves and exchange rate regimes. Data on the share of the euro in global trade invoicing were not available; those on foreign exchange settlements are at market exchange rates. The latest data are for the fourth quarter of 2017.
Sources: BIS, IMF, CLS, Ilzetzki, Reinhart and Rogoff (2017) and ECB calculations.

Figure 2. Snapshot of the international monetary system (percentages)



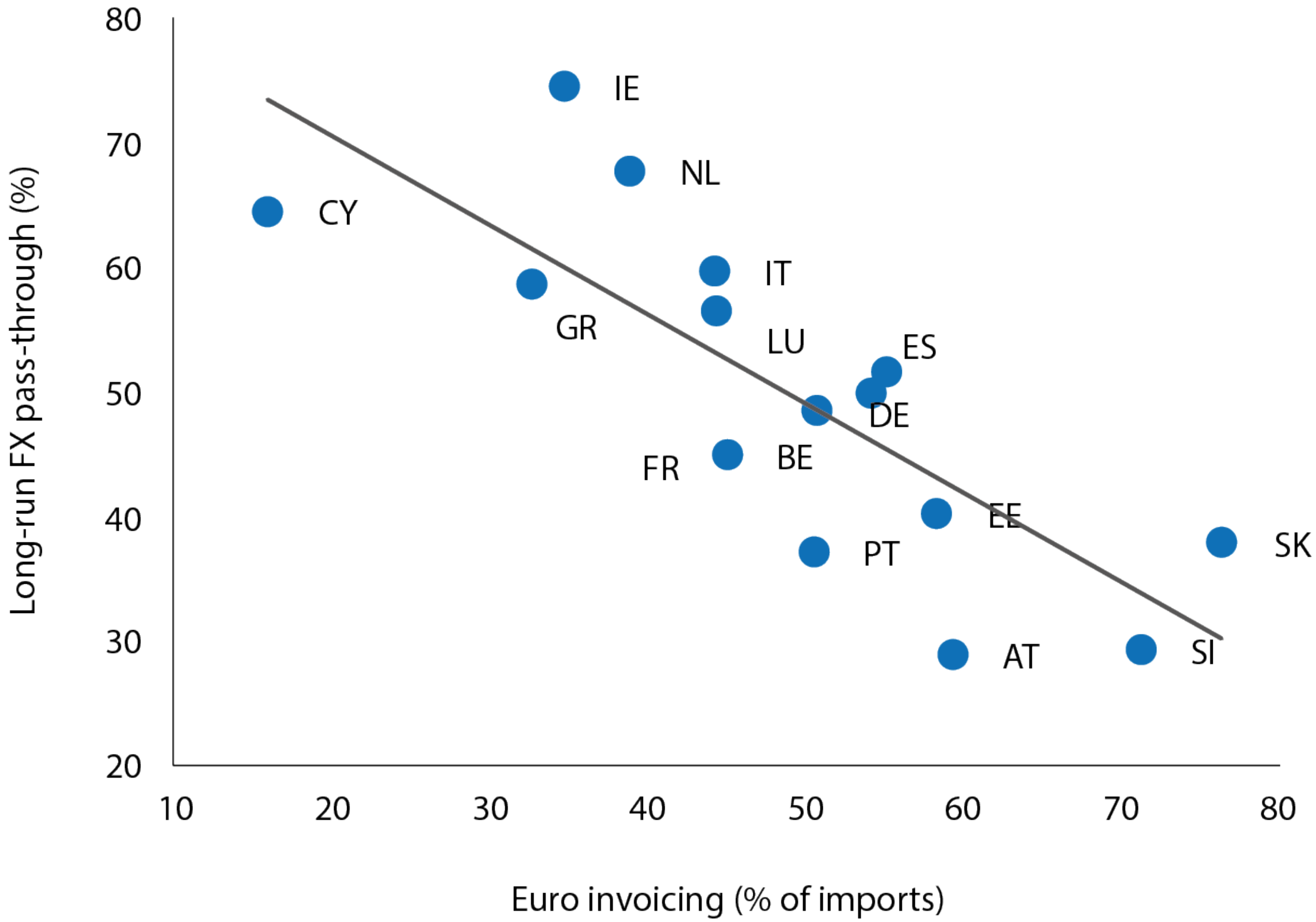
Note: Data as at the fourth quarter of 2017 or latest available. Data for the euro exclude intra-euro area transactions except for payments and invoicing.
Sources: BIS, IMF, SWIFT, Gopinath (2015) and ECB calculations.

Figure 3. Debt securities issued by central governments, 2018 (as a percentage of GDP)



Notes: Outstanding amounts at market value for the euro area; publicly held Treasury securities outstanding for the US. The blue bars in the chart report debt securities as rated by both Standard and Poor's and Moody's (local currency long-term debt rating).
Sources: OECD Government Statistics, IMF WEO and ECB staff calculations.

Figure 4. Exchange rate pass-through to import prices vs. euro invoicing across euro area countries



Notes: Long-run exchange rate pass-through is estimated using a standard log-linear regression model of the quarterly log change in import price unit values on the quarterly changes of the standard broad measure of the NEER-38 of the euro, a quarterly effective measure of inflation in production costs of the euro area's major trading partners and the quarterly log change in industrial production (excluding construction). The estimation sample spans the time period from the first quarter of 2000 to the last quarter of 2014. The share of euro invoicing reported on the x-axis is the average over the sample period. The black line is a fitted regression line.
Source: The international role of the euro, ECB, July 2015.

Of course, addressing this aspect extends beyond EMU. But it means that European initiatives to foster cooperation on security and defence, and to speak with one voice on international affairs, might help foster the euro's global outreach, too.

The second reason why the current debate on the euro's global role is relevant for the ECB is that a stronger international role of the euro would likely have tangible implications for the conduct and transmission of monetary policy.

First is the effect on exchange rate pass-through. The more the domestic currency is used for trade invoicing, the less the pass-through to import prices in the face of fluctuations in the exchange rate. The tight correlation between domestic currency invoicing and exchange rate pass-through is evident in the euro area (see Figure 4).

The degree of pass-through, in turn, has competing effects on the transmission of shocks. On the one hand, lower pass-through means that import prices are better shielded from exogenous exchange rate shocks, and monetary policy can focus more on domestic sources of inflationary pressures. On the other hand, increased local currency pricing would, in principle, attenuate the exchange rate channel of monetary policy.

That said, exchange rate pass-through has already notably declined over the past two decades in the euro area, mainly due to the declining share of commodity imports and the increasing role of global value chains (Cœuré 2017).

The second way in which an international currency is relevant for monetary policy is its effect on financial conditions. In principle, international currency issuers enjoy greater monetary autonomy. They often tend to influence monetary conditions globally, thereby creating spillovers and spillbacks through international trade and finance.

For example, the increased use of the euro as an international funding currency would amplify the international risk-taking channel of monetary policy, which operates through international bank leverage.

And if the euro were used more for trade among third countries, a depreciation of the euro would make all euro-denominated exports cheaper, from euro area and non-euro area firms alike. This would cause an increase in global trade with potentially positive spillbacks, not least as the euro area is more open to trade than the US (see also Boz *et al*. 2017).

At the same time, international currencies are not isolated from foreign spillovers. It is well documented, for example, that the large demand for US securities by foreign central banks in the run-up to the financial crisis contributed to the decline in longer-term US interest rates, thereby in part offsetting the parallel tightening efforts by the Federal Open Market Committee.

It is not that these effects are completely absent in the euro area today. As the second most important reserve currency, demand from foreign central banks can also be expected to have affected euro area financing conditions (Cœuré 2018b).

But there is a difference, and it is due to the aforementioned lack of a single safe asset. According to the IMF's Coordinated Portfolio Investment Survey, foreign central banks currently hold more than 40% of their euro-denominated debt reserves in German government bonds, well above Germany's share of total outstanding euro-denominated sovereign bonds, which is around 15%.

The implication is that a better functioning economic and monetary union could be expected to lead to a more even distribution of reserve demand effects, and more generally flight-to-safety effects, across the euro area. This, by itself, would benefit the transmission of our monetary policy. The flipside is that central banks in smaller economies could turn more frequently to the ECB for currency swap lines when the tide turns – ie. if and when international liquidity in euro dries up.

The ECB would then be called on to increase its activities as an international lender of last resort. Any extension of the global network of currency swap lines would, however, have to be based on sound monetary arguments. Central banks are mindful of global financial stability, but they always act in full discretion and within domestic mandates.

Concluding remarks

In sum, two tentative conclusions can be drawn at this stage. The first is that the decline in the euro's international role in recent years is primarily a symptom of the initial fault lines of EMU. Efforts that help overcome the shortcomings in the design of EMU may, therefore, also foster a stronger international role of the euro.

The second conclusion is that a stronger global role for the euro may have tangible consequences for the conduct of monetary policy, all of which we would need to understand and take into account when designing the common monetary policy for the euro area. But provided the right economic policies are adopted, a stronger global role of the euro could help facilitate the transmission of monetary policy across euro area financial markets and reduce perilous fragmentation. ■

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A new horizon

The building blocks for a transition to a low-carbon economy are being put in place. Mark Carney believes further progress will be driven by coherent government policies

A few years ago, I spoke of the *Tragedy of the Horizon* – how the catastrophic impacts of climate change will be felt beyond the traditional horizons of most banks, investors and financial policymakers, imposing costs on future generations that the current one has no direct incentives to fix[1]. Once climate change becomes a clear and present danger to financial stability it could already be too late to stabilise the atmosphere at two degrees.

The paradox is that risks will ultimately be minimised if the transition to a low-carbon economy begins early and follows a predictable path. But for markets to anticipate and smooth the transition to a 2-degree world, they need the right information, proper risk management, and coherent, credible public policy frameworks.

Today, catalysed by the COP21 Paris Agreement, and national policies such as the UK Government's Clean Growth Strategy, some of these elements are coming into place, creating a potential path to break the *Tragedy of the Horizon*. But the task is large, the window of opportunity is short, and the stakes are existential.

In pursuit of that new horizon, let me briefly discuss progress and prospects in three critical areas - reporting, risk and return.

First, reporting

Three years ago in response to a call from G20 leaders, the FSB began addressing the financial stability risks associated with climate change by ensuring the market had the right information to price climate risk and reward climate innovation. The FSB established the Task Force on Climate-Related Financial Disclosures (TCFD) led by businesses from a wide range of industries across the G20. Eighteen months later, the TCFD delivered to the Hamburg G20 Leaders Summit its recommendations for voluntary disclosures of material climate-related financial risks.

Since then there has been a step change in both demand and supply of climate reporting.

On the demand side, current supporters of the TCFD include three-quarters of the world's globally systemic banks, 8 of the top 10 global asset managers, the world's leading pension funds and insurers, major credit rating agencies and the Big Four accounting firms[2]. In total, these financial firms manage almost US$110 trillion in assets.

... the speed with which this market develops will be heavily influenced by the coherence and credibility of climate policies. Finance will complement - and potentially amplify – but never substitute for climate policy action

As a consequence, the incentives for companies to disclose and manage climate-related risks have increased dramatically. Moreover, climate change claimed its first S&P 500 bankruptcy last year[3], climate-related shareholder resolutions spiked to 90 last year[4], investment managers controlling over 45% of global assets under management now back shareholder actions on carbon disclosure, and companies representing over 90% of all shareholder advisory services now support the TCFD.

Not surprisingly, the supply of disclosure is responding. Over 600 organisations, with a total market capitalisation of US$9 trillion, have endorsed the TCFD recommendations since 2017.

The TCFD's September 2018 *Implementation Report* assessed, using artificial intelligence, some 1800 companies, and analysed in detail an additional 200 of the largest companies, drawn from eight representative sectors from across the G20[5].

In both cohorts, the majority of companies were already disclosing information in their 2017 filings that aligned with one or more of the TCFD's recommendations. This is commendable given companies only had six months to respond to the final TCFD recommendations, but more progress is needed. In particular:

- Financial implications are often not yet disclosed;
- Disclosures are often in multiple reports making comparisons harder; and
- Disclosure varies by industry and region, with higher percentages of European firms and higher shares of those on the climate frontline – such as the energy sector – disclosing more information aligned with the recommendations.

The next milestone will be the TCFD implementation report for the G20 Leaders Summit in Osaka, which should set out:

- The growing momentum behind disclosure;
- The types of disclosures that are most decision-useful for investors; and
- Best practice examples, including examples of scenario analysis so that firms can test their strategic resilience to different climate outcomes.

The momentum behind TCFD's voluntary disclosure is creating a virtuous circle by encouraging learning by doing. As companies apply the recommendations and investors increasingly differentiate between firms based on this information, adoption will continue to spread, disclosure will become more decision-useful and efficient, and its impact will grow.

As firms work to enhance their disclosures, they are being supported by various TCFD Preparers' Forums from energy to finance[6]. The TCFD will also continue to work with market participants to refine metrics so that they are consistent, comparable and decision-useful; and it will share best practices on the disclosure of risk management and governance.

In the future, disclosure will move into the mainstream, and it is reasonable to expect that more authorities will mandate it. IOSCO could play a constructive role in coordinating such mandates and in any event, the current iterative process of disclosure, reaction and adjustment will be critical to ensure that these eventual market standards are as comparable, efficient and effective as possible.

Second, risk analysis
The second step on the path to a new horizon is better climate change risk management. Climate change creates both physical and transition risks[7].

Physical risks arise from the increased frequency and severity of climate- and weather-related events that damage property and disrupt trade.

Transition risks result from the adjustment towards a lower-carbon economy. Changes in policies, technologies and physical risks will prompt a reassessment of the value of a large range of assets as costs and opportunities become apparent. The longer meaningful adjustment is delayed, the more transition risks will rise.

Climate risks also 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.

Part of the genius of the private sector-led TCFD is its recognition that disclosure needs to go beyond the static to the strategic. 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 Bank of England has also become increasingly active in such assessments, consistent with our financial stability and prudential mandates.

As the supervisor of the world's fourth largest insurance industry, we know that general insurers and reinsurers are on the front line of managing the physical risks from climate change. Insurers have responded by developing their modelling and forecasting capabilities, improving exposure management, and adapting coverage and pricing[8]. In the process, insurers have learned that yesterday's tail risk is closer to today's central scenario.

Sadly with climate, history repeats not as a farce but as tragedy and with growing frequency. For banks, the financial risks from climate change have tended to be beyond their planning horizons. The PRA's survey of 90% of the UK banking sector, representing over $11 trillion of assets, found that these horizons averaged four years – in other words, before risks would be expected to be fully realised and prior to ambitious climate policies taking effect[9].

That notwithstanding, the PRA's latest survey finds that almost three quarters of banks are starting to treat the risks from climate change like other financial risks – rather than viewing them simply as a corporate social responsibility issue.

Banks have begun considering the most immediate physical risks to their business models – from the exposure of mortgage books to flood risk, to the impact of extreme weather events on sovereign risk. And they 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.

Informed by these findings, the PRA will soon publish its final Supervisory Statement for banks, insurers and investment firms[10]. This statement will set out the PRA's expectations regarding firms' approaches to managing the financial risks from climate change, including with respect to:

- 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 appetites;

- 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 to develop best practices, the PRA has established a Climate Financial Risk Forum, jointly with the FCA, to work with firms from across the financial system[11].

The responses to our supervisory consultation reflect the urgency and significance of the issues. Perhaps for the first time in financial regulation, firms are both thanking their supervisors for raising an issue and pushing us to go further; with some asking for more prescriptive recommendations and others for mandatory disclosures[12].

Certainly, while climate risk management is improving, there is more to do particularly when assessing strategic resilience.

For companies, that means conducting scenario analysis.

The TCFD *2018 Status Report* found that non-financial industries (energy, transport, building and agriculture) were the most advanced at measuring strategic resilience, including some examples of scenario analysis[13, 14].

The TCFD review found that the financial sector is also moving toward enhanced strategic analysis. For example half of all insurance companies reviewed used the 2°C scenario, and the majority of banks described the potential impact of climate-related issues on their businesses.

However, the September TCFD report showed that while firms were starting to consider strategic resilience, few systematically conducted scenario analysis.

Indeed, the PRA has found that despite the sophistication of insurers in modelling climate risks, there are still gaps in their own risk management. The PRA is increasingly focused on cognitive dissonance in some insurers whose careful management of climate risks on the liability side of their balance sheets is not always matched by similar considerations on the asset side.

And the PRA's banking survey last September found that, although almost three quarters of banks recognised the risks of climate change, only one in ten were taking a long term, strategic approach to them.

With that in mind, we expect firms to consider scenario analysis as part of their assessments of the impact of climate risks on their balance sheet and broader business strategy.

An important question is the form these scenarios should take. Climate scenarios aren't forecasts, but data- driven narratives that help companies think through different possible futures. The scenarios should be comprehensive, rigorous and challenging. The assumptions and methodologies in the models – such as the assumed global temperature rise, the energy mix, or whether the transition happens smoothly or abruptly – should be sufficiently transparent to allow for comparisons and external challenge. And finally, scenarios should be implemented consistently across the business, linking identification of risks and opportunities to both strategy and disclosure.

To do this, firms will need either to develop their own transition scenarios or build on commonly available models. The TCFD report signposts existing models that firms can use, and the PRA's Climate Financial Risk Forum will work with industry to review tools and metrics, with the view to publishing reference scenarios and standard assumptions[15].

For supervisors, assessing strategic resilience will require climate-related stress testing. This involves linking high-level data-driven narratives on the evolution of physical and transition risks to quantitative metrics to measure the impact on the financial system.

Next month, the PRA will ask UK insurers, as part of a market-wide insurance stress test, to consider how their businesses would be affected in different physical and transition risks scenarios.

Testing the banks, and possibly other participants in the financial system, with climate-change scenario stress tests would have two objectives:

1. To consider whether, across the financial system, financing flows are consistent with an orderly transition to the climate outcome set out in the Paris agreement. These long-term scenarios can facilitate discussions between firms and their clients about possible risks across different sectors and geographies; and

2. To consider whether the financial system would be resilient to shorter-term shocks – including a climate 'Minsky moment' when climate risks materialise suddenly.

These long and short-term risks are, of course, linked – any overall misalignment with climate goals increases the short-term risks from a disorderly transition, possibly caused by extreme weather events or abrupt shifts in climate policy. A system-wide stress test can help supervisors and climate policymakers judge the adequacy of the current transition and whether further actions could be expected.

As the Bank of England considers the timing and design of such a stress test, we are working with colleagues in the Network for Greening the Financial System (NGFS) to develop a small number of high- level scenarios[16]. And in our Climate Financial Risk Forum we will work with banks, insurers and asset managers to ensure these scenarios are rolled out effectively within their organisations. Together with our work on this year's insurance survey, these initiatives will provide a basis for our future assessments of the system-wide exposure to climate risks.

The third and final area is return

A new horizon brings new opportunities. The IEA estimates that the low-carbon transition could require $3.5 trillion in energy sector investments every year for decades – twice the rate at present. Under their scenario, in order for carbon to stabilise by 2050, nearly 95% of electricity supply will need to be low carbon, 70% of new cars electric, and the CO_2 intensity of the building sector will need to fall by 80%.

With an estimated US$90 trillion of infrastructure investment expected between 2015 and 2030, smart decisions now can make sure that investment is both financially rewarding and environmentally sustainable.

Regulators and market participants are collaborating to facilitate cross-border investments in green infrastructure. The European Commission's Sustainable Finance Action Plan is developing a classification system for sustainable economic activities, a harmonised green bond standard and methodologies for low- carbon indices[17]. The three major credit rating agencies have all integrated environmental risk and green certification into credit ratings. And international organisations such as the Climate Bonds Initiative (CBI) and International Capital Markets Association (ICMA) have developed definitional frameworks, certification and validation methods for green financing[18].

This work is helping the green bond market to gather pace, with issuance quadrupling from $45 billion in 2015 to $168 billion in 2018[19]. Last year also saw inaugural sovereign green issues from five countries[20].

For investors green bond markets offer stable, rated and liquid investments with long duration. For issuers, green bonds are a way to tap the huge US$100 trillion pool of patient private capital managed by global institutional fixed-income investors. The shift to the capital markets from banks will also free up limited bank balance sheet capacity for early-stage project financing and infrastructure lending.

Over the last two years, the City of London has been glowing green with sixteen renewable infrastructure funds with a value of $7 billion listed on the LSE. The City has been the centre of a series of landmark global green bond issuances, from China's first Green Covered Bond – the country's first ever international issuance of a green bond –

to the first green Masala Bond worth INR 20 billion. In our view, such local currency green bonds will be particularly important to the climate transition in emerging market economies (EMEs).

However, while they are important catalysts, green bonds will not be sufficient to finance the transition to a low carbon future. They accounted for only 3% of global bond issuance in 2018.

Achieving the transition will require mobilising mainstream finance. Advances in reporting and risk analysis are paving the way for investors to realise the opportunities in climate-friendly investment by re-orienting their focus to broader, more sustainable long-term value creation.

Such investment approaches are becoming increasingly common. There are now almost 2,000 signatories, with over $80 trillion in assets under management, to the UN Principles for Responsible Investment (UN PRI), an international network of investors committed to considering ESG factors in their work[21].

This swell of support is driven by the expectation that sustainable investment can generate excess returns in three ways.

First, companies that score well on ESG metrics could better anticipate future climate-related risks and opportunities. This makes them more strategically resilient and therefore able to anticipate, and adapt to, the risks and opportunities on the horizon, generating true alpha from ESG.

Second, strong ESG scores could signal that a firm is more naturally disposed to longer-term strategic thinking and planning. Climate disclosure is increasingly seen not only as necessary in and of itself, but also as informative about the extent to which companies are focused on long-term value creation.

And third, strong ESG firms may enjoy valuation premiums consistent with shifting investor preferences. Millennials, keenly focused on company values and sustainability, are set to inherit $24 trillion of wealth in the US alone over the next 15 years and will seek the investment opportunities to match[22]. Already, assets are moving to ESG strategies at 20 per cent annual growth[23].

A review of over 200 sources on ESG performance by Oxford University and Arabesque showed that in the overwhelming majority (88%) of companies that focused on sustainability, operational performance was improved, translating to higher cash flows[24].

And meta-analysis of over 2,000 studies confirms that the responsible, as well as the economic case for ESG investment is tangible. 90% of studies find that there is no penalty on return on ESG investment, and the majority suggest that focusing on ESG criteria generates a positive return[25].

The outperformance of strong ESG companies is uncorrelated with underlying factors such as return on equity or capital employed, and reflects greater earnings stability and lower share price volatility. While 'screening' - excluding poor ESG performers - is still the most common tool among investors, some research finds that a more proactive consideration of ESG factors may pay off[26, 27, 28].

'Tilt' strategies, which overweight ESG stocks, and 'momentum' strategies, which focus on companies that have improved their ESG rating, have outperformed global benchmarks for close to a decade[29].

This suggests that there is more to well-regarded ESG companies than simply better management of downside risk. Given this growing track record, companies are developing ways to better score ESG performance and invest accordingly. For example, Arabesque uses machine learning models to assess the performance and sustainability of companies, and stock selection strategies to tailor portfolios to a wide range of investor ESG preferences. Recently BNY Mellon adopted such an approach motivated in part by the EU's Directive on Pensions (IORP II)[30].

Earlier this year UBS launched a pilot project that will allow investors to rate how much weight they want to place on different ESG factors[31]. And last month, BlackRock launched six new Exchange Traded Funds (ETFs) that combine an ESG uplift and a 30% reduction in carbon emissions[32]. These sustainable building blocks can be substituted into many traditional portfolios, improving ESG scores and reducing greenhouse gas (GHG) intensity without sacrificing performance.

In the future, climate and ESG considerations will likely be at the heart of mainstream investing. Investors will tailor their investments and fulfil their fiduciary duties through: better quality and more widely available data on sustainability and performance; superior data analytics through the advent of AI and Machine Learning; and more informed judgements of strategic resilience.

Conclusion: a new horizon

Financial policymakers will not drive the transition to a low-carbon economy. Governments will establish the climate policy frameworks, and the private sector will make the necessary investments.

Nonetheless, financial policymakers do have a clear interest in ensuring the financial system is resilient to any transition hastened by those decisions. Our role is to develop the frameworks for markets to adjust efficiently.

A market in the transition to a two-degree world is being built. It will reveal how the valuations of companies could change over time as climate policies adapt and carbon intensity declines. It will expose the likely future cost of doing business, of paying for emissions, and of tighter regulation.

It will help smooth price adjustments as opinions change, rather than concentrating in a climate 'Minsky moment'. And it will allow feedback between the market and policymaking, making climate policy a bit more like monetary policy, with policymakers learning from markets' reactions, and markets internalising policymakers' objectives, strategies and instruments.

In this way, recent progress in disclosure, risk management and return optimisation is creating a path to a new horizon. A virtuous circle is becoming possible where companies disclose more information, investors make better informed decisions, and sustainable investment goes mainstream.

But the speed with which this market develops will be heavily influenced by the coherence and credibility of climate policies. Finance will complement - and potentially amplify – but never substitute for climate policy action.

The policy frameworks with the greatest impact will be: time consistent (not arbitrarily changed); transparent (with clear targets, pricing and costing); and committed (through treaties, nationally determined contributions (NDCs), domestic legislation and consensus).

As countries build their track records and their credibility grows, the market will allocate capital to deliver the necessary innovation and growth and pull forward the adjustment to a low carbon future.

The more prolific the reporting, the more robust the risk assessment and the more widespread the return optimisation, the more rapidly this transition will happen, breaking the *Tragedy of the Horizon*. ■

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12. Forthcoming April 2019

13. As described in TCFD September 2018 report: These companies disclose the inputs to and outputs of their scenario analyses including strategic responses to the low-carbon transition, such as changes in portfolio mix or investment.

14. Encouragingly, all members of the oil and gas preparer forum used the 2-degree energy transition scenario to inform strategic decisions. The materials and building sector also had the highest percentage of companies disclosing information about strategic resilience and most provided some information on the climate-related scenarios they used to make these assessments.

15. The most widely used and well-known are the IEA transition scenarios, which model six different assumed pathways and associated temperature increases. For modelling physical risks, the IPCC's four Representative Concentration Pathways (RCPs) fix greenhouse emissions and analyse the resulting change to the climate.

16. The voluntary network was set up by 8 central banks and supervisors in December 2017 at the One Planet Summit, and has since grown to 29 members, representing countries accounting for nearly half of global emissions, and five observers. It is a voluntary, consensus-based forum whose purpose is to share best practices, contribute to the development of climate- and environment-related risk management in the financial sector and mobilize mainstream finance to support the transition toward a sustainable economy. The analytical work is split into three work streams and the research will be published in April 2019: WS1 microprudential/supervisory; WS2 macrofinancial; and WS3 Scaling up green finance.

17. For more information on the Commission's Sustainable Plan, see:
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Greening monetary policy

The EU is committed to a low-carbon economy. Dirk Schoenmaker believes that the transition could be accelerated by tweaking the Eurosystem's allocation of capital

The ECB's market-neutral approach to monetary policy undermines the general aim of the EU to achieve a low-carbon economy. The column argues that steering the allocation of the Eurosystem's assets and collateral towards low-carbon sectors would reduce the cost of capital for these sectors relative to high-carbon sectors. A modest titling approach could accelerate a transition to a low-carbon economy, and could be implemented without interfering with the priority of price stability.

Central banks traditionally take a long-term perspective on economic and financial developments. Through monetary policy they play an important role in the economy, and their mandate to ensure financial stability means they have an important role in the financial system too.

As part of this commitment, central banks have begun to examine the impact of climate-related risks on the stability of the financial system (Carney 2015). In monetary interventions, central banks have a long-standing policy of market neutrality, but there is evidence that the market has a bias towards carbon-intensive companies, and so monetary policy cannot be climate neutral (Matikainen *et al*. 2017). Doing nothing to meet this challenge is a decision that undermines the general policy of the EU to achieve a low-carbon economy.

In a recent paper (Schoenmaker 2019), I propose steering the allocation of the Eurosystem's assets and collateral towards low-carbon sectors, which would reduce the cost of capital for these sectors relative to high-carbon sectors. A modest tilting approach could reduce carbon emissions in their portfolio by 44% and lower the cost of capital of low-carbon companies by four basis points. This can be done without interfering with the transmission mechanism of monetary policy. Price stability, the primary objective, should remain the priority of the Eurosystem.

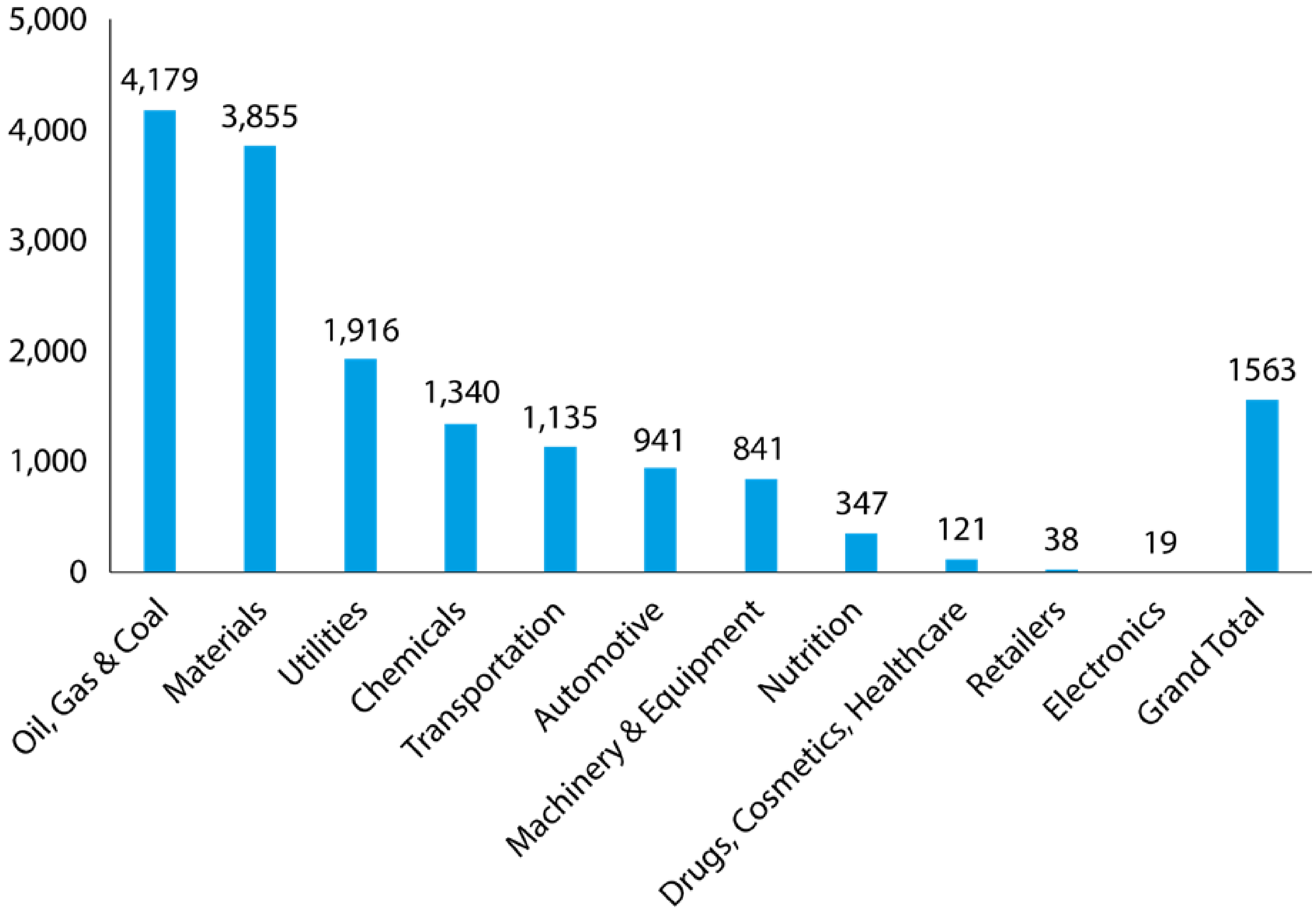
Carbon-intensive assets

Carbon-intensive companies – such as fossil-fuel companies, utilities, car manufacturers and airlines – are typically capital-intensive. Market indices for equities and corporate bonds are therefore overweight in high-carbon assets. Figure 1 summarises the average carbon intensity, defined as carbon emissions divided by sales, of industrial sectors in Europe.

As we might expect, the oil, gas, and coal sector has the highest carbon intensity followed by the materials sector (metal producers and construction), utilities, chemicals, transportation (airlines), and automotive (carmakers). The lopsided distribution of carbon intensity shows that carbon emissions are concentrated in a few sectors.

A low-carbon allocation policy in the Eurosystem's asset and collateral framework would therefore contribute to the EU's policy of accelerating the transition to a low-carbon economy

Figure 1. Average carbon intensity by industry (emissions in tonnes of CO_2 divided by sales in millions of €)



Note: Scope 1, 2 and 3 emissions are included for the 60 largest corporations in the euro area.
Source: Schoenmaker (2019).

In its monetary policy, the ECB – like any other central bank – follows a market-neutral approach in order to avoid market distortions. This means that it buys a proportion of the available corporate bonds in the market. This market-neutral approach leads to the Eurosystem's private-sector asset and collateral base being relatively carbon-intensive too (Matikainen *et al*. 2017).

Investment in high-carbon companies reinforces the long-term lock-in of carbon in production processes and infrastructure. We can conclude that the ECB's market-neutral approach undermines the broader policy of the EU to achieve a low-carbon economy.

Now that central banks have started to examine the impact of climate-related risks on the stability of the financial system (Carney 2015). Why not address the carbon intensity of assets and collateral in central banks' monetary policy operations as well?

Legal mandate

First, the legal mandate of central banks must allow the 'greening' of monetary policy. The primary responsibility of central banks is to maintain price stability, with a secondary responsibility to support economic growth. Interestingly, the EU applies a broad definition of economic growth. Article 3(3) of the Treaty on European Union says that:

> *"The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability … and a high level of protection and improvement of the quality of the environment."*

This broad definition of sustainable economic growth could provide a legal basis for greening monetary policy.

The ECB can only pursue its secondary objectives as long as they do not conflict with its first objective. The proposed tilting approach would not lead to undue interference with price stability. As everyone is a stakeholder in the environment and the climate (Schoenmaker and Schramade 2019), the ECB could contribute to the climate agenda without getting into political discussions.

There is thus a need for political space for the ECB to avoid central bankers making policy decisions. As climate policy is a top priority of European policy on a consistent basis, the ECB can contribute to this secondary objective using its asset and collateral framework of monetary policy operations. The European Commission and Council have repeatedly stated their aim to combat climate change by reducing carbon emissions. European Parliament members have also asked questions to the ECB president about the ECB's lack of carbon policies (see, for example, Draghi 2018).

Greening monetary policy operations

I propose a tilting approach to steer the Eurosystem's assets and collateral towards low-carbon companies (Schoenmaker 2019). The Eurosystem manages about €2.6 trillion of assets in its Asset Purchase Programme, which includes corporate and bank bonds in addition to government bonds[1]. In its monetary policy operations, the Eurosystem provides funds to banks in exchange for collateral, which currently amounts to €1.6 trillion. A haircut is applied to the value of collateral, reflecting the credit risk.

To avoid disruptions to the transmission of its monetary policy to the economy, the Eurosystem should remain active in the entire market. The basic idea of tilting is to buy relatively more low-carbon assets (for example, a 50% overallocation) and fewer high-carbon assets (in this case, it would be a 50% underallocation). The Eurosystem can then apply a higher haircut to high-carbon assets. Calculations show that such a tilting approach could reduce carbon emissions in the Eurosystem's corporate and bank bond portfolio by 44%.

Applying a higher haircut to high-carbon assets also makes them less attractive, reducing their liquidity. Early estimates indicate that this haircut could result in a higher cost of capital for high-carbon companies relative to low-carbon companies of four basis points.

Accelerating the transition

A low-carbon allocation policy would reduce the financing cost of low-carbon companies, fostering low-carbon production. The higher cost of capital incentivises high-carbon companies to reform their production process using low-carbon technologies, because this will save on financing costs.

A low-carbon allocation policy in the Eurosystem's asset and collateral framework would therefore contribute to the EU's policy of accelerating the transition to a low-carbon economy. To avoid political interference, it is important that the Eurosystem remains fully independent in the choice and design of its allocation policies.

This allocation policy can and must be designed so it does not affect the effective implementation of monetary policy. Price stability is, and should remain, the top priority of the Eurosystem. ■

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Avoiding the storm: climate change and the financial system

Climate change poses significant risks to the economy and to the financial system, Sarah Breeden asserts, and calls for action today

My message is simple. Climate change poses significant risks to the economy and to the financial system, and while these risks may seem abstract and far away, they are in fact very real, fast approaching, and in need of action today. In short, there are storm clouds on the horizon and the financial system needs to act now to plot a new course to safer waters. To do that we will need three things. Firstly, a destination. Secondly, an able crew. And finally, a nautical chart – or map - to get us there.

We have the destination. More than 190 countries have signed the 2015 Paris agreement and set a goal to limit average global temperature rises to well below 2 degrees above pre-industrial levels. We even have a broad course to follow – that of a smooth and orderly transition.

We have also assembled a crew. Managing the transition to a low carbon economy is a global challenge that requires a global response. And so a coalition of the willing among central banks and supervisors have come together to form the Network for Greening the Financial System (NGFS).

In addition, and closer to home, we are working domestically with industry through the Climate Financial Risk Forum (CFRF) to build intellectual capacity and establish best practice in how to manage the financial risks from climate change.

What we are missing is the map. Getting us to our destination requires an understanding of what risks lurk in these deep waters and what future winds may buffet us, so we can make better decisions today. We need more data, greater disclosure, better analytical toolkits, advanced scenario analysis and new risk management techniques to help identify the hidden dangers on our journey. Of course there are opportunities potentially in front of us, too. Financing that orderly transition to a low carbon economy holds the promise of favourable tailwinds and smooth sailing.

But how do we begin to draw this map? Climate change is an unprecedented challenge and, I am sorry to say, there are no existing charts for us to follow.

We therefore need to start with the very basics - understanding how, and on what scale, climate change creates risks for the financial system.

How the financial risks from climate change affect the financial system

The financial risks from climate change manifest through two channels – physical risks and transition risks.

We can already hear distant thunder, but we must not wait for the storm to hit. We need to work together internationally and domestically, private sector and public sector, to achieve a smooth and orderly transition

Physical risks arise from damage to property, land and infrastructure from catastrophic weather-related events and broader climate trends such as heatwaves, hurricanes, droughts, floods and rising sea levels.

These are not just risks for the future. Inflation-adjusted insurance losses from these events have increased fivefold in recent decades. And these physical risks affect banks and other financial institutions too. For example, according to analysis by ClimateWise, the average annual loss on UK residential mortgages from flood risk is expected to more than double by 2050 in a 4 degree world. And smaller lenders with geographic concentrations would be more at risk. The risk to the safety and soundness of the firms we supervise is clear.

Transition risks arise from changes in climate policy, technology and market sentiment as we adjust to a lower-carbon economy. The need to transition is widespread, affecting not only energy companies but also transportation, infrastructure, agriculture, real estate to name just a few. The implied change in energy costs from the transition will have a significant effect on many businesses. And so banks that have provided loans to those companies and investors that own their securities may find themselves with unexpected losses.

The timing and form of transition is inherently uncertain. But here, too, risks are already materialising. Tightening energy efficiency standards are affecting property markets. And credit risks associated with the low-carbon transition are already emerging in the automotive and energy sectors.

The distinctive nature of the risk

It is therefore clear to us at the Bank that climate change creates financial risks that are core to our mandates of safety and soundness and financial stability. But we have also been clear that the financial risks that climate change creates are distinctive and require a different approach if they are to be managed effectively.

First the risks are far-reaching in breadth and scope. They will affect all agents in the economy, in all sectors and across all geographies. Their impact will likely be correlated, and non-linear. They will therefore occur on a much greater scale than other risks.

Second, the risks are eminently foreseeable. I cannot tell you now exactly what will happen and when. But I can say with a high degree of certainty that some combination of physical and transition risk will materialise at some point in the future. Uncertainty about what will happen cannot lead to inaction and inertia. Rather we must develop different ways of managing the risk.

Third - and for me this is key - the size of those future risks will be determined by the actions we take today. The carbon released today is creating the physical and transition risks of tomorrow. Climate change therefore represents the tragedy of the horizon: by the time it is clear that climate change is creating risks that we want to reduce, it may already be too late to act.

That need to act most obviously includes government through climate policy. But since the financial risks that climate change creates are to be managed in all future states of the world, it is incumbent upon financial firms, and central banks and supervisors, to act too.

Sizing the risk

How well placed are we to measure these far-reaching, foreseeable financial risks that require action today? To return to our metaphor of the storm – do we know if we are facing a near gale or a hurricane?

Studies show that average global incomes could be significantly reduced, perhaps by as much as one-quarter by the end of the century, if limited or no action is taken to reduce carbon emissions. Global averages of course mask significant differences across regions and sectors. And most estimates are in my view conservative – particularly since the models are partial, heavily dependent on assumptions, and do not capture well the non-linearities that are a key feature of the most recent climate analysis.

The good news is that these risks can in principle be avoided. Let me be clear, the scale of transition is significant. But it need not create substantial costs across the global economy as a whole.

There will of course be winners and losers. Studies have focused on the impact from the transition on the financial system through 'stranded assets' that turn out to be worth less than expected, probably zero in the case of unburnable carbon. The estimated losses are large – $1 trillion-$4 trillion when considering fossil fuels alone, or up to $20 trillion when looking at a broader range of sectors.

Even at the bottom ends of these ranges, losses represent a material share of global financial assets. A climate Minsky moment, where asset prices adjust quickly with negative feedback loops to growth, seems possible. That underlines why the financial system needs an early and orderly transition. And why we need to change course now.

The Bank of England's response

Now we have established that the financial risks from climate change are significant and relevant to our objectives, what is the Bank of England doing about it?

We are of course considering the implications of climate change for our own operations, taking account of the financial risks from climate change whilst ensuring the purpose of our core operations as a central bank is preserved.

In our work with the financial system more broadly we are taking a two-pronged approach, tackling the issue top-down and bottom-up.

Bottom-up: supervisory expectations, CFRF, disclosure

The action, or lack of action, of individual institutions will be critical in determining whether climate-related risks are well managed.

To that end, today, and following several months of consultation, we became the first regulator in the world to publish supervisory expectations that set out how the banks and insurance companies we regulate need to develop an enhanced approach to managing the financial risks from climate change.

Our expectations cover governance, risk management, scenario analysis, and disclosure. They are designed to ensure firms take a strategic approach, led by the Board, and with clear accountability. The approach should be holistic, forward-looking, embedded in business-as-usual risk management but grounded in the long-term financial interests of the firm.

We have deliberately not been prescriptive in our expectations, recognising that our understanding of this risk is immature but that it needs action now. Over the next year or so, as tools and expertise develop, we will however embed more granular requirements into our policy, to bring industry in line with our evolving expectations.

To support this development of best practice, we have established the UK Climate Financial Risk Forum (CFRF), co-chaired by the Prudential Regulation Authority and the Financial Conduct Authority. The forum brings together a wide range of industry participants (banks, insurers, the LSE and asset managers) as well as regulators. We have established four workstreams – disclosure, risk management, scenario analysis and innovation – each of which will help us put greater detail on our map.

The Bank supports the disclosure of climate risks by firms in line with standards set out by the Task Force on Climate-related Financial Disclosures (TCFD).

Disclosure by firms is critical if the financial system is to be able to weigh risks and direct investment accordingly. It is essential that that disclosure is forward-looking, speaking to future risks and opportunities and not just current emissions. Speaking personally, I cannot see that we will be able to disinvest our way to a low carbon economy. And we need to get to a position where we have a better basis for consistent comparisons across different firms.

Top-down - scenario analysis, BES, stress testing

Let me be clear this is just the start of our voyage. To be able to judge whether we are sufficiently well prepared for the future storms - to see whether a change in course or greater financial resilience is required - we need to look forwards not backwards, and we need to consider the position of the system as a whole.

Measuring these future risks from climate change to the economy and to the financial system is a complex task. A myriad of possible climate pathways – with different physical and transition effects – need to be translated into economic outcomes and financial risks looking ahead over many decades.

To simplify that challenge, we need to focus not on what will happen but what might happen. To do that we can use scenario analysis – data driven narratives that help anchor our assessments of risk. We might think of that as investigating a small number of different courses that we could follow, in order to determine which delivers the safest passage.

Using scenario analysis to paint a picture of the risks of continuing along the current climate trajectory creates a clear strategic imperative to act. Considering a scenario where our climate goals are met highlights the changes that will be needed to support a transition to a low carbon economy.

Both expose the customers, sectors and geographies that are vulnerable to physical and transition risks and therefore highlight the areas where action is required.

Analysis of a disorderly transition - with sudden, unanticipated and discontinuous effects, perhaps prompted by the greater occurrence of extreme weather events – will demonstrate greater risk. That should incentivise financial firms to seek to pull forward the transition so that they are ahead of and in control of it - directing their capital to those that are resilient and avoiding those that are not.

By taking different decisions today, participants in the financial system are able to minimise their future financial risks. But while necessary, that may not be sufficient to deliver a financial system that is resilient to the financial risks from climate change.

Instead, we need also to consider this risk at the level of the system. In particular, do the actions of individual institutions in aggregate deliver the smooth climate pathway that their individual plans assume? And if they do not, what further action is required? In this way we can begin to stress the resiliency of financial system to the risks from climate change.

To that end, the Financial Policy Committee and the Prudential Regulation Committee here at the Bank of England will consider including climate related factors in a future Biennial Exploratory Scenario. The PRA will also ask UK insurers, as part of its market-wide insurance stress tests this year, to consider how their businesses would be affected in different physical and transition risk scenarios. And the NGFS plans to set out voluntary guidelines for how central banks can use scenario analysis to assess system-wide financial risks from climate change.

Scenario analysis thus bridges the gap between our top-down and bottom-up understanding of risk. That supports different actions by financial firms, central banks and supervisors today, and ensures that everyone is steering a safer course to avoid that otherwise impending storm.

Opportunities

My natural focus as a central banker is on the risks. But let me spend a brief moment on the opportunities.

The investment needs to finance this transition are significant – an estimated $90 trillion (almost five times US GDP) by 2030. This presents substantial opportunities for the financial sector to develop new products and services to mainstream green finance.

To support that goal, we might well need to develop new standards and classifications to identify which economic activities contribute to the transition to a low-carbon economy. With buoys pointing the way, we will be better able to identify the investment and lending decisions that will support a smooth and orderly transition.

Conclusion

Where does this leave us? I set out at the beginning our need for a map to get us to our destination. And I have set out how we at the Bank of England have begun to draw that map and where further cartography is in train.

What I did not mention is that the economy and the financial system appear to me to be like super-tankers rather than high-speed catamarans in the America's Cup. To change course, therefore, we need early action, a sustained effort and a recognition that it is better to be roughly right now not precisely right when it is too late. We can already hear distant thunder, but we must not wait for the storm to hit. We need to work together internationally and domestically, private sector and public sector, to achieve a smooth and orderly transition.

The window for that orderly transition is finite and closing. And our work to seize that opportunity could not be more important. Indeed it is not an overstatement to say that the future of our planet depends on it.

All hands on deck. ■

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The market is betting on climate change

Wolfram Schlenker and Charles Taylor look at weather derivatives in financial markets to assess beliefs about climate. They find that traders have been pricing in a warming trend that is closely aligned with the projections of scientific climate models

Understanding beliefs about climate change is important, but most of the measures used in the literature are unreliable. Instead, this column uses prices of financial products whose payouts are tied to future weather outcomes in the US. These market expectations correlate well with climate model outputs between 2002 and 2018 and observed weather data across eight US cities, and show significant warming trends. When money is at stake, agents are accurately anticipating warming trends in line with the scientific consensus of climate models.

Scientists overwhelmingly agree that climate is changing because of human activity. But public opinion in the US remains mixed. As of 2016, less than half of Americans believe that the Earth is getting warmer due to human activity, a number which hasn't budged much since the Pew Research Center started asking the question back in 2006.

These views vary greatly across geography, political affiliation, educational status, and economic sector (Leiserowitz *et al*. 2016). Likewise, politicians in the US have questioned the evidence on climate change, with some famously calling it an 'elaborate hoax'. However, public statements and poll responses on highly politicised issues like climate change can be unreliable.

In our recent paper (Schlenker and Taylor 2019), we look at weather derivatives in financial markets to assess beliefs about climate. We find that traders have been pricing in a warming trend that is closely aligned with the projections of scientific climate models, as well as the observed weather outcomes during that time.

Our data come from the Chicago Mercantile Exchange, which offers monthly futures contracts for eight cities on two main weather products – cooling degree days, which measure how much cooling is necessary during hot temperatures in summer months, and heating degree days, which measure how much heating is required during cold temperatures in winter months.

The contracts are indexed to 65°F, a common standard for utility companies because cooling and heating systems tend to be turned on above and below that level, respectively. For example, a mean daily temperature of 85°F degrees would count as 20 cooling degree days. These daily degree days are then summed over the course of a month or season.

Futures prices closely follow the predictions of climate scientists, which, on average, appear to have materialised, thus validating the climate models. This close agreement between markets and models implies that traders are taking into consideration the scientific consensus on climate change when making trades

Introduced in 2002, the futures contracts allow companies to mitigate losses stemming from fluctuations in the weather (eg. a heating oil distributor can hedge against low sales stemming from a warm winter). They also allow traders to bet on whether a particular month will be hotter or colder than average. And since they are traded prior to the month on which their price is based, the contract price provides a direct measure of the market's view on future climate beyond the ten to fourteen-day window in which weather forecasts have predictive power.

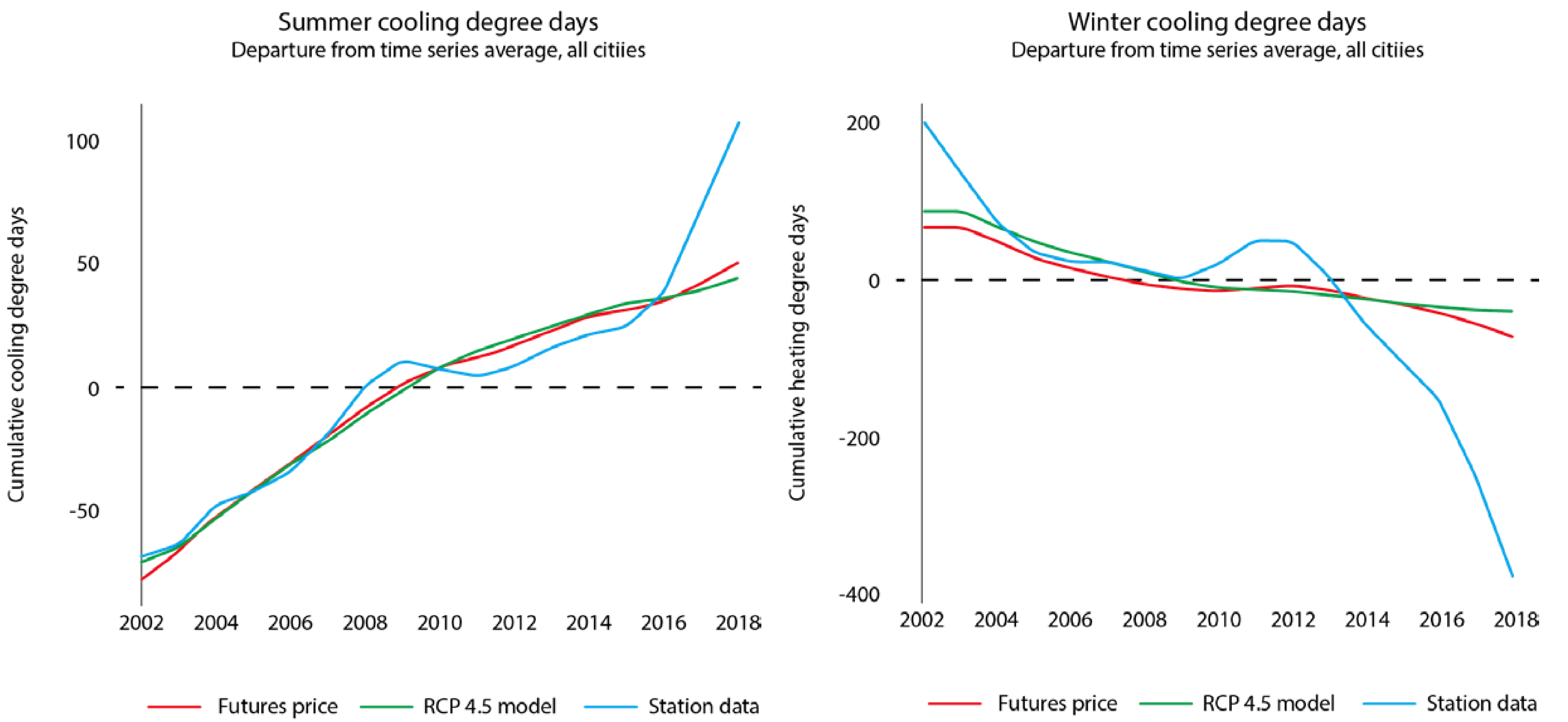
At the beginning of June, for example, traders begin placing bets on how hot July will be, an outcome unknown at the time the trades are made. We test whether this price has changed over the years.

For the eight cities from 2002 to 2018, we sum up the yearly predictions for cooling degree days between July and September, and for heating degree days between November and March. We then compare annual price trends, actual temperature trends, and the projections made in 2006 by an ensemble of climate models.

All show significant warming, ie. an increase in cooling degree days in summer and a decrease in heating degree days in winter. In other words, the market's predictions are aligned with observed warming trends. The relationship is weaker during winters than summers, but still robust. It holds after controlling for changes in ocean circulation patterns such as El Nino and the North Atlantic Oscillation, which have been shown to be strong predictors of temperature (Zebiak and Cane 1987).

Futures prices closely follow the predictions of climate scientists, which, on average, appear to have materialised, thus validating the climate models. This close agreement between markets and models implies that traders are taking into consideration the scientific consensus on climate change when making trades.

Figure 1. Trends in futures prices, weather station data, and climate models



Note: The figure estimates non-parametric trends using lowess regression on the average annual residual among the eight city airports. The left panel shows cumulative degree days for summer (June-September) and the right panel for winter (November-March).

Overall, we find that the market has been accurately pricing in climate change, largely in line with global climate models, and that this began occurring at least since the early 2000s when the weather futures markets were formed.

Our findings are relevant to understanding climate adaption. Economists have studied the costs and benefits of a changing climate (Auffhammer 2018), often by estimating damages by looking at the impacts or random year-to-year weather fluctuations (Dell *et al*. 2014).

But if people are adapting to what they see as a permanent change in climate – and shifting their behaviours and investments accordingly – then it may not be appropriate to assume these observed weather sensitivities over the long term. And before people can adapt, they first need to believe that climate is changing. Therefore, knowing true beliefs about climate change is crucial for both successful policymaking and adaptation.

Anyone doubting the observed warming trend can make a significant profit by betting against it in weather markets. However, the observed annual trend in futures prices shows that the supposedly efficient financial markets agree that climate is warming. When money is on the line, it is hard to find parties willing to bet against the scientific consensus. ■

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Global economy threatened by 'sustainable' investments

Governments are pressuring portfolio managers to invest their clients' funds in sustainables. Martin Hutchinson critically examines the arguments made in favour of investing in sustainables

Recent decades have seen the substantial growth of the so-called 'sustainable' investments movement, which would have portfolio managers invest their clients' funds in assets that are perceived to promote social benefits, especially benefits to the environment. In fact, such investments undermine the global economy and contribute to the political corruption that undermines civil order as well.

The aims and claims of sustainable investments

Calls for sustainable investments are often related to Environmental, Social and Governance (ESG) criteria, which were defined in a 2005 report by the firm Freshfields Bruckhaus Deringer on behalf of the United Nations[1]. Today, sustainable investments made in accordance with these criteria total about $12 trillion, up from $639 billion in 1995. Of that total, nearly $2 trillion are invested primarily with environmental goals in mind[2].

One might think environmental criteria had to do mainly with, for example, avoiding investing in projects that would pump dangerous pollutants in rivers. That sounds sensible. However, the primary environmental focus today is on whether a company's operations contribute adversely to the perceived problem of global warming. Climate alarmists who define environmental criteria allege that increased amounts of atmospheric CO_2 produced by using fossil fuels to generate energy is creating runaway warming that will seriously harm humans. But on closer examination, the argument for making investments based on this criterion collapses.

Fiduciary duties

To begin with, the environmental element of sustainable investment guidelines runs counter to the goals of fiduciaries and other investors whose primary duty or goal is to maximize returns on an investment portfolio.

Professional investors managing institutional portfolios for others, especially large retirement funds, have a legal and moral obligation to look first and foremost to their fiduciary duties to their clients. They are 'playing with other peoples' money,' not engaging in an exercise to promote their personal values. When it comes to sustainable investments, professional investors' duties often come into conflict with the environmental element of the ESG principles.

Institutional biases

To fulfill their fiduciary duties properly, portfolio managers are obliged to do their research and to understand that materials supporting sustainable investments are often biased. Many reports are produced by organizations with a vested financial interest in the topic, including large banks, utilities, renewable energy producers, and insurers. In other cases, political ideology taints sustainable investment reports.

It's better to protect prosperity and portfolios by engaging in responsible investment practices that properly balance the real risks and rewards of investing than to depend on the fantasies of 'green' extremists

A primary source of much of the climate alarmist bias surrounding sustainable investments is the reports of the UN Intergovernmental Panel on Climate Change[3]. That organization systematically excludes and even refuses to acknowledge a mountain of materials that question the climate change orthodoxy.

For example, the Nongovernmental International Panel on Climate Change has produced four volume of its *Climate Change Reconsidered* series[4]. All four volumes, each nearly 1,000 pages, include well-documented, in-depth articles by hundreds of reputable and highly credentialed scientists, scholars, and economists from around the world who offer a more realistic and sceptical assessment of climate issues.

A deep dive into the science behind climate alarmism shows it to be unsound on many levels. Predictive models fail to predict accurately or to line up with measurable data. Data is often 'adjusted' to line up with failed models[5].

Portfolio managers fail in their fiduciary duties by taking popular nostrums and climate alarmists' assertions on faith as gospel.

Pressures to invest

Portfolio managers rightly look for investment opportunities that maximize returns at risk levels acceptable to clients. But their liberty to make such investments is often limited by outside pressures, especially from governments.

Requirements that managers report the degree to which their investments support the climate alarmist anti-fossil fuel agenda or even to demonstrate that their investments promote that agenda is a major source of pressure.

In France, 2005/2008 legislation targeting pension funds and investment companies requires the *"introduction of a sustainable investment strategy and mandatory inclusion of at least one fond solidaire."*[6]

In the Netherlands, the 2008/2013 Pension Fund Act declared a *"pension fund must publicly disclose details of its sustainable investment strategy"* and a 1995 act offered tax reductions for green investments[7].

The Swiss regions of Geneva (in 2014) and Vaud (in 2015) changed their laws so that they *"now oblige their respective pension funds to comply with sustainable development and responsible investment objectives."*[8]

In September 2018, California passed legislation mandating that the state's two largest pension funds, California Public Employees' Retirement System and the California State Teachers' Retirement System, take climate change into account and report on meeting the anti-CO_2 goals of the Paris Climate Agreement[9]. (In June 2017, the Trump administration announced the United States will pull out of that agreement.)

In May 2018, the European Commission presented three proposals aimed at establishing disclosure requirements on how institutional investors integrate ESG factors in their risk processes and creating a new category of benchmarks that will supposedly help investors compare the carbon footprint of their investment[10]. No portfolio manager is likely to respond, *"I don't care about these benchmarks based on bad science. I'm protecting my clients' funds."*

If sustainable investments were good investments, governments would not need to force portfolio managers to make them.

Relying on government subsidies

Many sustainable investments are made attractive by government subsidies and favours rather than on their own merits. However, governments do a poor job of picking technologies that are economically viable.

In the US, Solyndra[11], which sought to manufacture its uniquely designed photovoltaic solar panels, received a $535 million government loan guarantee in 2009. When the company went bankrupt in 2011, taxpayers had to cover that giant loss. Any sustainable investments that would have been made in Solyndra would have been lost.

Wind turbines provide another example of a highly subsidized technology that has failed to meet expectations and has left investors with large losses. Some offshore wind farms have suffered rapid salt-induced erosion of their turbines, forcing them to shut down years before their expected end date. In total, the United States is estimated to have 14,000 abandoned wind turbines[12].

In Germany, 5,700 of the country's 29,000 wind turbines with an inherited capacity of 45 MW are expected to be abandoned in 2020, when their subsidies run out and they become uneconomical. It is thus likely that after 2020, Germany's wind power output will decline. Under German law, the entire turbine, including the massive concrete base, must be removed when the turbine ceases operating. Removing turbines is a mammoth task, because each German wind turbine weighs 3,000 tons, including its reinforced concrete base[13].

Promoting cronyism and corruption

Those portfolio managers who are tempted to virtue signal or are being eco-shamed into making sustainable investments must appreciate that they are an integral part of a corrupt, crony system—one that they are effectively endorsing by continuing to take part in it. They are handing over their clients' funds to be used by businesses and special-interest groups that profit from government power and influence, rather than by producing goods and services to sell to willing customers. Such arrangements can rightly be described as 'legal corruption.'

This is certainly contrary to the letter and spirit of the Environmental, Social and Governance criteria. The ESG criteria are supposed to allow socially conscious investors to earn profits while making the world a better place.

But unless one accepts the most extreme fears of climate alarmists—namely that without draconian government measures to restrict CO_2 emissions, humanity's future and millions of lives will be endangered—it is unreasonable to say those participating in government-supported sustainable investments are improving the planet in a reasonable way.

Global economic effects of sustainable investments

If there is any consideration portfolio managers should take account of beyond immediate returns on investment on their clients' funds, it's that there be a healthy, growing, dynamic economy in which to invest. Investors in sustainable assets promoted or mandated by government are complicit in the serious economic damage they have and will continue to cause, and they are undermining the markets upon which a sound economy depend.

A 2016 Manhattan Institute report noted, *"Between 2005, when the EU adopted its Emissions Trading Scheme, and 2014, residential electricity rates in the EU increased by 63 percent, on average. In Germany, those rates increased by 78 percent; in Spain, by 111 percent; and in the UK, by 133 percent. Over the same period, residential rates in the US rose by 32 percent. In 2016, households in Germany paid about 40 cents per kilowatt-hour for electricity, compared to the American average of about 12.5 cents."*[14]

A September 2013 article in *Der Spiegel*, acknowledged the destructive effects of the war on fossil fuels in an article exploring *How Electricity Became a Luxury Good*[15]. It reported in 2013 German consumers would be forced to pay six times the price for electricity from solar, wind and biogas plants as would be the market price for that energy.

No wonder in 2013, car manufacturer BMW decided to build a new $100 million plant to manufacture carbon fibers for its vehicles in Moses Lake, Washington. A major reason it chose not to build this factory in Germany is that German electricity costs six times more than the hydro-electric power available in Washington State[16].

Australia, one of the world's major coal producers which had generated 80 percent of its electricity from that resource, has similarly pursued economically destructive anti-fossil fuel policies[17]. The state of South Australia committed to transitioning to a system relying almost entirely on renewable energy faster than other states.

As a result, a September 2016 blackout in that state left 1.7 million people, approximately 7 percent of Australia's total population, in the dark. It was 12 days before power would be fully restored. A similar blackout hit the region in February 2017. Australian electricity prices soared and in 2018, the ruling Liberal Party replaced its leader, the countries prime minister renewable energy proponent, Malcolm Turnbull, with Scott Morrison who pledged lower energy prices.

In any case, expensive renewable resources meant to protect the environment are anything but clean[18]. A recent study by Environmental Progress, for example, warns toxic waste from used solar panels poses a global environmental threat, creating 300 times more toxic waste per unit of energy than do nuclear power plants.

Further, it would almost be physically impossible to replace all fossil-fuel generated energy with renewables. In 2016, several American environmental groups offered a plan to replace all fossil fuel energy with renewables by

2050. But the 46,480 solar PV plants envisioned would take up almost the total land area of Texas, California, Arizona and Nevada[19].

Taking the investment high road

Global commerce today is directly threatened by the unsubstantiated assumptions of climate alarmists: that the atmosphere is warming dangerously; that human use of fossil fuels rather than natural or sunspot cycles or other causes are responsible; that sustainable resources can generate enough energy to replace fossil fuels; that the clear damage to global commerce and economies caused by draconian climate alarmist policies will be offset by future benefits. Portfolio managers are put in a difficult situation because this orthodoxy does often go unquestioned.

But their fiduciary duties would at least require them to obtain explicit, informed consent from clients about the risks of so-called 'sustainable' investments. Better still, socially conscious investment managers could take the moral high ground and attempt to educate their clients about the fallacies of sustainable investments. Why passively follow an investment strategy that is likely to harm a client's interests?

It's better to protect prosperity and portfolios by engaging in responsible investment practices that properly balance the real risks and rewards of investing than to depend on the fantasies of 'green' extremists. ■

ABOUT THE AUTHOR

Martin Hutchinson based this piece on his Heartland Institute study Fallacies of So-Called 'Sustainable' Investments.
Hutchinson is a former merchant banker with more than 25 years of experience working for some of the world's most prominent financial institutions, including banks in his native Britain, United States, and Europe.
In 2000, Hutchinson moved into journalism, becoming the business and economics editor at United Press International

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Hutchinson has appeared on television on BBC, Fox News, Fox Business, TFN, and RTV Slovenija, and he has lectured at the Cato Institute, Texas Workforce Conference, Institute of Economic Affairs, National Economists Club, and at Princeton University.

Hutchinson is the author of the book Great Conservatives (2004) and the coauthor, with Kevin Dowd, of Alchemists of Loss (2010).

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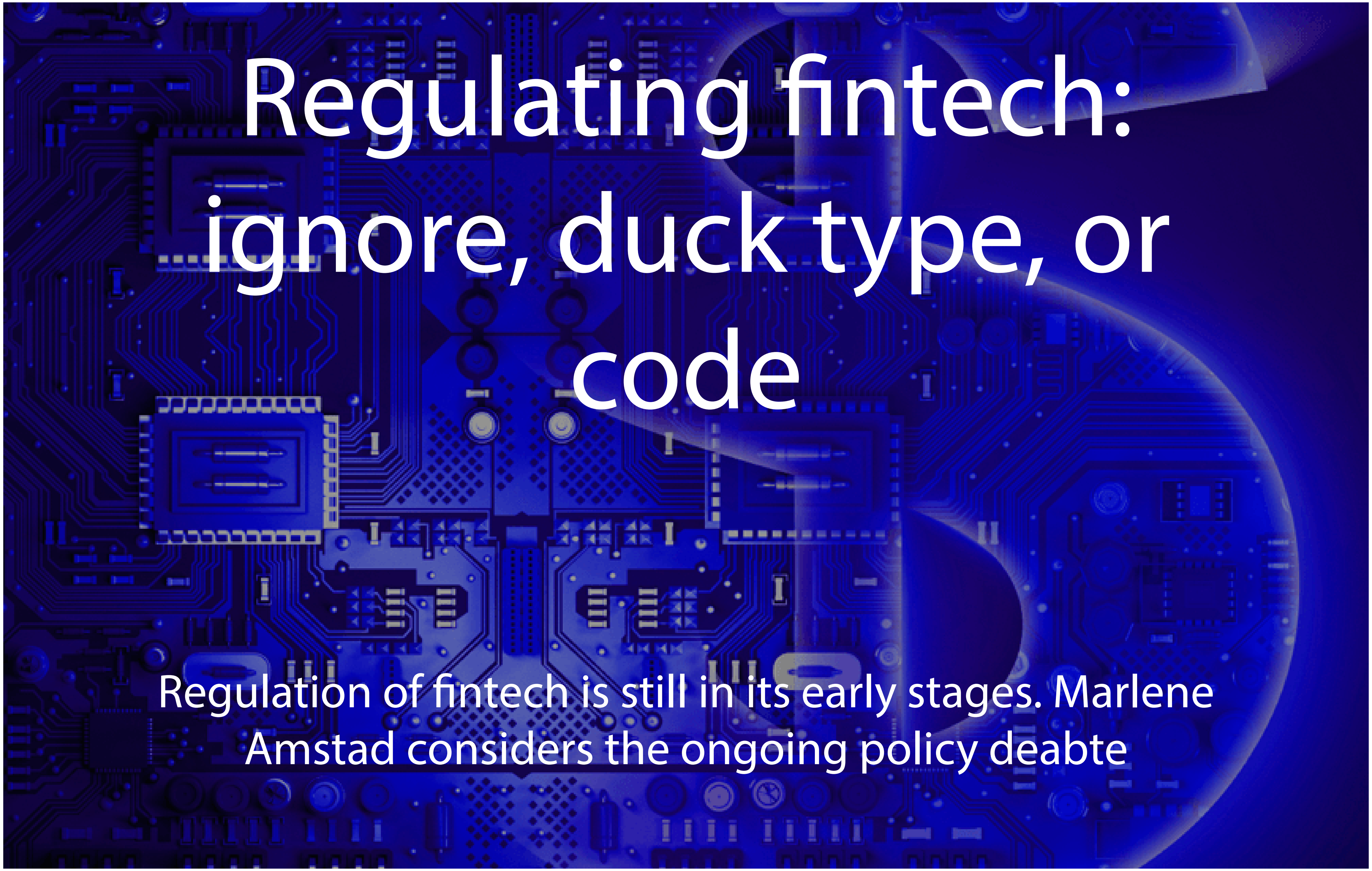


Regulating fintech: ignore, duck type, or code

Regulation of fintech is still in its early stages. Marlene Amstad considers the ongoing policy deabte

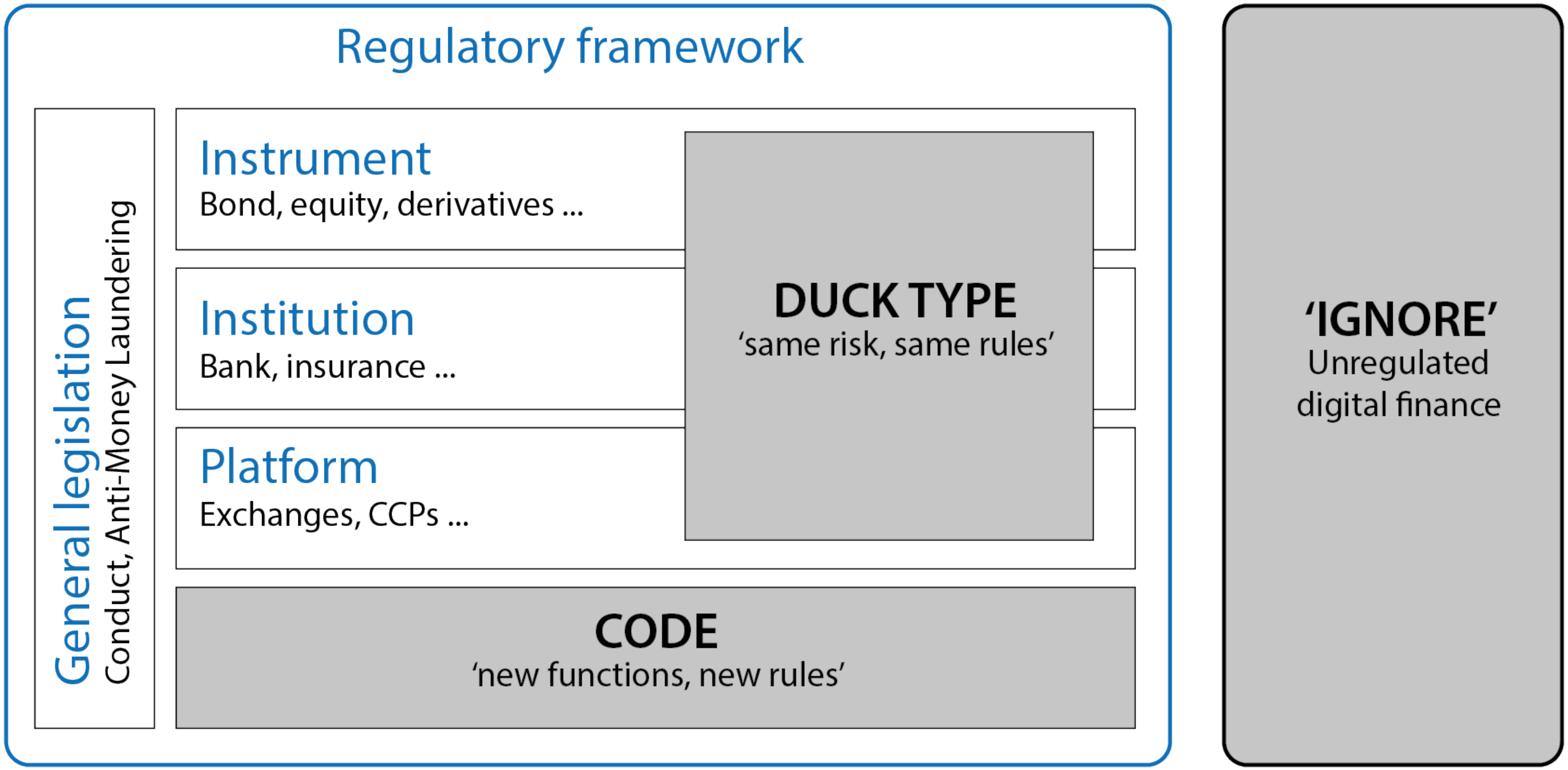
Two events have shaped the financial system over the past ten years: the Global Crisis and the rise of fintech. But while the lessons learned after the crisis have been widely discussed and the regulatory response broadly agreed upon, the question of whether and how to regulate fintech is a topic of an ongoing policy debate. This column discusses the three basic options that regulators have: ignore it, 'duck type' rules into existing regulations, or specifically tailor new regulations.

Two events have shaped the financial system over the past ten years: the global financial crisis and the rise of the crypto-finance ecosystem, broadly labelled 'fintech'. Both of these events have raised questions about the appropriate regulatory response. The lessons learned after the crisis have been widely discussed and the regulatory response broadly agreed upon – even though it is not yet fully implemented – in the Basel III framework by the Financial Stability Board (FSB). However, the answer as to whether and how to regulate fintech is still in its early stages and is a topic of an ongoing policy debate.

In the current traditional regulatory framework, a few aspects – such as conduct and money laundering – apply to the full financial universe. However, in most aspects, the regulatory framework differs by instrument, institution, and platform (see Figure 1). Where does fintech fit into this landscape? The answer is not trivial as fintech encapsulates a broad spectrum of activities.

A one-size-fits-all regulatory approach seems to risk stifling innovation and discouraging new market entrants. Accordingly, Claessens *et al*. (2018) focus on fintech credit and Kaal (2018) focuses on ICOs, both finding that the current regulatory responses differ widely across types of fintech activities and jurisdictions. In this piece, I argue that despite these disparate differences regulators essentially have three options in this regard: ignore, duck type, or code (Amstad 2019).

Figure 1. Regulating digital finance



Source: Amstad (2019).

Ignore — 'keep it unregulated'

The first option is to leave fintech largely unregulated. A precondition for good regulation is clarity about the need for, and goals of, regulation. The finance literature commonly gives three forms of market failure as a basis for the justification of regulation: information asymmetry, moral hazard, and monopoly power. From these elements, objectives such as investor protection, financial stability, and market integrity take shape. These likely can also provide appropriate guidance as to whether or not to regulate fintech.

An open dialogue among regulators, the fintech industry and academia may help to identify early on new functionalities that may require conceptually distinct regulation of technology-enabled finance

In the early days of fintech, regulators in most jurisdictions chose 'wait and see'. Some fintech companies felt hampered in their activities as they could not benefit from the legal certainty of regulation – a criticism that contrasts with the sometimes anti-governmental approach of at least some fintech activities. However, implementing new regulations or even licensing may be misinterpreted as endorsement by supervisory authorities, or even as an implicit guarantee.

The aggregate market capitalisation of cryptoassets skyrocketed from $30 billion to peak at over $800 billion in early January 2018, before falling back to around $200 billion (Rauchs *et al*. 2018). With increased fintech-era volumes, levels of fraud, inappropriate market practices, and Ponzi schemes increased. Hesitant to over-regulate but increasingly seeing the need for a regulatory response to ensure investor protection and market integrity, several jurisdictions resorted to issuing warnings to the market. In detailing the case of initial coin offerings (ICOs), Zetzsche *et al*. (2018) document the issuance of warnings as the least interventionistic of all regulatory options.

In terms of financial stability, the Committee on the Global Financial System and the Financial Stability Board, among others, concluded that at this stage, the size of fintech-era credit in many jurisdictions was still small enough to limit any systemic impact (CGFS and FSB 2017). At the same time, a range of benefits and risks were identified in cases where fintech might grow further. If regulation seems appropriate, the fundamental question arises as to whether fintech's risks and rewards can be integrated into the existing framework, or whether a new regulatory paradigm is required.

Duck type — 'same risk, same rules'

The second option is to 'duck type'[1] fintech rules into the existing regulation. Some fintech models are essentially digital or crypto representations of an instrument, an institution, or a platform. A straightforward approach to regulating these fintech models is to focus on their economic function or, more specifically, their underlying risk.

This strategy refers to the famous Howey test[2], and is often simplified as the 'duck test' that says, *"if it looks like a duck, swims like a duck, and quacks like a duck, then it probably is a duck."*

Duck typing regulation applies two widely used regulatory principles: it is 'principles-based' as it regulates the same risk with the same rule, and it is 'technology-neutral' as it focuses on the economic function. An example is the ICO guidelines by Swiss Financial Market Supervisory Authority: *"In assessing ICOs, FINMA will focus on the economic function and purpose of the tokens (ie. the blockchain-based units) issued by the ICO organizer"* (FINMA 2018).

Accordingly, ICOs are classified into payment, utility, and asset tokens. Compliance with respective existing regulations and in all cases with anti-money-laundering legislation is required. Duck-typing regulates the function rather than the instrument, institution, or platform. However, fintech innovations may also lead to new functionality. Regulators need to identify these new functions and, if need be, code them into new regulations that specifically address fintech issues.

Code – 'new functionality, new rules'

The third option is to code fintech using regulations that are specifically tailored to new functionality made possible through technological innovation. Duck typing regulation works as long as fintech operates in the same way as traditional finance. Despite technological change, the underlying core risks in financial markets, such as market, credit, liquidity, and operational risks, have remained largely the same.

However, with ongoing financial innovation, new combinations of risks might emerge. Alternatively, the core risks might show up in forms only made possible through using new technology. Both scenarios might need additional specific regulations.

Similarly, new risks stemming from interconnected financial markets were brought to the forefront during the global financial crisis. While underlying risks would stay the same, it became clear that safeguarding individual financial institutions is insufficient and a separate additional macroprudential layer is necessary.

Indeed, current research suggests that fintech might lead to new functionality based, among other elements, on: (a) the specific features of blockchain technology, (b) the new combination of business models, and (c) new digital operational challenges. In the following we provide examples for each characteristic.

(a) Blockchain technology. Cong and He (2018) demonstrated that blockchains have profound economic implications on consensus generation, industrial organisation, smart contract design, and anti-trust policy. Specifically, in the traditional system – largely due to contract incompleteness – sellers cannot offer prices contingent on the success of delivering the goods.

In contrast, blockchains, via decentralized consensus, enable agents to contract based on service outcomes and to automate contingent transfers. They conclude that this new functionality can deliver higher social welfare and consumer surplus through enhanced entry and competition, yet it may also lead to greater collusion. Consequently, they suggest an oft-neglected regulatory solution to separate usage and consensus generation on blockchains, so that sellers cannot use the consensus-generating information for the purpose of sustaining collusion.

Another example for functionality made possible through blockchain is the 'fork', as an either accidental or intentional change in protocol. Biais *et al*. (2017) illustrated that forks might be an integral part of blockchain applications, leading to orphaned blocks and persistent divergence between chains[3].

Again, it is not straightforward to see a direct analogy to a fork in the non-digital world and therefore how to mirror it using current regulations, at least taking into consideration whether dedicated regulations are needed.

New functionality might also arise from decentralisation, which, for example, allows for greater ease in benefitting from regulatory arbitrage. Makarov and Schoar (2018) found that price movements in cryptocurrencies are largely driven not by transactions costs or differential governance risk, but rather by avoiding regulation.

(b) New combination (of business models and jurisdictions). Fintech is characterised by a strong and increasing cross-segment expansion instead of limiting itself to the value chain of a classic bank or insurance company. Rauchs *et al*. (2018) found that 57% of cryptoasset service providers were operating across at least two market segments to provide integrated services for their customers.

This led some to declare fintech a new asset class. Findings by Hu *et al*. (2018) support this view, showing that cryptocurrencies are highly correlated among each other – likely driven by Bitcoin serving as vehicle currency in the cryptocurrency space – but are largely orthogonal to traditional assets. It is still too early to tell whether cryptocurrencies' distinct behaviour is a testament to the rise of a new asset class justifying its own regulation.

(c) New digital operational risks can appear across the digital financial services and market value chain. Digital technology also enables the generation and analysis of vast amounts of customer and transaction data (ie. 'big data'), which introduces its own set of benefits and risks that should be managed (G20 2018).

An additional need for dedicated regulation may arise from the fact that digital blockchain records must be *enforced* in the physical world. *"While blockchains can keep track of transfer of ownership, proper enforcement of possession rights is still needed, except in the case of (fiat) cryptocurrencies"* (Abadi and Brunnermeier 2019).

The enforcement of rights and duties in fintech may differ from those found in traditional assets. Cohney *et al*. (2018) found, for example, that ICO codes and ICO disclosures often do not match, opening a potential need for ensuring legal certainty by regulating the link between the legal framework and the code.

Conclusion

As with previous regulation, regulating fintech needs to be justified by either investor protection, market integrity, or safeguarding financial stability. Ignore or wait-and-see approaches – at least in the beginning — can therefore be prudent approaches to avoid stifling innovation.

In cases where regulation seems appropriate, however, similar activities should be treated in similar ways in an attempt to limit incentives for regulatory arbitrage. At the same time, regulators would be well-advised to remain alert to the limits of duck typing. An open dialogue among regulators, the fintech industry and academia may help to identify early on new functionalities that may require conceptually distinct regulation of technology-enabled finance. ■

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Endnotes
1. I borrow the term 'duck typing' from computer programming.
2. It goes back to a case in the Supreme Court in 1946, which created a test that looks at an investment's substance, rather than its form, as the determining factor for whether it is a security

3. They also show how forks can be generated by information delays and software upgrades.

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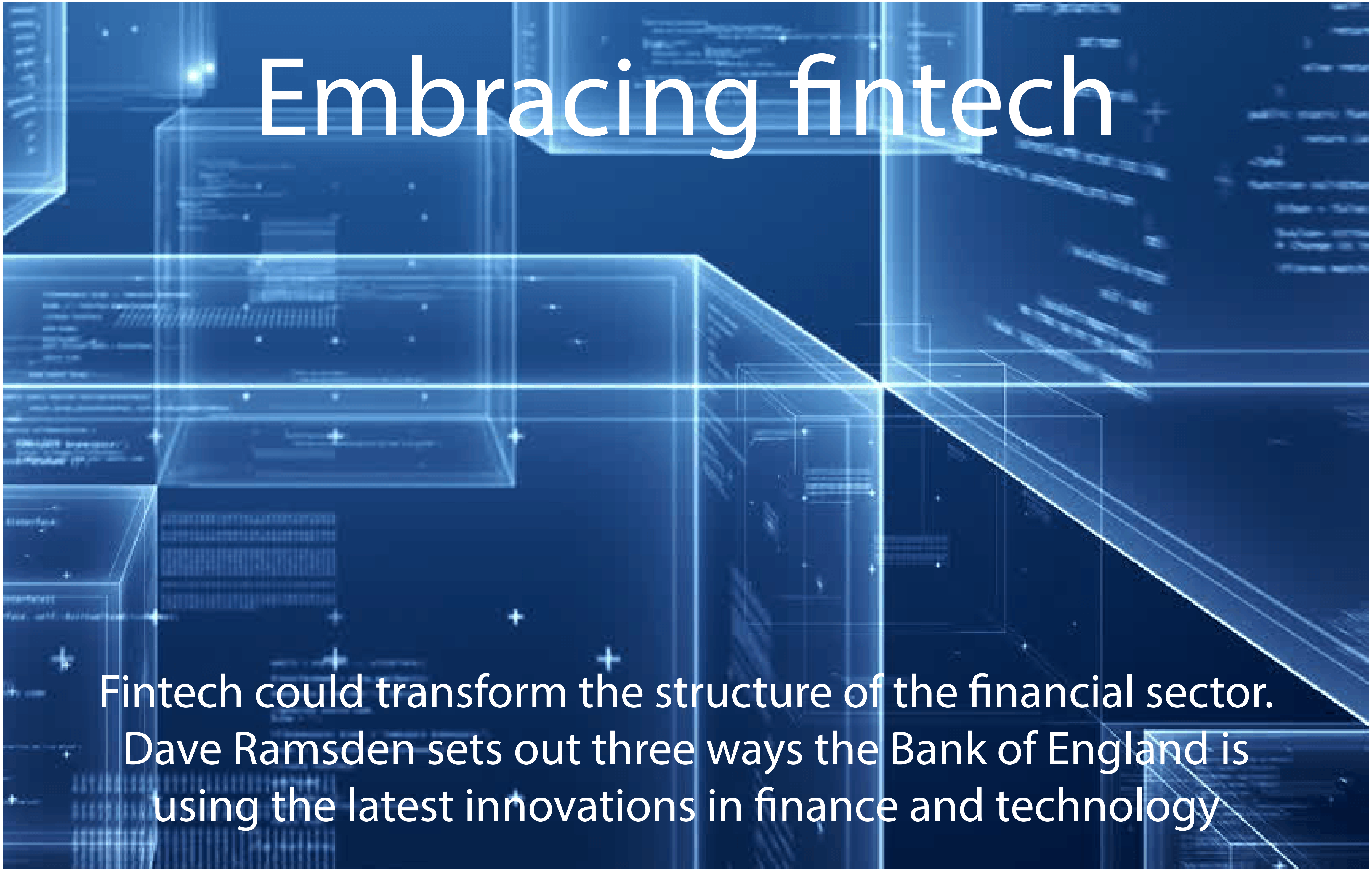
Authors' note: Marlene Amstad serves as Vice Chair of the Board at Swiss Financial Market Supervisory Authority (FINMA). The views expressed in this column are those of the author and do not necessarily represent those of FINMA. This article was originally posted on VoxEU.org and is taken from the VoxEU eBook, The Economics of Fintech and Digital Currencies, available to download here



Embracing fintech

Fintech could transform the structure of the financial sector. Dave Ramsden sets out three ways the Bank of England is using the latest innovations in finance and technology

In the past ten years, growth in the digital economy, new technologies and an increased ability to capture and analyse large amounts of data have spurred a new wave of innovation by financial institutions. And that wave of innovation will intensify in the coming years. Fintech is enabling new players and business models to enter the market. This is increasing competition, helping meet unfulfilled customer needs, reducing inefficiencies and changing the way institutions provide – and consumers and businesses use – financial services. It could transform the structure of the financial sector, with implications for customers, firms and regulators[1].

Given our range of responsibilities, it is essential that the Bank of England keeps on top of this wave and understands and adapts to its implications. As you heard from the Bank's Governor, Mark Carney, yesterday, the Bank's strategy is to enable innovation and empower competition, while ensuring monetary and financial stability[2].

In practice the Bank is embracing fintech, and working to do as much as we can to ensure that it develops in ways that maximise the opportunities and minimise the risks for society, and that as such are entirely consistent with the defining theme of this year's summit – *"the value and purpose that fintech has to society."*

The Fintech Hub one year on

The vehicle we use to do all this is our Fintech Hub, which we launched one year ago[3]. This team, which grew out of our award-winning Fintech Accelerator, sits at the heart of the Bank and leads our fintech strategy by bringing together expertise from all of Bank's business areas. They have engaged extensively with the fintech sector to understand developments and apply these to support the next wave of innovation in finance.

Examples of their work this year include: collaborating with HMT and the FCA to set out the UK's approach to cryptoassets and distributed ledger technology in financial services[4]; examining challenges in cross-border payments with colleagues from the Bank of Canada and Monetary Authority of Singapore[5]; exploring how financial services might evolve over the next decade as part of the Bank's Future of Finance project[6]; and analysing everything from the potential role of Big Techs in financial services to the implications of Open Banking and PSD2.

But instead of looking back, I want to stay faithful to the spirit of today's session and look forward to the contributions the Bank can make to the future of finance. Fintech is one of the Bank's seven strategic priorities for 2019. In particular I'll discuss three key areas of Fintech Hub focus in 2019: payments; unbundling; and artificial intelligence[7].

Given our range of responsibilities, it is essential that the Bank of England keeps on top of this wave and understands and adapts to its implications

Payments

The first area I'll focus on is payments. While the Bank is not nearly as old as the Guildhall, this year we are celebrating 325 years as the UK's central bank; that includes 325 years of providing foundational payments services.

Payments have become increasingly digital in recent years, and there are now hundreds of alternative payment methods[8] available; recent years have seen a significant diversification of payment companies with new entrants to the market, such as e-money institutions and technology companies – which is why the subject is of interest to the Fintech Hub. This diversification is bringing about an 'unbundling' of financial activity – that is to say, breaking the financial services activity and value chain into its component pieces.

The shift towards digital payments can enable competition and ultimately benefit consumers, and the Bank, given its role at the heart of the financial system, is in a unique position to support that. As the Governor said yesterday, this includes updating our own hard and soft infrastructure to provide a platform for private innovation to serve the digital economy. I'll give three examples of what this means in practice.

First, the Bank is renewing its Real Time Gross Settlement service (RTGS), the UK's core payments infrastructure – Victoria Cleland, our Executive Director for Banking, Payments and Innovation, spoke about this at a roundtable discussion here yesterday. Our goal is to deliver a materially stronger, more resilient, flexible and innovative sterling settlement system, with the ability to support a diverse range of payment technologies such as those built on distributed ledger technology[9].

Second, as well as renewing RTGS, we, alongside Pay.UK, are moving UK payment systems onto the ISO 20022 messaging standard[10]. That should bring many benefits, including better interoperability between payment systems, lower entry costs and the possibility of innovative data services to users. We are also working closely with our international peers to promote the harmonisation of ISO20022 globally, which could increase efficiencies and facilitate easier and so cheaper cross-border payments.

And third, as the Governor highlighted yesterday, we are opening up direct RTGS access to a broader range of firms. Five non-bank payment service providers now hold accounts in RTGS, and have seen benefits including faster transaction times and lower reduced individual transaction costs, and around twenty further firms are exploring the possibility of joining.

Unbundling

The evolution of payment systems is just one example of unbundling, the second area that I'm going to focus on today. Emerging business models can unbundle traditional financial services activities into individual core functions such as settling payments, performing maturity transformation and allocating capital.

We are already seeing the benefits of unbundling – established and challenger banks alike are deploying sophisticated mobile apps that allow consumers to manage their finances, initiate payments and help with budgeting. Insurance startups are responding to the growth of the gig economy by offering highly personalised/tailored insurance products that combine traditional home and/or motor insurance with business coverage for temporary use.

But while fintech could help increase competition in financial services, some of these new solutions might also lead to the migration of activity outside the perimeter of prudential regulation. So it is important that we analyse the implications of any such migrations for financial stability as well as the impact on, and strategic response of, the banks and insurers that we supervise through the PRA. This will be an important area of work for the Fintech Hub, working with supervisory colleagues in the PRA, in the coming months.

AI

The third area I'll touch on, artificial intelligence, is an example of how a general-purpose technology is reshaping our world, with the potential to revolutionise the nature of both work and commerce. This will affect all aspects of the Bank's mission, from the future behaviour of the labour market, through its effects on employment, productivity and wages, to the future nature of finance, through its effects on customer service, trading and risk management.

Finance is amongst the first sectors to deploy AI at scale. Deloitte estimates that financial services executives expect cognitive-related technologies to become mainstream in the next 2-5 years[11]. And the Global Association of Risk Professionals expect up to 80% of financial services firms to use it[12]. The technology has the potential to increase efficiency across the financial sector, including leaner, faster and more responsive operations.

The Fintech Hub together with the FCA have just conducted the first survey of regulated firms' applications of AI. The survey aims to establish a consistent picture of the state of deployment and readiness within financial services. This includes understanding how advanced firms are in their deployment of AI and what specific business lines they are applying it to. Deepening our understanding will help us work out where policy can support the safe and productive deployment of AI in finance.

Conclusion

I have given a partial picture of the Bank's work on fintech. Even so, I hope the examples have illustrated the breadth and depth of our commitment to enabling innovation, empowering competition and embracing fintech in a safe and effective way, as well as the role of the Bank's Fintech Hub in driving that. ■

Dave Ramsden is Deputy Governor, Markets & Banking, at the Bank of England

Endnotes

1. As set out by Mark Carney in his 2018 Mansion House Speech, "New Economy, New Finance, New Bank", available at https://www.bankofengland.co.uk/speech/2018/mark-carney-speech-at-the-lord-mayors-bankers-and-merchants-dinner-mansion-house

2. "A Platform for Innovation", available at https://www.bankofengland.co.uk/speech/2019/mark-carney-speech-at-innovate-finance-global-summit-2019

3. I set out our ambitions for the Fintech Hub in my speech "Open to Fintech", available at https://www.bankofengland.co.uk/speech/2018/dave-ramsden-speech-hmts-international-fintech-conference

4. See https://www.gov.uk/government/publications/cryptoassets-taskforce

5. See https://www.bankofengland.co.uk/news/2018/november/boe-boc-mas-joint-report-digital-transformation-in-cross-border-payments

6. This project, led by Huw van Steenis, is looking at how financial services might evolve over the next decade, and what this means for individuals, businesses and financial service providers. For more information see the project webpage at https://www.bankofengland.co.uk/research/future-finance

7. For more detail on the work of the Fintech Hub, see the article "Embracing the promise of fintech" in the Bank's Q1 Quarterly Bulletin, available at https://www.bankofengland.co.uk/quarterly-bulletin/2019/2019-q1/embracing-the-promise-of-fintech

8. See WorldPay's Global Guide to Alternative Payments, available at http://offers.worldpayglobal.com/rs/worldpay/images/worldpay-alternative-payments-2nd-edition-report.pdf

9. See https://www.bankofengland.co.uk/news/2018/march/rtgs-renewal-proof-of-concept and https://www.bankofengland.co.uk/paper/2017/a-blueprint-for-a-new-rtgs-service-for-the-uk

10. I set this out in more detail in my speech "Setting Standards", available at https://www.bankofengland.co.uk/speech/2018/dave-ramsden-remarks-at-iso-20022-conference

11. See https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/technology/deloitte-cn-tech-ai-and-you-en-170801.pdf

12. See https://www.sas.com/content/dam/SAS/documents/marketing-whitepapers-ebooks/third-party-whitepapers/en/artificial-intelligence-banking-risk-management-110277.pdf

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A platform for innovation

Mark Carney highlights the opportunities offered by innovation in the financial services. He says we're moving to a new kind of economy, which needs new kinds of financial services for individuals and businesses

A century ago, John Maynard Keynes resigned as a delegate to the Paris Peace Conference over his concerns about the scale of reparations in what would become the Treaty of Versailles. He returned home to write *The Economic Consequences of the Peace*. In that seminal work, Keynes marvelled that before the war:

"The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth… [or] adventure his wealth in the natural resources and new enterprises of any quarter of the world that fancy or information might recommend."

Such global trade and portfolio management were made possible by new technologies ranging from the telegraph to the first transatlantic cable.

Replace 'telephone' with 'tablet' and 'tea' with 'turmeric latte' and you have not the start of the Twentieth Century but of the Twenty First. The second great wave of globalisation is cresting. The Fourth Industrial Revolution is just beginning. And a new economy is emerging driven by immense changes in technology, the reordering of global economic power, and the growing pressures of climate change.

New economy – new finance

A new economy requires a new finance. A new finance to serve the digital economy, a new finance to support the major transitions underway across the globe and a new finance to increase the sector's resilience. A new finance with products that are more cost effective, better tailored, and more inclusive.

The UK's FinTech companies are creating this new finance. We have heard from Charlotte Crosswell of Innovate Finance how the UK FinTech sector leads in talent, drive and investment. But you cannot do it all on your own. Your efforts will be even more effective if you have the right conditions in which to innovate and the level playing fields on which to compete.

New finance - new bank

That's why a new finance demands a new Bank of England. In this spirit, last year at Mansion House I announced that Huw van Steenis would lead a review of the future of the UK financial system, including recommendations for how the Bank should respond. In two months, Huw will publish his conclusions and the Bank will announce a number of concrete steps to create an environment for a more resilient, effective and efficient financial system.

The new finance must be inclusive, allowing everyone to be better connected, better informed and more empowered

To preview our general approach I want to highlight some recent measures the Bank has been taking. The Bank's strategy is to enable innovation and empower competition, while ensuring monetary and financial stability.

Our levers are the hard and soft infrastructure we control:

- Hard infrastructure, such as the Real-Time Gross Settlement (RTGS) system, which lies at the heart of the UK payment system.

- And soft infrastructure, such as our rules, regulations and standards.

To illustrate what this means in practice, consider three examples of how the new Bank can provide a platform for private innovation to serve the digital economy, to finance major transitions, and to increase the resilience of the financial system.

Serving the digital economy

First, at the heart of the new economy, the very nature of commerce is changing. Last year, one fifth of all sales in the UK were online. Next year, it will be one quarter. The new economy is more inclusive, offering easier routes to market for firms both large and small, and greater access for consumers both near and far. We are entering an age when anyone can produce anything, anywhere and sell everywhere through platforms such as Tmall, Amazon, Shopify and YouTube.

This new digital economy is placing new demands on finance. Consumers and businesses increasingly expect transactions to be settled in real time, checkout to become an historical anomaly, and payments across borders to be indistinguishable from those across the street.

In parallel, big data is opening up new opportunities for more competitive, platform-based finance of SMEs. Search and social media data are supplementing traditional metrics to unlock finance for smaller enterprises whose assets are increasingly intangible.

This new finance demands a Bank of England that is as open to new providers as it has been to traditional players.

Here's one way we are changing our hard infrastructure in response. The Bank is in the midst of an ambitious rebuild of RTGS[1], which processes over £600 billion of payments every day. Until recently only commercial banks had direct access to it, and alternative payment service providers (or PSPs) had to route through them. That made sense in the old financial world arranged around a series of hubs and spokes but it is increasingly anachronistic in the new, distributed finance that is emerging.

So we are now making it easier for a broad set of firms to plug in and compete with more traditional providers. Responding to demands from FinTech providers, the rebuild will provide API access to read and write payment data.

In July 2017, we became the first G20 central bank to open up access to our payment services to a new generation of non-bank PSPs. Since then, five have become members and there is a growing pipeline of around twenty firms exploring whether and how to join. Wider access will improve services to UK households and businesses and it will bring financial stability benefits by increasing the proportion of settlement in central bank money, diversifying the number of settlement firms, and driving innovation.

Financing major transitions

My second example of how the Bank is providing a platform for private innovation concerns the financing of the major transitions shaping the new economy such as the rapid rise of emerging economic powers and the evolving response to climate change.

The transition to a low carbon economy, in particular, will require enormous re-allocations of capital and massive investments in infrastructure—on some estimates as much as $100 trillion globally over the next decade. Firms that anticipate these developments will be rewarded handsomely; those that fail to adapt will cease to exist. This will have enormous ramifications both the financial system and for financial stability[2].

That's why the Bank is transforming our soft infrastructure. Recognising the need for adequate reporting of climate-related risks and opportunities, four years ago the Bank helped catalyse the private sector-led Task Force on Climate-Related Financial Disclosures (TCFD). The TCFD has now led to a step change in the demand and supply of climate reporting. With over $100 trillion in assets now demanding TCFD quality disclosures, a market in transition is now being built.

In parallel, the Bank is overhauling its supervisory approach. Earlier this month we published a *Supervisory Statement and Policy Statement*[3] that together set out our expectations for banks and insurers regarding their governance, risk management, strategic resilience and disclosure of climate-related financial risks.

To support the capacity building and the development of best practice, the PRA has just established the Climate Financial Risk Forum to work with firms from across the financial system.

The Bank of England is also working with central bank and supervisory colleagues from around the world in the Network for Greening the Financial System (NGFS) to improve climate risk management in the core of the global financial system. Our priorities include the development of a small number of high-level climate scenarios that can be used in future system-wide stress tests[4]. In May the PRA will require insurers, as part of market-wide stress tests, to consider how their businesses would be affected in different climate risk scenarios.

By adapting our soft infrastructure in these ways, the Bank will help ensure that the financial system is not only resilient to climate-related risks but also can take full advantage of the enormous opportunities in a new low carbon economy.

Applying new technologies to increase resilience

My final example of how the Bank is building a platform for FinTech innovation, considers how general-purpose technologies, including advanced analytics such as AI, can increase the resilience of the financial system.

As much of life moves online, a trail of data is created. Indeed, more data was created in the past two years than in all the years that came before[5]. And this data is creating enormous opportunities for the new finance to serve customers better and to manage risks more effectively.

To those ends, the financial sector is investing heavily in the Cloud, Machine Learning and AI. Banking is already the second biggest global spender on AI systems (after retail) and is expected to invest a further $10 billion on AI by 2020. AI-enabled solutions are increasingly important in fraud detection as well as automated threat intelligence and prevention. As some in the audience are exploring, there is also significant potential in credit assessments, wholesale loan underwriting and trading.

As my colleague James Proudman recently described, such advanced analytics are also likely to lead to changes to the way the Bank conducts supervision[6]. The PRA promotes safety and soundness based upon forward-looking, judgement-based supervision, in which we identify the key risks facing firms and set supervisory strategies to mitigate them. As a process, it can be broken down into three simple steps:

1) rule-setting and reporting;

2) analysis and monitoring; and

3) setting and communicating a supervisory strategy to mitigate identified risks.

Each of these aspects of supervision is amenable to automation, machine learning or AI to some extent. Consider rule setting and reporting. At over 638,000 words, the *PRA Rule Book* is longer than *War and Peace*. It is also somewhat less interesting and infinitely more complex.

We are currently using advanced analytics to understand the complexity and interconnectedness of the PRA rulebook, to identify ways to simplify our rules, and to make compliance with them easier for firms.

And to explore ways to make reporting more efficient and effective, we are running a Digital Regulatory Reporting pilot, with the FCA, on machine readable reporting requirements that firms' systems could interpret and ultimately automate regulatory data collection.

These initiatives are goods in and of themselves, but they also create the potential to unlock the power of AI in order to improve the quality of our supervision.

Conclusion

When Keynes marvelled at new possibilities, a decade of wealth creation would follow, but its gains gave rise to imbalances in incomes and in trade. When combined with the *Economic Consequences of the Peace*, disaster ensued.

Today, new technologies, the new economy and the new finance have the potential to unlock more sustainable and inclusive growth. Consumers can have greater choice and better-targeted services; small and medium sized businesses can access new credit to grow; banks themselves can become more productive, and the financial system overall can become more resilient.

Most fundamentally, unlike in Keynes' time, the gains from new technologies will not be limited to men or captured by denizens of the City.

The new finance must be inclusive, allowing everyone to be better connected, better informed and more empowered. By adapting our hard and soft infrastructure, the Bank of England will help create the conditions for such innovation to flourish to promote the good of all the people of the United Kingdom. ■

Mark Carney is the Governor of the Bank of England

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The EU and money laundering

Money laundering scandals at EU banks have become pervasive. Joshua Kirschenbaum and Nicolas Véron detail the current AML architecture's fundamental weaknesses and propose a new framework

Money laundering scandals at EU banks, often linked to Russia, have become pervasive. Reform of anti–money laundering (AML) supervision is urgent. Illicit actors have repeatedly moved billions of dollars through individual banks. This flow sustains the Kremlin's patronage system at home by serving as an outlet for elites while it simultaneously corrodes institutions, commerce, and politics in Europe.

The current system, which leaves AML enforcement to national authorities, is broken. As we explained in a recent paper, a new EU agency tasked solely with AML supervision is the antidote. Without dramatic change, the problem will continue to fester.

The existing architecture has three fundamental weaknesses. First, national AML supervisors have no efficient way to communicate and coordinate, neither with one another nor with the European Central Bank, which has overall responsibility for bank oversight in the euro area.

Second, the system leaves supervisors in very small countries on their own, with relatively limited capacity and resources, in the face of a sophisticated transnational threat. Third, it encourages the growth in 'weak link' countries of financial sectors catering to suspect clients of Russian and other origin. The outcome is undue political influence and sometimes even capture.

A dedicated European-level AML agency would solve coordination problems, develop strong capability and deep expertise, and enjoy sufficient political independence. This would result in more proactive supervision, more aggressive fines, and the establishment of credible deterrence.

Recent cases have touched Cyprus, Denmark, Estonia, Germany, Latvia, Malta, the Netherlands, and the United Kingdom. In the most dramatic case, €200 billion was pumped through the Estonian branch of Danske Bank, Denmark's leading lender. At Danske Bank's branch in Estonia, non-resident shell-company clients moved massive sums through a concentrated number of accounts, generating huge fees. Management knew that the clients represented unknown sources of money from Russia and the Commonwealth of Independent States, but they failed to act for years.

No one can say with certainty whose money transits these banks, and that is part of the problem. Professional facilitators set up opaque channels precisely to obscure the ultimate purpose of these transactions. Sometimes the proceeds of corruption may be used to purchase luxury real estate. Other times, the flow may stem from, or facilitate, organised criminal activity. And there is no reason that the Russian government could not tap these same networks to carry out interference activities in the West. The flow likely contains elements of all of these, and more.

The European Union must change its supervisory architecture to fight money laundering

Since 2012, the European Central Bank has been the prudential supervisor of all banks in the euro area, overseeing governance, capital adequacy, and lending practices. But AML supervision is excluded as a 'business conduct' issue, which remains the sole province of national authorities.

Meanwhile, financial services are passported across the entire Single Market, and fines for AML violations have generally been small – although they have recently begun to increase in some member states.

As was the case with prudential supervision before 2012, today's AML architecture leads to perverse supervisory incentives. It leaves too many avenues for untoward political and regulatory influence on the part of those who benefit from a reliance on money of dubious provenance, creating a vicious circle of supervisory failure in the more vulnerable countries. Even if some member states have effective AML supervisory regimes, the failure is systemic from a European perspective because there is always a weak link.

The fix, unavoidably, is a strong central authority at the European level. The European Union has recently decided to enhance the AML responsibilities of the European Banking Authority (EBA), but this change is too incremental to fix the problem. The EBA can only intervene too late and not forcefully enough. Under the soon-to-be-enacted legislation, it will be unable to do much until after a failure of national authorities has been established, and even then there would be no meaningful penalties.

Instead, a new agency should serve as a single information hub and a unitary decision-making body that takes proactive measures. The central authority may then re-delegate certain tasks and decisions to national agencies, as has happened with competition policy enforcement, or indeed prudential supervision, for example.

A new, dedicated EU AML agency should supervise banks and non-banks alike across the Single Market. It should not be the European Central Bank, because its authority would be limited to the banking sector and only within the euro area, leaving scope for weak links at non-bank institutions or in non–euro area countries. As the US experience demonstrates, fragmentation of AML supervision across segments of the financial sector impairs its efficiency. In a first phase, at least, financial intelligence units would remain scattered at the member-state level, but the European AML supervisor can be equipped to interact with all of them in an efficient way.

To be sure, the creation of a new agency would increase the complexity of the EU supervisory landscape and should not be taken lightly. But the critical importance of AML supervision to the integrity of Europe's financial system justifies the effort. It would also demonstrate to the general public that the European Union is able to address its most serious challenges credibly and not just tinker at the edges. AML reform is a top priority from a European financial sector and security perspective. It would be good European politics, too. ■

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Universal basic income and the Finnish experiment

Catarina Midoes examines the preliminary results on the Universal Basic Income experiment in Finland, and what they mean for the long-standing questions over the potential impact of UBI in developed countries

"How can sufficient goods be available when anyone can withdraw from work – when people are no longer motivated by the need to earn their own living, or when reliance on the efforts of others makes them lazy? If only you'd been with me in Utopia (…)"

Utopia, Thomas More, 1516.

The conversation between Rafael Contrasenso and Thomas More has been rehashed, following the publication of preliminary results on the Universal Basic Income (UBI) experiment in Finland. There may have been more hashtags, but no fewer mentions of the word 'utopia'. In this review, we look at how the results of the Finnish UBI experiment were viewed in the blogosphere and social media, and how they fit with longstanding questions over the impact of UBI in developed countries.

Context

Effects on well-being and long-term labour supply

Opponents of UBI, such as Nathan Keeble at Mises, argue that a substantial reduction in labour supply necessarily follows the introduction of UBI, through income effects. Hoynes and Rothstein (2019), in *Universal Basic Income in the US and Advance Countries*, point to the Blundell and Macurdy (1999) literature review as evidence of negative income elasticities of labour. Similar estimates are obtained when looking at lottery estimates, a possible for UBI (Cesarini *et al*. (2017)). Adam Perkin goes further and argues anti-work incentives breed employment-resistant personalities.

The most extreme-left position is the work of anarchist Pëtr Kropotkin who, to the contrary, believes *"idleness"* would be minimal after work is disassociated from livelihood. Kropotkin argues the true lazy man is rare. Intellectually stimulating work, aligned with interests and skills and improvements in child welfare, would prevent reductions in labour market participation (in the *Conquest of Bread* (1892)). Hoynes and Rothstein (2019) write that any UBI would be expected to decrease labour supply in the short run. However, they show how modern pro-UBI theory (and some empirical work) support these offsetting mechanisms.

... careful experiment design is needed. Isolating the experiments from political influence is fundamental for useful results and policy guidance

Hoyes and Rothstein (2019) mention extensive evidence on how credit constraints are binding on education and job decisions. A UBI, some argue, would allow for higher educational investment and moves to jobs with training. Furthermore, *"higher skilled individuals tend to work more."* Increases in wages would follow productivity gains. UBI second-order effects on child development *"may be an important and until recently largely overlooked part of the benefits."* Finally, Jones and Marinescu (2018), in their analysis of the Alaska Permanent Fund, conclude that the demand from increased income might be enough to compensate for the initial labour supply reduction.

An important discussion around UBI instead focuses on how it compares to current welfare schemes. Arguably the most important pro-UBI argument is the elimination of welfare traps. The UBI does away with the opportunity cost of finding work in unemployment insurance and the steep marginal tax rates of means-tested transfers. Such an argument has been advanced by Milton Friedman in defence of a negative income tax. Compared to current welfare schemes, a UBI could thus increase labour supply.

On the other hand, a UBI does away with mandated job search. Such unconditionality can disincentivise work, as pointed out in the University of Bath's IPR Policy Brief on *Assessing the Case for a Universal Basic Income in the UK*. Friedman, as well as libertarians such as Matthew Feeney at Cato Institute and Ed Dolan, however, argue that even if effective in increasing the labour supply, such conditions might wrongly shape individuals' decisions and ultimately be harmful to society.

Other points in favour of a UBI include improvements in subjective well-being, health status and network/community spillovers. Examples include stress reduction, reduction in hospitalisation rates and in crime. An increase in wellbeing can simultaneously increase productivity, decrease financial costs, and increase social welfare. Universality also eliminates the stigma of welfare programmes. Stigma is nonetheless an intended part of welfare schemes and, some say, necessary as an incentive to find work.

A more pragmatic perspective to support UBI over current welfare schemes is the reduction of bureaucracy (see libertarian author Ed Dolan or, yet again, Friedman) and how it would be harder to cheat the system (eg. John Davis Davidson at *The Federalist*). Iain Murray at the *National Review* suggests UBI might boost mutual aid (private charity), alleviating one of the main libertarian criticisms of the welfare state.

Yet, the affordability/redistribution trade-off is a concern for many. If income from current welfare schemes was simply repurposed as a UBI, there would be an income shift to middle-class families, non-disabled families (as shown in OECD simulations and in IZA simulations). Increased taxation to ensure progressiveness threatens affordability and faces opposition on the same grounds as other redistributive policies.

Effects on labour allocation

Staunch defenders of UBI, such as political economist Van Parijs, argue that UBI could maximise welfare by allowing job uptake aligned with personal preferences. Such arguments rest on the existence of substantial market failures in labour markets, which others such as Nathan Keeble at Mises dispute. On entrepreneurship, while Brittany Hunter at FEE defends the view that it would be stifled, UBI proponents highlight that it would instead encourage risk-taking – a view with some empirical (non-experimental) support.

Brittany Hunter at FEE criticises UBI on the grounds that “there is no greater incentive than financial security and holding a job is essential to that end”. Yet, the idea that people currently work from need instead of want is seen by some (namely Groot in his work *Basic Income, Unemployment and Compensatory Justice*, building on Hamminga (1995)) as a market failure that a UBI could correct.

What the Finnish experiment tells us (not) about UBI

Two thousand people aged 25-58 years who received an unemployment benefit from Kela, the Finnish Social

Security Institution, in November 2016, were selected as the treatment group for a Randomised Control Trial. They received a partial basic income of €560 per month, the equivalent to the basic unemployment allowance and the labour market subsidy usually provided in Finland. The first results of the basic income experiment were published on February 8th 2019 in a *Report*.

Media and social media reception

The experiment and now its results have been represented by media outlets and on social media in inconsistent and, at times, contradictory ways. In April 2018, several media outlets (eg. *Sky News*, *The Guardian*, *Business Insider*) announced that Finland was cancelling the experiment, which prompted a statement from Kela: *"Contrary to reports, the Basic Income Experiment in Finland will continue until the end of 2018."*

Today, regarding the results of the experiment, the University of Bath IPR scholar Ville-Veikko Pukka draws attention to *"reckless interpretation of the results by media, policy-makers, and the public"* which *"can have far-reaching consequences on the future of policymaking."* Focusing on partial results has resulted in very contradictory assessments of the experiment.

Effects on labour supply and the welfare trap

The *Report* states that *"through the basic income experiment, the government wishes to investigate whether a social security model based on basic income could promote more active participation and provide a stronger incentive to work than the present system."* On the primary outcome – number of days in open employment – the treatment group did not find it statistically significantly easier to find employment than the control group. Most outlets which consider the experiment a failure give prominence to this result.

Many factors might have muted the positive effects of the UBI on labour supply. Heikki Hiilamo highlights: *"The Finnish experiment was about partial basic income targeting able-bodied people without work, it was not about universal basic income. That has been a source of major confusion around the experiment and a source of critique of it."*

Moreover, even for the unemployed targeted, the short time span of the trial (and particularly the published first-year results) might not allow for long-term effects to arise (see financial journalist Anni Lassila and Ville-Veikko Pukka).

Olli Kärkkäinen, an economist at Nordea, raises the point, echoed by many (eg. Juhana Vartiainen), that it is impossible to disentangle effects from the elimination of the welfare trap – which would increase labour supply – and the elimination of the need to search for a job – which would reduce labour supply.

It must also be highlighted the welfare trap was not entirely eliminated. The majority of the treatment group received social insurance benefits on top of the UBI, unlike originally planned by the research group. As confirmed to Bruegel by Miska Simanaien, researcher at Kela, such unemployment benefits would be taken away in the case of full employment. The treatment group and control group were arguably not sufficiently different from each other.

Finally, maybe the welfare trap was not the binding constraint on the sampled population. The report concedes that the sampled population was in *"a difficult labour market situation."*

Other factors would instead bias labour uptake upwards. The report states a *"majority of individuals in the treatment group did not benefit from non-compulsory active labour market measures"* due to legislation changes. Finally, the beneficial tax treatment (income from the UBI not being) created a higher incentive to take on work than would realistically exist. Olli Kärkkäinen says he is surprised at the absence of positive effects, given such a *"high incentive to work."*

Suomen Kuvalehti gives a detailed piece showing how these design issues ultimately translated into a lost opportunity for clear results.

Effects on wellbeing

Other outcomes analysed in the *Report* are trust and satisfaction with life, health and financial well-being. Individuals receiving basic income were more likely to assess their health status positively, to rate positively their ability to concentrate, and to remain interested in things previously considered enjoyable, with such a difference being statistically significant. Most voices considering the experiment a success highlight these results.

Basic income recipients were also more trusting in other people, in the legal system and in politicians. They were more positive about the future, confident in their future financial situation and on their ability to influence societal matters.

Such results support theories on well-being gains and network spillovers. Yet, the benefits are not quantified and are based on self-assessment. Heikki Hiilamo argues well-being variables are not reliable since there was no baseline survey. The direction of the associated bias in unknowable. He adds that the positive effect could be due to attention created by the study, a concern raised by Kela itself, which would inflate the real effects of UBI on well-being.

Effects on bureaucracy

The report evaluates experiences of bureaucracy. Individuals in the treatment group were more likely to consider that basic income would reduce the bureaucracy involved when accepting a job offer, with the difference between the groups being statistically significant.

This is a second result highlighted by those considering the experiment a success. The *FT*, for instance, highlights *"World's largest trial cuts bureaucracy but is a long way from viable system"*; Van Parijs mentions a *"lower administrative cost."*

The report highlights that a *"majority of the individuals in the treatment group did not benefit from the lower bureaucracy,"* since the basic income was not truly unconditional. People were forced to apply for benefits whenever these were superior to the level of the basic income. This would produce a downward bias on the difference in perceptions, but also jeopardises the value of the result to guide policy, since many individuals had an experience with bureaucracy comparable to the control group. The absence of a baseline survey remains potentially problematic.

Effects on job distribution and entrepreneurship

The test group was 8 percentage points more likely to be in part-time employment (not statistically significant), 0.85 percentage points more likely to receive income from self-employment, and received on average €21 less in earnings from self-employment. Per the report, statistical significance is not reported to control for multiple hypothesis testing.

Santens, a basic income advocate, points out that entrepreneurship effects are muted because there was no demand stimulation, only initial capital stimulation. Yet, he argues the treatment group *"earned a bit less, which supports how people would prefer to be their own boss"* and states findings include *"increased ability to be an* *entrepreneur regardless of earnings."* Such information cannot be derived from small differences whose statistical significance is unknown.

More compelling positive signs of UBI effects on entrepreneurship come through in a *Financial Times* piece. Looking into the experience of three recipients, two state their decision to start their own business was 'unlocked' by the income transfer.

Take-away
Analogous to communication on negative income tax experiments (as argued by Karl Widerquist) the conclusiveness of the Finnish UBI experiment might be overstated in the media, *"though some important conclusions can be drawn, if they are drawn carefully."*

Regarding the main outcome of interest – labour supply – the experiment is unfortunately not very informative. Being a partial income, applied only to a subset of the unemployed, in such a short span, means that income effects, human capital accumulation and demand factors do not come through. Long-term effects on labour supply cannot be inferred.

Though the experiment was intended to test short-term labour supply effects as compared to current welfare schemes, design issues led to unclear results. The zero difference between treatment and control group in employment tells us little about the relative effects from abolishing the welfare trap and eliminating conditions to access welfare.

The treatment and control group were also not sufficiently different, which might have biased results towards zero. Moreover, the fact the policy tested is not revenue-neutral, undermines its value as policy guidance.

Results on other measures are threatened by the absence of a baseline survey and quantitative measures. The strong increase in subjective well-being has been widely celebrated by UBI proponents, yet estimates might be upward-biased.

No clear effects on entrepreneurship arise, though case studies on recipients hint at positive effects. The evidence on the reduction of bureaucracy is arguably the most robust, since it comes through despite a downward bias. Design issues unfortunately undercut its value for policy advice.

One aspect does find broad support in the blogosphere, media and social media: the desire to experiment and carefully design public policy is welcome. Nonetheless, careful experiment design is needed. Isolating the experiments from political influence is fundamental for useful results and policy guidance. ■

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Risks to banks – from inside and out

Banks have become more resilient, but they still face a number of risks and challenges. Sabine Lautenschläger says plenty of work still lies ahead for banks and supervisors

The crisis has shown how important it is to be aware of what's going on elsewhere, of how closely markets and market participants are interconnected. After all, a crisis that breaks out on one side of the globe can quickly spread to the other.

So, being aware is one thing. But the crisis forced us to go further; it forced us to join forces – not only in overcoming problems as they arose, but also in revamping the regulatory and supervisory framework afterwards. This happened at the global level – Basel III – and at the regional level.

In Europe, policymakers went further than anywhere else. At the height of the crisis, they decided to set up a banking union. The first step was to take banking supervision from the national to the European level. So, in 2014, the ECB became responsible for supervising banks in the euro area.

Has this worked out? I still remember that, back in 2014, I heard quite a few critical voices. Not everyone believed that European banking supervision would actually work. Four years later, this has changed. European banking supervision has been set up, it is running smoothly, and it contributes to making banks safer and sounder.

But it was quite some job, I can tell you. I remember the early days, when we were just a handful of people sitting in a half-deserted building in Frankfurt. I remember how we began to hire staff – around 1,000 – for the ECB, and how we began to bring together the supervisors in national authorities, supporting them in adopting the new European supervisory approach.

I remember the comprehensive assessment we carried out on the banks that we would later supervise. We were like a start-up; we still are, in fact. We are constantly innovating, learning and growing together as a European team of supervisors.

And this European aspect is crucial. As European supervisors, we can take a higher vantage point; we can see and act across borders. As a national supervisor at the Federal Financial Supervisory Authority and the Deutsche Bundesbank, I supervised 20 large banks – all from Germany. In the SSM, we supervise around 120 large banks from across the euro area. You can imagine the greater depth of insight that we gain.

The euro area economy mostly relies on banks as a source of credit – much more so than many other economies. This is particularly true for small and medium-sized enterprises, which form the backbone of the economy

We benchmark all these banks against their peers; by comparing them we can more easily spot new trends, new risks and new vulnerabilities. We can clearly distinguish the nodes and links of the European banking sector. And see what works and what doesn't – both on the banking and the supervision side.

Let me give you just one example. It's no secret that European banks have a profitability problem. In analysing this problem, we benefited a great deal from our cross-country perspective. We could identify a number of banks that constantly outperform their peers, and we could assess the factors behind their success. This would not have been possible if we had looked only at a national sample of banks.

But now that I have lavishly praised the concept of European banking supervision, let's turn to the banks and the risks they face.

Risks from the outside – the economy, geopolitics and technology

And there are plenty of risks. Plenty of risks that interact in complicated ways. So, for brevity's sake, I won't address all the risks that exist but will focus on just a few. I will start with one of the issues that has, unfortunately, become a hallmark of the euro area banking sector: non-performing loans, or NPLs.

In early 2015, significant institutions in the euro area held almost €1 trillion worth of bad loans on their balance sheets and the aggregate NPL ratio stood at 7.5% on average. This average, however, masks big differences: NPL ratios ranged from around 1.5% in Luxembourg to more than 45% in Greece.

The banks therefore had a heavy burden to carry. After all, NPLs require special care and so tie up management resources. They also pose a higher risk of losses, require provisions, tie up capital and affect lending. Their effect on lending is what makes NPLs a problem that reaches beyond the banks.

The euro area economy mostly relies on banks as a source of credit – much more so than many other economies. This is particularly true for small and medium-sized enterprises, which form the backbone of the economy. In the EU, SMEs account for more than 50% of value added and more than 60% of employment. Altogether, 99% of all enterprises are small and medium-sized[1]. The three most important sources of financing for SMEs are bank loans, leasing and credit lines[2].

So they do rely heavily on banks. This makes them somewhat vulnerable. In crises, banks tend to charge higher premiums when lending to SMEs. And, as an ECB study shows, this premium is in turn partly driven by the amount of NPLs on a bank's balance sheet[3]. The more NPLs a bank holds, the less it lends to the economy.

So, it was clear from the start that NPLs were not just a problem for banks and their supervisors. Other national and European authorities had to act as well.

As for us supervisors, dealing with NPLs is a core task! We benefited from our European point of view, from being free of national traditions. We drew, for instance, on the experience of countries such as Ireland which had already successfully dealt with NPLs.

And we were able to compare and draw lessons from the different legal and judicial environments in 19 countries. Building on all these insights, we developed a harmonised European supervisory approach for tackling NPLs. This was not easy, though, as we met with considerable pushback.

But we nevertheless moved ahead. After first taking stock, we pursued a two-pronged approach from 2015 onwards: first, directly addressing legacy NPLs; second, preventing new NPLs from piling up.

On this basis, we devised a harmonised approach that rests on three pillars. The first pillar is qualitative guidance to banks on how to develop and implement strategies to reduce NPLs. These strategies should contain targets for reducing NPLs at the portfolio level over a three-year horizon. But our guidance simply outlines best practices in devising the strategies and lists tools for implementing them. As no two banks are alike, each bank needs to pursue an individual strategy and meet individual reduction targets. It goes without saying that we diligently monitor their progress.

The second pillar is a quantitative addendum to this guidance, in which we specify our supervisory expectations for the provisioning of new NPLs. These expectations depend on the extent to which NPLs are secured. For fully unsecured exposures and unsecured parts of partially secured exposures, we expect banks to achieve 100% coverage within two years after a loan has been classified as non-performing. For secured NPLs, the limit is seven years.

The third pillar is a framework to address the stock of NPLs. Within this framework, we formulate, for each bank, our expectations regarding the provisioning of legacy NPLs, bearing in mind the general expectations on provisions that I just outlined.

Our assessment of each bank's implementation of our qualitative and quantitative guidance is part of our bank-specific Supervisory Review and Evaluation Process, or SREP for short.

At the same time, an action plan to tackle NPLs was developed at the political level. This plan set out the need for action in three areas: first, banking supervision; second, insolvency and debt recovery frameworks; and third, secondary markets for distressed debt.

And since 2015, we have made real progress in bringing down the level of NPLs. The volume of NPLs has declined by almost €400 billion since that year. The average NPL ratio now stands at just over 4%, around €600 billion in absolute terms. So things are improving significantly, but there is still some way to go.

NPLs are among the biggest challenges facing banks in the euro area; it is essential that banks complete the clean-up of their balance sheets as long as the sun is shining.

But banks and supervisors cannot focus solely on the past, on legacy assets. We must also look to the future and watch out for the risks that are still beyond the horizon or just appearing on the horizon.

While I have just praised the banking union as a major step towards a united Europe, one country is about to take a step in the opposite direction. Brexit is about to happen – or so it seems. The official date for the United Kingdom to leave the European Union is 29 March 2019. As of today, however, it is still unclear how this will happen – if it happens at all. The worst scenario would be a Brexit without any agreement between the United Kingdom and the EU on their future relationship.

Despite all the uncertainty, one thing is clear: Brexit will change the shape of the European banking sector. In the first place, the large number of banks that are located in the United Kingdom and do business in the EU will have to find new ways of accessing the European market after Brexit.

And this is relevant for us supervisors, of course. Over the past two years, we have clearly set out what we expect from banks relocating to the euro area. We have published information on our website; we have talked about the issue in interviews and speeches; and we have had intense discussions directly with the banks. We have urged and pushed them to prepare for all potential outcomes of the political process. At present, most banks relocating to the euro area have made reasonable progress in preparing their move.

But it's not just banks located in the United Kingdom that will be hit by Brexit. Euro area banks rely, for instance, very much on central counterparties, or CCPs, in the United Kingdom to clear derivatives. With Brexit, they might lose access to these services, and this might disrupt their business and the markets, and in turn threaten financial stability. The European Commission has acknowledged the problem and plans to take temporary measures to preserve access. While this is certainly good news, it is merely a stopgap. There is no time to relax; there is just a little more time to prepare.

Now, Brexit at least offers an opportunity to think about CCPs and concentration risk in more general terms. The market for clearing is highly concentrated. While I do see the benefits in terms of efficiency, I also see the risks. And this is something we definitely need to discuss.

I have now focused on two challenges that are more or less European: NPLs and Brexit. There are, of course, many more challenges, and these affect banks not only in Europe but worldwide.

There are geopolitical uncertainties, for instance. It seems that nationalism and, thus, protectionism, is on the rise. In the long run this will hurt the economy and everyone will be worse off, including those who appear to benefit from protectionist measures at first glance; the current trade tensions are a case in point.

Then there are financial market risks. Interest rates are low and liquidity is still abundant and cheap, but these conditions will not last forever; there is the risk of a snapback in markets.

At the same time, technological progress might change the business of banking and the structure of the sector. This could be an opportunity; but it may also be a risk if banks fail to adapt.

Risks from the inside – governance, culture and ethics

Banks have to deal with many risks these days. And while it seems that the risks have grown, it should be clear that risks are an inherent part of a bank's business. In fact, what distinguishes a good bank from a bad bank is how it deals with risk.

And in this regard, the enemy all too often comes from within. After all, banks are managed by people. And people make mistakes from time to time; they are often biased when taking decisions under uncertainty and some people have skewed ethics. The result can be bad risk management or even outright misconduct. Neither is acceptable and each can damage the reputation of a bank, drive away its customers and diminish its capital. Each can bring down a bank and harm others.

For policymakers, issues of misconduct can bring additional challenges. Money laundering is a good example. Recent cases have shown that it often reaches across borders and requires different authorities to act. In Europe, national authorities are in charge of anti-money laundering, AML for short. The ECB has no AML mandate, but as European banking supervisors we also have to take relevant risks into account. We do so, for instance, when we assess acquisitions of qualifying holdings, or when we assess whether banks' managers are fit for their jobs.

Prompted by the recent scandals, European policymakers have now taken several initiatives, one of their aims being to strengthen the cooperation between national AML authorities and European banking supervisors. For instance, new European legislation provides that the ECB and national AML authorities exchange relevant information.

To better integrate findings from national AML authorities in prudential supervision, ECB Banking Supervision is setting up an AML coordination function which will have three main roles: to handle interactions with national AML authorities, raise supervisors' awareness about money laundering risks in banks, and be a centre of expertise on prudential AML topics.

But AML is just one example. More generally, good governance, with the right checks and balances in place, can keep such problems from emerging. Governance has been neglected by regulators and supervisors for far too long. I see it as a crucial topic for the years to come.

For European banking supervision, governance is a key issue – and has been from the very beginning. The quality of a bank's governance is one of the four pillars of our SREP. How could we judge a bank to be safe and sound without assessing its governance framework?

As part of our SREP, we also assess the banks' risk appetite frameworks, their RAFs. We look at whether banks are fully integrating the policies, processes, controls, systems and procedures set out in their RAF into their decision-making processes and their risk management. We also assess whether their RAF is aligned with their business plans, strategies, capital planning and remuneration schemes. Easier said than done, as I'm sure you know.

We do not look at banks in isolation. As I just mentioned, benchmarking is a key supervisory tool. We carry out horizontal analyses on a host of issues, including governance, which was the subject of a thematic review we published in 2016[4].

However, all of this is still work in progress – for supervisors and for banks. That banks are not yet where they should be becomes clear when we look at the recent scandals in the headlines: money laundering, tax evasion, manipulation of rates and prices – you are no doubt familiar with these cases. They are not confined to a single region, nor to a single bank. While good governance can take banks a long way in behaving responsibly, we have to dig deeper.

Ultimately, ethical behaviour is either helped or hindered by a bank's culture. So we do not want to see a culture that tolerates misconduct or even encourages it. But it is not in a supervisor's power to shape a bank's culture. Ultimately, the onus is on the banks and their stakeholders to bring about a cultural shift.

The first step is to understand that staying in business for the long term is more important than ramping up profits in the short term. In that sense, a good reputation is worth more than a dodgy deal – no matter how much profit that deal promises.

Shareholders, too, should focus more on the sustainability of a bank's business model, and thus their investment, and less on receiving as high a dividend as possible in the short run.

This understanding is only the first step. The culture of a bank is shaped both ways, top-down and bottom-up. The management of a bank plays an important role in setting the tone and defining expected behaviour. But this is not enough. When it comes to culture, action speaks louder than words. Staff will take the behaviour of management as a cue of what is acceptable and what not. Managers have to lead not only by words but by example.

Incentives are another important point. Staff will know which behaviour earns them a bonus or gets them promoted. That's why European banking supervisors assess remuneration schemes, including the extent to which integrity matters in promotions. More generally, integrity is one of the five criteria we apply when conducting fit and proper assessments of potential bank managers.

And this is key. Culture tends to be self-perpetuating, because people with certain values tend to hire people who hold the same values. Breaking this cycle is difficult, but necessary. But simply hiring people with different values and perspectives will not suffice. They then must be encouraged to speak up – to call foul when necessary.

Here, we supervisors can help again. The ECB has set up a breach-reporting mechanism through which whistle-blowers can share information with us. Last year, we received more than 120 reports, an increase of about 40% from 2017.

So, there are things that can be done, but we should not expect miracles. Culture is a sticky thing that tends to change very slowly. I am sure it will keep us busy for some time to come.

Conclusion

This is it; this is how the banking world looks from a European point of view. Banks have become more resilient over the past years, but they still face a number of risks and challenges. Some of these risks and challenges are indeed European, but some are global in scope. And a number of risks are universal in the sense that they emerge from within a bank: weak governance, bad risk management, unethical behaviour. So plenty of work lies ahead for banks and supervisors. ■

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Endnotes

1. European Commission (2018), Annual Report on European SMEs 2017/2018, November.

2. European Commission (2018), Survey on the access to finance of enterprises (SAFE), November.
3. Holton, S, McCann, F (2017), "Sources of the small firm financing premium: evidence from euro area banks", Working Paper Series, No 2092, ECB, August.
4. The report is available on the ECB's banking supervision website.

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