

WORLD COMMERCIAL BANKING REVENUE

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MARIO DRAGHI OUTLINES
HOW THE SINGLE MARKET
HAS BENEFITED EUROPE
OVER THE LAST 20 YEARS

TRANSPARENCY AT THE
FED WILL STRENGTHEN
DEMOCRATIC LEGITIMACY,
JEROME POWELL BELIEVES

MARK CARNEY REFLECTS ON
HOW THE GLOBAL FINANCIAL
SYSTEM HAS BECOME SAFER,
SIMPLER AND FAIRER

THE GLOBAL TRADE PLATFORM

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Foreword

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elcome to the *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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Europe and the euro 20 years on

We should consider the gains made as a result of having one market with one money, says Mario Draghi, outlining how the Single Market has benefited the people of Europe over the past 20 years

In January 2019 we celebrate the 20th anniversary of the launch of the euro. The two decades in which the euro has existed have perhaps been exceptional. The first was the culmination of a 30-year upswing in the global financial cycle, while the second saw the worst economic and financial crisis since the 1930s. But, exceptional as they were, these two periods can teach us some useful lessons about what still needs to be done.

Monetary Union has succeeded in many ways, but it has not delivered the gains that were expected in all countries. This is partly the result of domestic policy choices and partly the result of Monetary Union being incomplete, which led to insufficient stabilisation during the crisis.

The way ahead, therefore, is to identify the changes that are necessary to make our Monetary Union work for the benefit of all member countries. We need to make these changes as soon as possible, but we also need to explain why they are important to the people of Europe.

The rationale for one market, one money

The Single Market is often seen simply as an expression of the globalisation process, which over time has even eliminated exchange rate flexibility. But the Single Market and globalisation are not the same thing.

Globalisation has led to higher overall welfare for all economies, and for emerging markets in particular. But it is now clear that the rules that accompanied this process were not sufficient to prevent it from causing severe distortions. Open markets have heightened economic insecurity for people exposed to intensified competition, and added to their sense of being 'left behind' in a world where the great wealth created has been concentrated in a few hands.

From the outset, however, the Single Market was designed to reap the benefits of openness while also tempering its costs for the most vulnerable; to promote growth while protecting the people of Europe from the injustices of untrammelled free markets. This was undoubtedly also the vision of Jacques Delors, the architect of the Single Market.

[The] European project is even more important today. It is only by continuing to make progress, freeing up individual energies but also fostering social equity, that we will save it through our democracies, with a unity of purpose

The Single Market was conceived during a period of weakness in the European economy. Annual growth had averaged just 2.2% from 1973 until 1985 in the 12 countries that would go on to form the euro area¹, down from 5.3% between 1960 and 1973. Growth potential had also fallen from about 5% per year at the beginning of the 1970s to around 2% per year by the beginning of the following decade.

The typical response of governments to low growth was to increase fiscal deficits. From 1973 to 1985, public deficits in the euro area 12 averaged 3.5% of GDP, while in Italy the average was 9% of GDP. Unemployment rose from 2.6% in 1973 to 9.2% in 1985 for the euro area 12. In Italy, it climbed from 5.9% to 8.2% over the same period.

But the EU had a powerful tool at its disposal to raise growth: the common market.

One reason that growth potential had decelerated was that intra-EU trade growth had stalled in the early 1970s, because the common market covered mainly intermediate goods where growth was already saturated. Trade in sectors with high R&D and skill content was restricted by non-tariff barriers, preventing productivity spillovers².

The Single Market offered a way to remove these barriers, reverse the decline in economic potential, and bring more people back into work. Yet the Single Market was never just about this. It also aimed to protect people from some of the costs of the changes that would inevitably arise. This, in turn, would create a more favourable political environment for advancing the process of European integration, following the setbacks of the 1970s.

Unlike the wider process of globalisation, the Single Market allowed Europe to impose its values on economic integration – to build a market that, to the extent possible, was free but just. Product rules could be used to protect consumers from lax standards in other countries, and protect producers from unfair competition. And production rules could be used to protect workers by putting a floor on ‘social dumping’ and upholding labour standards.

This is why the launch of the Single Market agenda in the mid-1980s went hand in hand with a strengthening of common rule-making in the EU and of powers of judicial review. The opening of markets was accompanied by the creation of a strong European authority to safeguard fair competition; product standards became tighter, with the introduction of the geographical indication protections for specific foods, for example. And safeguards central to the European social model were progressively embedded in EU law, in areas where the EU had the power to act.

The Charter of Fundamental Rights has prevented a 'race to the bottom' in terms of workers' rights. Legislation was adopted to curtail unfair labour practices, such as the revision of the Posted Workers Directive this year. EU legislation also protects those in less secure employment.

One example is the Directive on part-time work in 1997, which sought equal treatment for part-time and fixed-term employees. Last year the EU institutions endorsed the European Pillar of Social Rights to support equal opportunities and access to the labour market, fair working conditions, social protection and inclusion.

EU legislation has not led to a complete harmonisation of labour protections across Europe. But it has meant that the gap in labour standards across countries has gradually narrowed, even as lower-income countries have joined the EU. Research finds a process of upward convergence in significant areas of social expenditure in the EU since 1980, although this has tailed off in recent years³. The same cannot be said at the international level.

But the Single Market required greater exchange rate stability than a free trade area, and this resulted in significant trade-offs for economic policy. These were well-articulated by Tommaso Padoa-Schioppa in his famous "*inconsistent quartet*"⁴. If European countries wanted to have the benefits of managed open trade, they could not simultaneously have capital mobility, independent monetary policy and fixed exchange rates.

Governments initially responded to this conundrum by maintaining fixed exchange rates and introducing capital controls on short-term flows, which allowed a degree of monetary policy autonomy. But as financial integration deepened and capital controls were progressively eliminated during the 1980s, fixed exchange rates became unsustainable.

Due to the international financial storms raging at the time, the countries that had pegged their currencies to the Deutsche Mark (DM) within the European Monetary System (EMS) had to periodically decide either to maintain an independent monetary policy and devalue, or to maintain parity with the DM and lose any sovereignty over their monetary policy.

Given the frequency with which policymakers had to make these decisions, some countries lost both the benefits of exchange-rate stability and their monetary policy independence. The social costs were high. This process came to an end with the ERM crisis in 1992-3, when it ceased to be credible for countries entering a recession to follow German interest rate rises. At the same time, devaluing repeatedly was becoming incompatible with the deep Single Market that countries were trying to build.

Indeed, the prevailing view on devaluations was captured well by Nobel laureate Robert Mundell, who developed his theory of optimal currency areas in the belief that, *"I could not see why countries that were in the process of forming a common market should saddle themselves with a new barrier to trade in the form of uncertainty about exchange rates"*⁵. Exchange rate flexibility would have undermined the Single Market in two ways.

First, it would have weakened incentives for firms to raise productivity, because they could have lifted competitiveness – if only temporarily – by devaluing rather than increasing output per head⁶. Yet Europe had witnessed time and again that such actions did not lead to lasting welfare gains.

From the launch of the EMS in 1979 to the ERM crisis in 1992, the Italian lira was devalued seven times against the DM, losing around half of its value cumulatively vis-à-vis the German currency. Yet average annual productivity growth⁷ in Italy was lower than in the euro area 12 over this period, Italy's GDP growth rate was roughly the same as that of its European peers, and its unemployment rate went up by 1.3 percentage points. At the same time, consumer prices in Italy grew cumulatively by 223%, compared with 103% in the euro area 12⁸.

Second, support for the Single Market would be undermined in the long run if firms that did invest in raising productivity could be deprived of some of the benefits by 'beggar-thy-neighbour' behaviour through competitive devaluations in other countries. Open markets would not have lasted.

Europe had experienced the problems created by exchange rate flexibility in the 1960s with the common agricultural market. Absent a single currency, the common agricultural policy was based on prices quoted in units of account. But successive currency crises, in particular a revaluation of the DM and a devaluation of the French franc in 1969, jeopardised trust in the market, as the farmers affected demanded compensation for their losses.

The issue was smoothed over by introducing monetary compensatory amounts to mitigate sudden changes in farm prices caused by abrupt adjustments in exchange rates. But the system proved difficult to implement and sustain as it was virtually impossible to avoid distortions of production and trade, which poisoned intra-Community relations⁹.

So, faced with an 'inconsistent quartet' of policy choices, a single currency provided, at least in principle, a way to resolve them. It would allow countries to maintain stable exchange rates and therefore benefit from openness within the Single Market, while managing as far as possible its costs.

Not all countries that had joined the Single Market also joined the euro, of course. Some countries, such as Denmark, pegged their exchange rates to the euro. For other countries, the Single Market represented the gateway to the euro. Five additional countries¹⁰ joined the euro in its first decade and three more in its second, but other smaller economies have stayed out so far.

Finally, there is the United Kingdom, the only large economy inside the Single Market that chose to stay out of the euro area. The United Kingdom is a particular case, not only for political reasons but also for structural reasons, such as the relatively low exchange rate pass-through it had in the past¹¹.

The benefits of one market, one money today

We should consider what gains have been made as a result of having one market with one money. With the euro protecting the Single Market, trade growth has increased, with intra-EU exports rising from 13% of EU GDP in 1992 to 20% today.

Intra-euro area trade has risen both in absolute terms and as a share of total trade with advanced economies¹², even as emerging market economies have entered the global market. Foreign direct investment (FDI) flows within Europe have also grown¹³, with inflows from the rest of the EU to Italy increasing by 36% from 1992 to 2010¹⁴.

Behind the growth of intra-EU trade lies perhaps an even more important development, which is the much closer intertwining of European economies through the deepening of value chains.

Since the start of the 2000s, supply chain linkages between countries within the EU have intensified at a faster pace and were more resilient during the crisis, compared with their supply chain linkages with countries outside the Single Market¹⁵.

The removal of customs barriers as part of the Single Market agenda has facilitated multiple border crossings during the production process. Europe-wide standards have boosted intra-EU value chains by providing more certainty for firms about the quality of production in other countries and encouraging the fragmentation of the production process that is typical of value chains¹⁶.

And the single currency has further enhanced the process by eliminating the costs of foreign exchange payments and settlements and of hedging exchange rate risk.

Participation in these value chains has brought gains for all countries, especially in terms of productivity spillovers. The imported inputs used in value chains generate a tangible boost to productivity¹⁷.

And higher productivity in turn leads to higher wages. Integration within value chains is associated with an increase in hourly compensation for all skill groups¹⁸.

Moreover, integrating into value chains has improved risk-sharing among European countries, since it has allowed the gains (and losses) of trade with the rest of the world to be more evenly spread. Within the EU, close to 20% of export-supported jobs are located in a country other than the one that exports the final product¹⁹.

Around half a million Italian workers are involved in the production processes of companies located in other EU countries that export to the rest of the world²⁰. Italian firms themselves participate strongly in global value chains and this is positively associated with labour productivity²¹.

It is often this link to value chains that allows in particular the SMEs that are so typical of Italy's manufacturing sector to survive and grow. In a world that is increasingly dominated by scale, this permits Italy to retain one of its

fundamental characteristics. Italy, through the Single Market and the single currency, is deeply integrated into the European production process.

The closer intertwining of European economies has had two significant effects on exchange rate relationships for euro area countries. First, the cost of not being able to devalue within Monetary Union has fallen.

ECB analysis finds that misalignments of real effective exchange rates are smaller – albeit more persistent – for euro area countries than those between advanced economies or countries linked by pegged exchange rates, and these misalignments have actually become smaller in the second decade of EMU relative to the first decade²².

At the same time, value chains have blunted the short-run benefits of competitive devaluations²³. Since exports contain a greater share of imports, any boost to external demand associated with a hypothetical devaluation is now offset by higher input costs from imported intermediates. As a result, participation in value chains has been found to reduce the responsiveness of export volumes to movements in the exchange rate²⁴.

So, any country hypothetically looking to devalue to regain competitiveness would have to do so to a much larger extent than was necessary in previous decades. And devaluations of such size would not only threaten the existence of the Single Market. They would also result in a substantial loss of welfare within the country carrying out the devaluation owing to the greater negative impact it would have via higher import prices.

And studies on non-EU countries suggest that the welfare loss would be greatest for the poorest in society, since poorer households tend to spend a larger share of their income on tradeable goods than richer households²⁵. This is also typically the case in euro area countries.

But does being outside the euro provide additional benefits in terms of monetary policy sovereignty? This is not so obvious. First, the single currency has actually allowed countries to regain monetary sovereignty compared with the fixed exchange rate regimes of the past.

Decision-making over monetary policy, which effectively belonged to Germany under the EMS, is now shared among all euro area countries. And the size of euro financial markets has made the euro area less vulnerable to US spillovers, even as global financial integration has accelerated.

Second, it is worth noting that the supposed advantages of monetary sovereignty – such as the ability to engage in monetary financing of government spending – do not appear to be valued highly by countries that are members of the Single Market but not the euro.

Such countries have a weighted average public debt of 68% of GDP (44% of GDP if the United Kingdom is excluded), compared with 89% for countries that use the single currency.

In any case, as the history of Italy has shown, monetary financing of government debt did not lead to real long-term benefits²⁶. In periods where debt monetisation was more common in Italy, such as in the 1970s, maintaining a growth rate similar to its European peers required repeated devaluations. Inflation reached unsustainable levels and hit the most vulnerable in society.

Convergence and divergence in the euro area

But if it is true that the supposed advantages associated with the freedom of being outside Monetary Union belong to a memory that has been obscured by time and the dramas of the recent crisis, it is also true that in some countries various benefits that were expected from EMU have not yet materialised.

It was not mistaken, and nor is it today, to expect higher growth and employment to emerge from the 'culture of stability' that Monetary Union would bring about. But it was inconceivable that joining Monetary Union alone would be sufficient to achieve this. We needed and continue to need much more.

To the founders of EMU, it was clear that establishing a well-functioning monetary union would be a long and gradual process. Historical experience suggested that opening markets could lead to differentiated gains, with some regions profiting more than others. This had been the experience of both Italy and Germany after unification in the 19th century²⁷.

Several euro area countries have achieved significant convergence, particularly the Baltic countries, Slovakia and, to a lesser extent, Malta and Slovenia. In these countries, the gap between real GDP per capita and the euro area mean has been reduced by around one-third since 1999²⁸.

Others that also started far from the euro area average – such as Portugal and Greece – have on balance been unable to close the gap considerably.

But such divergences are not exclusive to the euro area. GDP per capita in the richest state in the United States is around twice that of the poorest state, which is roughly the same gap as in the euro area²⁹. And the dispersion of growth rates across euro area countries has fallen considerably over time and, since 2014, has been comparable to the dispersion across US states.

So what has driven the different convergence trajectory of countries, and how much is it related to membership of the euro? Convergence can be thought of in two ways. The first is convergence of real GDP per capita levels. This is a long-term process which is driven by factors such as rates of FDI, productivity growth and institutional quality. Such

factors can be fostered by sharing a single currency, but they are not determined by it. Domestic policies, structural and institutional reforms, and contributions from EU structural funds are what play a crucial role here.

The second concept of convergence relates to *growth rates*, ie. how much business cycles across countries are synchronised, especially when major shocks hit. This is determined more by monetary union membership, since the design of a monetary union affects the capacity of countries to adjust and stabilise demand during recessions.

In the case of Italy, we see both long-term and cyclical factors at play. Between 1990 and 1999 – that is, before the introduction of the euro – Italy already had the lowest cumulative per capita GDP growth of the original euro area members. From 1999 to 2008, it again had the lowest per capita GDP growth of all euro area members.

From 2008 to 2017, it recorded the second lowest cumulative growth, behind Greece. And, if we look further back, the growth we saw in the 1980s was borrowed from the future, having been based on debt that was left for future generations to bear.

So, low growth in Italy is a phenomenon that dates back a very long time before the euro. This is a supply-side problem, which is clear if one looks at regional performance. There is a correlation between GDP per capita in different Italian regions and some structural indicators, such as – just to take an example – the ease of doing business index compiled by the World Bank: the values for the poorer regions are generally lower than those of richer regions.

At the same time, the fact that Italy – and other countries – diverged further from the euro area average during the crisis highlights two important points. First, that structurally weaker countries are more vulnerable to economic slowdowns than others; and second, that our Monetary Union remains incomplete in some key respects.

There is a fair amount of evidence that countries that implemented decisive structural policies recovered faster from the crisis than others. In countries that made such changes, the labour market is now more responsive to growth³⁰, and the improved economic conditions have led to gains in employment³¹. But alongside structural policies, different layers of protection are necessary to ensure that countries can stabilise their economies during crises.

Without appropriate backstops at the euro area level, individual countries in a monetary union can be exposed to self-fulfilling dynamics in sovereign debt markets. Such overshooting can aggravate adverse debt dynamics in downturns, inducing procyclicality in national fiscal policies, as we saw in 2011-12.

Typically, sovereign borrowing costs should fall in a recession, but at that time economies representing one-third of euro area GDP saw their borrowing costs become positively correlated with risk aversion³². The result was a lack of stabilisation that harmed both growth and fiscal sustainability.

So it is the structurally weaker countries that most need EMU to have instruments to diversify the risk of crises and counteract their effect on the economy. I have talked before about how countries like Italy, which had been weakened by decades of low growth and had no fiscal space when the crisis began, saw a crisis of confidence in government debt turn into a credit crisis with major repercussions for employment and growth³³.

Deepening private risk-sharing through financial markets is one key element in preventing such events from recurring. In the United States, around 70% of shocks are mitigated and shared across the individual states through integrated financial markets, whereas in the euro area the share is only 25%³⁴. It is therefore also in the interest of the weaker countries in the euro area to complete banking union and to proceed with the construction of a genuine capital market.

But national budgets will never lose their function as the main stabilisation tool during crises. In the euro area, around 50% of an unemployment shock is absorbed through the automatic stabilisers in national public budgets, significantly more than in the United States³⁵. The use of automatic stabilisers, however, depends on countries not being constrained by their debt level. So the necessary fiscal space will have to be created again so that budget interventions can be made in the event of a crisis.

Yet national fiscal policies also need a complement at the European level. We need an institutional architecture that gives all countries the necessary support to ensure that their economies are not exposed to procyclical market behaviour during downturns. This will only be possible if the support is temporary and does not constitute a permanent transfer between countries, which would result in a failure to put in place the necessary fiscal consolidation, let alone the fundamental structural reforms needed for a return to growth.

Conclusion

It is not a technocratic desire to see convergence across countries and the smooth functioning of Monetary Union that has led me to frequently mention the importance of structural reforms in recent years. Each country has its own reform agenda, but such reforms are the only way to create the conditions for sustainable growth in wages, productivity and employment and to underpin our welfare state.

In large part these measures have to be undertaken at the national level, but they can be supported at the European level by the recent decisions to launch an instrument for convergence and competitiveness.

However, to tackle future cyclical crises, the two layers of protection against shocks – the diversification of risk through the private financial system on the one hand, and public countercyclical support through national budgets and the fiscal capacity of the EU budget on the other – need to interact in a complete and efficient manner.

The more progress we make in completing the banking union and capital markets union, the less urgent – although still necessary – it becomes to construct a fiscal capacity, which could at times serve to complement national stabilisers. Inaction on both fronts heightens the fragility of Monetary Union in times of great crisis and the divergence between countries increases.

It is clear that completing Monetary Union is the best way to prepare the transition to a form of union that is more complete. Monetary Union, a necessary consequence of the Single Market, has become an integral and defining aspect – with its symbols and its constraints – of the political project whose central aim is a Europe that is united in freedom, peace, democracy and prosperity.

It was an exceptional response – or to paraphrase Robert Kagan³⁶ an anti-historical response – to a century that had seen dictatorships, war and misery, and in that respect was not dissimilar to previous centuries. A unified Europe was part of that world order, itself the result of exceptional circumstances, which followed the Second World War.

The intervening years have confirmed the rationality of the choices made at the European and the global level. The challenges that have arisen have become ever more global in nature and need to be tackled together, not alone. And this is even more true for Europeans, both at the level of their individual nations and for the continent as a whole: rich but relatively small; strategically exposed, militarily weak.

Yet today, for many, the memories that inspired those choices seem distant and irrelevant, and the rationale behind them has been undermined by the misery created by the great financial crisis of the past decade. It does not matter that we are emerging from the crisis. Elsewhere in the world, the fascination with illiberal prescriptions and regimes is spreading; we are seeing little steps back in history.

And this is why our European project is even more important today. It is only by continuing to make progress, freeing up individual energies but also fostering social equity, that we will save it through our democracies, with a unity of purpose. ■

Mario Draghi is President of the European Central Bank

Endnotes

1. Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.
2. See Study Group appointed by the Commission and presided by Padoa-Schioppa, T (1987), "Efficiency, stability, and equity: a strategy for the evolution of the economic system of the European community: a report".
3. See Caminada, K, Goudswaard, K and Van Vliet, O (2010), "Patterns of Welfare State Indicators in the EU: Is there Convergence?", *Journal of Common Market Studies*, 48(3), pp. 529-556; Paetzold, J (2012), "The Convergence of Welfare State Indicators in Europe: Evidence from Panel Data", Working Paper No 201204, University of Salzburg; Athanasenas, A, Chapsa, X and Michailidis, A (2015), "Investigating Social Protection Convergence in the EU-15: A Panel Data Analysis", *European Research Studies Journal*, vol. 0(2), pp. 79-96.
4. See Padoa-Schioppa, T (1982), "Capital Mobility: Why is the Treaty Not Implemented?", in Padoa-Schioppa, T (1994), *The Road to Monetary Union in Europe* (Oxford: Clarendon Press).
5. Mundell, R, "Optimum Currency Areas", luncheon speech at Tel Aviv University, 5 December 1997.
6. See Eichengreen, B (2007), "The European Economy since 1945, Coordinated Capitalism and Beyond", Princeton University Press.
7. Real GDP per hour worked.
8. Reference period is 1979-1991, excluding Italy.

9. European Commission (1980), ["Reflections on the Common Agricultural Policy"](#), Bulletin of the European Communities, Supplement 6/80.
10. Greece was one of the original signatories of the Maastricht Treaty but only joined the euro area in 2001.
11. See, for example, Campa, JM and Goldberg, LS (2002), ["Exchange Rate Pass-Through into Import Prices: A Macro or Micro Phenomenon?"](#), NBER Working Paper, No. 8934.
12. Euro area plus Australia, Canada, Denmark, Japan, Sweden, United Kingdom and United States.
13. Carril-Caccia, F and Pavlova, E (2018), ["Foreign direct investment and its drivers: a global and EU perspective"](#), Economic Bulletin, Issue 4, ECB.
14. Percentage increase of five-year centered average.
15. Schmitz, M, Fidora, M and Gunnella, V (2017), ["The impact of global value chains on the macroeconomic analysis of the euro area"](#), Economic Bulletin, Issue 8, ECB.
16. Blind, K, Mangelsdorf, A, Niebel, C and Ramel, F (2018), ["Standards in the global value chains of the European Single Market"](#), Review of International Political Economy, 25(1), pp. 28-48.
17. See, for example, Halpern, L, Koren, M and Szeidl, A (2015), ["Imported Inputs and Productivity"](#), American Economic Review, 105(12), pp. 3660-3703.
18. Schmitz et al. (2017), *op. cit.*
19. European Commission (2018), ["Fact Sheet"](#), 27 November.
20. European Commission (2018), ["Exports Mean Jobs, Italy"](#).
21. Agostino, M, Giunta, A, Scalera, D and Trivieri, F (2016), ["Italian Firms in Global Value Chains: Updating our Knowledge"](#), Rivista di Politica Economica, vol. VII-IX/2016.
22. Fidora, M, Giordano, C and Schmitz, M (2017), ["Real exchange rate misalignments in the euro area"](#), Working Paper Series, No. 2108, ECB.
23. Devereux, M and Yetman, J (2014), ["Globalisation, pass-through and the optimal policy response to exchange rates"](#), Journal of International Money and Finance, 49(PA), pp. 104-128.

24. See Amiti, M, Itskhoki, O and Konings, J (2014), "Importers, Exporters, and Exchange Rate Disconnect", *American Economic Review*, 104(7), pp. 1942-1978; Swarnali, A, Maximiliano, A and Michele, R (2017), "Global value chains and the exchange rate elasticity of exports", *The B.E. Journal of Macroeconomics*, 17(1), pp. 1-24; Rodnyansky, A (2018), "(Un) Competitive Devaluations and Firm Dynamics", mimeo.
25. See Cravino, J and Levchenko, A (2017), "The Distributional Consequences of Large Devaluations", *American Economic Review*, Vol. 107, No. 11, November.
26. Fratianni, M and Spinelli, F, *A Monetary History of Italy*, Cambridge University Press, Cambridge, 1997.
27. See Toniolo, G (1990), "Economic Problems of the Unification" in *An Economic History of Liberal Italy*, Routledge; Study Group appointed by the Commission and presided by Padoa-Schioppa, T (1987), *op. cit.*
28. Diaz del Hoyo, J, Dorrucchi, E, Frigyes, FH and Muzikarova, S (2017), "Real convergence in the euro area: a long-term perspective", *Occasional Paper Series*, No. 203, ECB, December.
29. Adjusted for purchasing power in euro area countries and excluding Luxembourg and Ireland.
30. Based on a static relationship between changes in the employment rate and percentage changes in GDP for the period between the first quarter of 1999 and the second quarter of 2015. The period of recovery analysed is from the second quarter of 2013 to the second quarter of 2015. See the article entitled "What is behind the recent rebound in euro area employment?", *Economic Bulletin*, Issue 8, ECB, 2015.
31. See Banco de España (2015), "Competitive adjustment and recovery in the Spanish economy", *Annual Report*, Box 2, pp. 39-63; Vansteenkiste, I. (2017), "Did the crisis permanently scar the Portuguese labour market? Evidence from a Markov-switching Beveridge curve analysis", *Working Paper Series*, No. 2043, ECB, April; and Sestito, P and Viviano, E (2016), "Hiring incentives and/or firing cost reduction? Evaluating the impact of the 2015 policies on the Italian labour market", *Questioni di economia e finanza (Occasional Papers)*, No. 325, Banca d'Italia, March.
32. As measured by the VIX index (ECB calculations).
33. See Draghi, M (2018), "Risk-reducing and risk-sharing in our Monetary Union", speech at the European University Institute, Florence, 11 May.

34. European Commission estimates. See Nikolov, P (2016), "Cross-border risk sharing after asymmetric shocks: evidence from the euro area and the United States", *Quarterly Report on the Euro Area*, Vol. 15, No. 2.
35. Dolls, M, Fuest, C, Kock, J, Peichl, A, Wehrhöfer, N and Wittneben, C (2015), "Automatic Stabilizers in the Eurozone: Analysis of their Effectiveness at the Member State and Euro Area Level and in International Comparison", Centre for European Economic Research, Mannheim.
36. Kagan, R (2018), *The Jungle Grows Back*, Penguin Random House.

This article is based on a [speech](#) delivered at Laurea Honoris Causa in Economics by University of Sant'Anna, Pisa, 15 December 2018

The Federal Reserve's framework for monitoring financial stability

Transparency will enable the Federal Reserve to serve the needs of the American public and strengthen democratic legitimacy, Jerome Powell believes

will begin by briefly reviewing the outlook for the economy, and then turn to a discussion of financial stability. My main subject will be the profound transformation since the Global Financial Crisis in the Federal Reserve's approach to monitoring and addressing financial stability.

November 28 marks the publication of the Board of Governors' first *Financial Stability Report*. Earlier this month, we published our first *Supervision and Regulation Report*. Together, these reports contain a wealth of information on our approach to financial stability and to financial regulation more broadly. By clearly and transparently explaining our policies, we aim to strengthen the foundation of democratic legitimacy that enables the Fed to serve the needs of the American public.

Outlook and monetary policy

Congress assigned the Federal Reserve the job of promoting maximum employment and price stability. I am pleased to say that our economy is now close to both of those objectives. The unemployment rate is 3.7 percent, a 49-year low, and many other measures of labour market strength are at or near historic bests. Inflation is near our 2 percent target. The economy is growing at an annual rate of about 3 percent, well above most estimates of its longer-run trend.

For seven years during the crisis and its painful aftermath, the Federal Open Market Committee (FOMC) kept our policy interest rate unprecedentedly low - in fact, near zero - to support the economy as it struggled to recover. The health of the economy gradually but steadily improved, and about three years ago the FOMC judged that the interests of households and businesses, of savers and borrowers, were no longer best served by such extraordinarily low rates.

We therefore began to raise our policy rate gradually toward levels that are more normal in a healthy economy. Interest rates are still low by historical standards, and they remain just below the broad range of estimates of the level that would be neutral for the economy that is, neither speeding up nor slowing down growth. My FOMC colleagues and I, as well as many private-sector economists, are forecasting continued solid growth, low unemployment, and inflation near 2 percent.

The risks of destabilizing runs are far lower than in the past. The institutions at the heart of the financial system are more resilient

There is a great deal to like about this outlook. But we know that things often turn out to be quite different from even the most careful forecasts. For this reason, sound policymaking is as much about managing risks as it is about responding to the baseline forecast. Our gradual pace of raising interest rates has been an exercise in balancing risks.

We know that moving too fast would risk shortening the expansion. We also know that moving too slowly - keeping interest rates too low for too long - could risk other distortions in the form of higher inflation or destabilizing financial imbalances. Our path of gradual increases has been designed to balance these two risks, both of which we must take seriously.

We also know that the economic effects of our gradual rate increases are uncertain, and may take a year or more to be fully realized. While FOMC participants' projections are based on our best assessments of the outlook, there is no preset policy path. We will be paying very close attention to what incoming economic and financial data are telling us. As always, our decisions on monetary policy will be designed to keep the economy on track in light of the changing outlook for jobs and inflation.

Under the dual mandate, jobs and inflation are the Fed's meat and potatoes. In the rest of my comments, I will focus on financial stability-a topic that has always been on the menu, but that, since the crisis, has become a more integral part of the meal.

Historical perspective on financial stability

The term 'financial stability' has a particular meaning in this context. A stable financial system is one that continues to function effectively even in severely adverse conditions. A stable system meets the borrowing and investment needs of households and businesses despite economic turbulence. An unstable system, in contrast, may amplify

turbulence and prolong economic hardship in the face of stress by failing to provide these essential services when they are needed most.

For trivia buffs, I will note that the second ever presentation to the Economic Club of New York by a Federal Reserve official was about this very topic. The date was March 18, 1929. Weeks before, the Fed had issued a public statement of concern over stock market speculation, and had provided guidance frowning on bank funding of such speculation.

William Harding, a former Fed Chair and then president of the Federal Reserve Bank of Boston, defended the Fed's actions in his talk. He argued that, while the Fed should not act as the arbiter of correct asset prices, it did have a primary responsibility to protect the banking system's capacity to meet the credit needs of households and businesses.

At the meeting, critics argued that public statements about inflated asset prices were "*fraught with danger*;" that the nation's banks were so well managed that they should not "*face public admonition*;" and, more generally, that the Fed was "*out of its sphere*."¹ Of course, Harding spoke just a few months before the 1929 stock market crash, which signaled the onset of the Great Depression².

Fast forwarding, a host of Depression-era reforms helped avoid, for the next three-quarters of a century, a systemic financial crisis and the associated severe economic dislocation the longest such period in American history. Those decades saw many advances in monetary policy and in bank regulatory policy, but the appropriate role for government in managing threats to the broader financial system remained unresolved.

Periodic bouts of financial stress during this period - such as the Latin American debt crisis, the savings and loan crisis, and the Russian debt default - were met with improvised responses. Policymakers conjured fixes from a mixture of private-sector rescues, emergency liquidity, occasional implicit or explicit bailouts, and monetary accommodation. Outside of these crisis responses, however, systemic issues were not a central focus of policy.

The Global Financial Crisis demonstrated, in the clearest way, the limits of this approach. Highly inventive and courageous improvisation amid scenes of great drama helped avoid another Great Depression, but failed to prevent the most severe recession in 75 years. The crisis made clear that there can be no macroeconomic stability without financial stability, and that systemic stability risks often take root and blossom in good times³.

Thus, as the emergency phase of the crisis subsided, Congress, the Fed, and the other financial regulators began developing a fundamentally different approach to financial stability. Instead of relying on improvised responses after crises strike, policymakers now constantly monitor vulnerabilities and require firms to plan in advance for financial distress, in a framework that lays out solutions in advance during good times.

The new approach to financial stability

This new approach can be divided into three parts. First, build up the strength and resilience of the financial system. Second, develop and apply a broad framework for monitoring financial stability on an ongoing basis. And third, explain the new approach as transparently as possible, so that the public and its representatives in Congress can provide oversight and hold us accountable for this work.

Although I'll focus mainly on the stability efforts of the Federal Reserve, a number of federal regulatory agencies have responsibilities in this area. All of these agencies are represented on the Financial Stability Oversight Council,

or FSOC, which is chaired by the Treasury Secretary and which provides a forum for interagency cooperation in responding to emerging risks.

Building resilience of the financial system

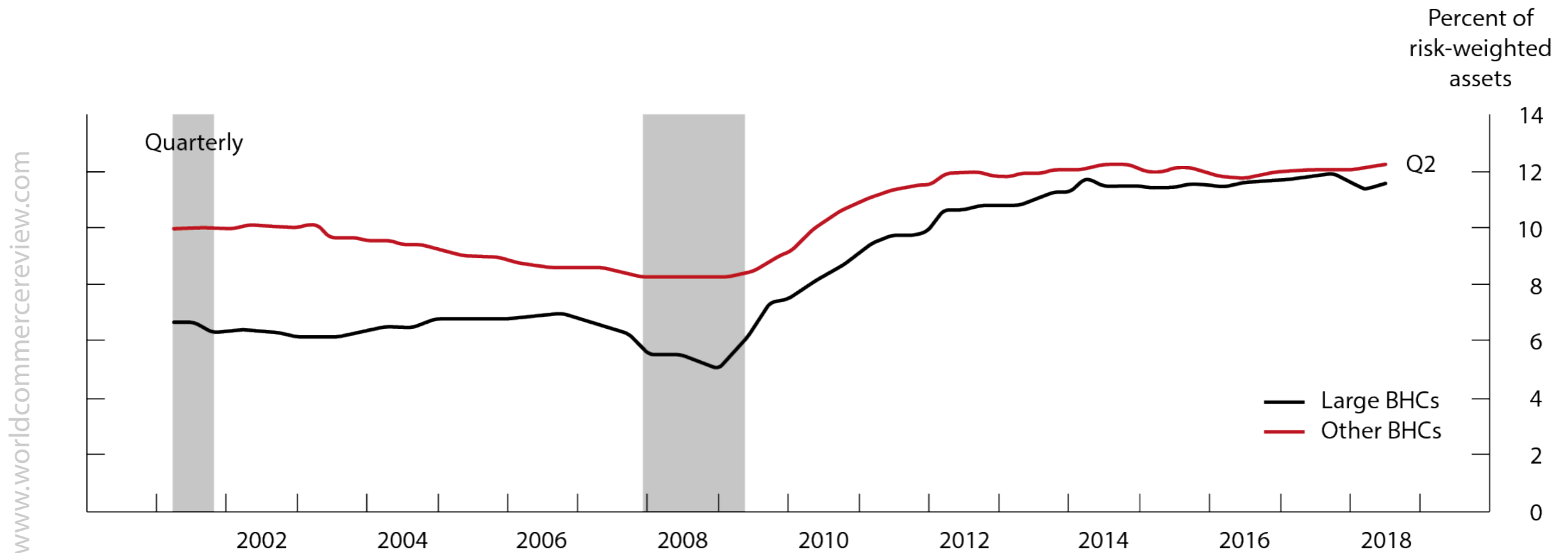
After 10 years of concentrated effort in the public and private sectors, the system is now much stronger, with greater capacity to function effectively in stressful times. In the banking system, we have implemented a post-crisis regulatory framework based on robust capital and liquidity requirements, a strong stress-testing regime, and mandatory living wills for the largest firms. As a result, banks now have much more high-quality capital than before (Figure 1).

The most recent stress tests indicate that, even after a severe global recession, capital levels at the largest banks would remain above regulatory minimums, and above the levels those banks held in good times before the crisis⁴. The most systemically important financial institutions also now hold roughly 20 percent of their assets in the form of high-quality liquid assets—that is, safe assets that could be readily sold at short notice (Figure 2). The share of these assets is about four times its pre-crisis level.

Compared with other economies, lending and borrowing in the United States depend less on bank loans and more on funds flowing through a wide array of capital market channels. The crisis revealed that this capital market centric system, despite its many benefits, also provides more places where systemic risks can emerge. In response, Congress and the regulatory agencies have made many stability-enhancing changes outside of the banking system.

For example, many derivatives transactions are now required to be centrally cleared, which, through netting, has reduced exposures and enabled better management of counterparty risk. Triparty repurchase agreement (repo) reforms have substantially improved the resilience of that marketplace, in particular by limiting intraday loans.

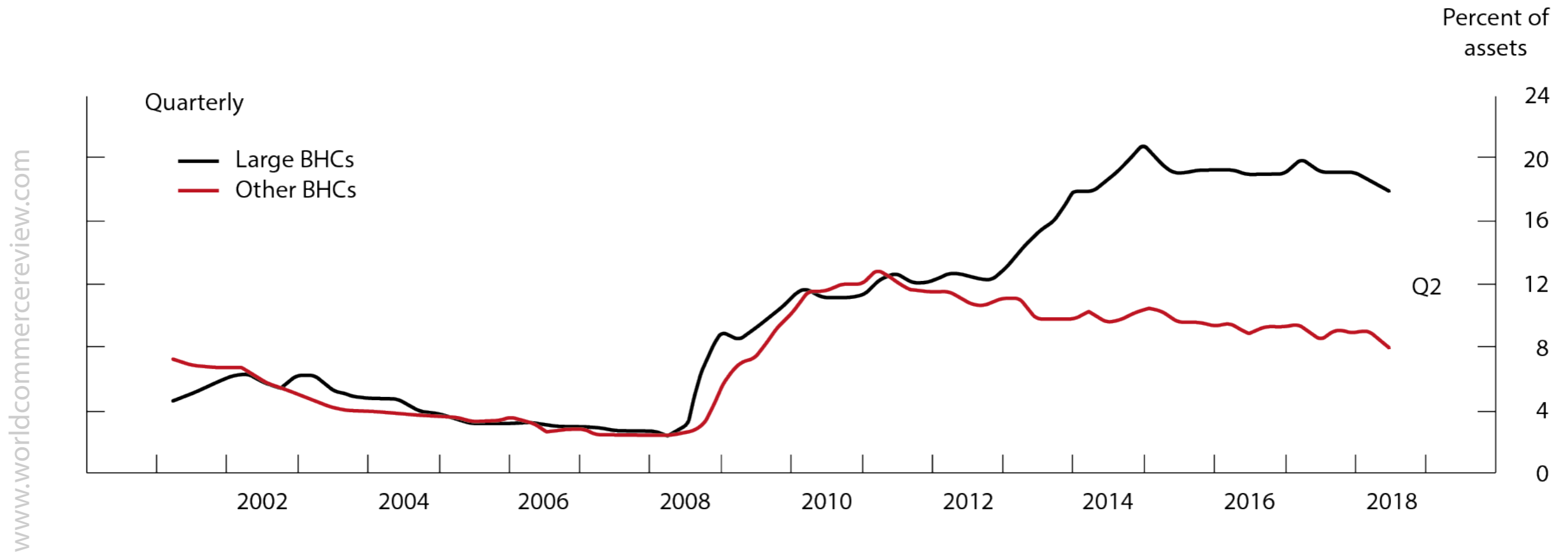
Figure 1. Common equity Tier 1 ratio, by BHC type



Note: The data are seasonally adjusted by Board staff. Sample includes banks as of 2018:Q2. Before 2014:Q1, the numerator of the common equity Tier 1 ratio is Tier 1 common capital for advanced-approaches bank holding companies (BHCs) (before 2015:Q1, for non-advanced-approaches BHCs). Afterward, the numerator is common equity Tier 1 capital. Large BHCs are those with greater than \$50 billion in total assets. The denominator is risk-weighted assets. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research: March 2001-November 2001, December 2007-June 2009.

Source: Federal Reserve Board, Form FR Y-9C, Consolidated Financial Statements for Holding Companies.

Figure 2. Liquid assets held by banks



Note: Liquid assets are excess reserves plus estimates of securities that qualify as high-quality liquid assets. Haircuts and Level 2 asset caps are incorporated into the estimate. Large bank holding companies (BHCs) are those with greater than \$50 billion in total assets.

Source: Federal Reserve Board, Form FR Y-9C, Consolidated Financial Statements for Holding Companies; Federal Reserve Board Form FR 2900, Report of Transaction Accounts, Other Deposits and Vault Cash.

Before the crisis, prime institutional money market funds were permitted to report a constant, \$1 share price so long as the value of the underlying assets remained near \$1.

This reporting convention, combined with the implicit support of the plans' sponsors, led investors to treat those funds like bank deposits, even though they were not likewise insured. These funds are now required to report floating net-asset values, and after this reform investors chose to migrate to government-only funds, which are safer and less susceptible to runs (Figure 3)⁵. These and other measures have reduced the risk that key non-bank parts of the system would freeze up in the face of market stress.

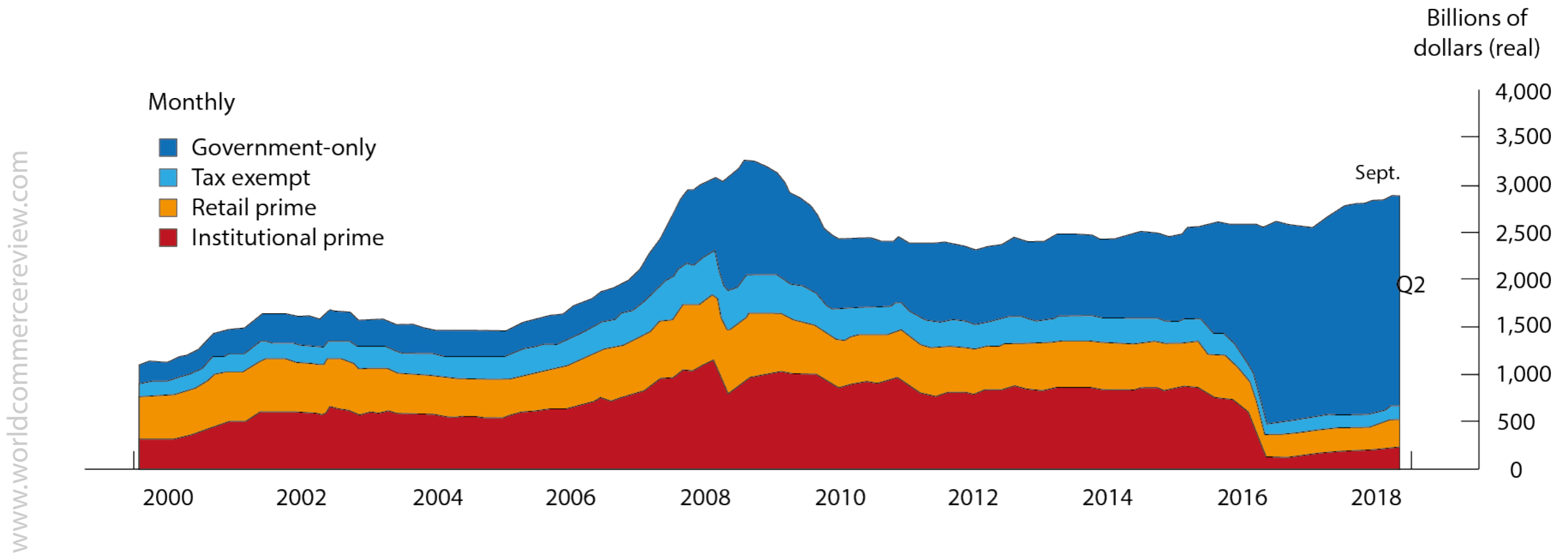
A new framework for monitoring systemic risks

Innovation and risk-taking contribute to the dynamism of our financial system and our economy. As Hyman Minsky emphasized, along with the many benefits of dynamism comes the reality that the financial system will sometimes evolve toward excess and dangerous imbalances⁶. This reality underscores the vital importance of the second part of post-crisis reform: monitoring for emerging vulnerabilities.

As laid out in our new *Financial Stability Report*, we have developed a framework to help us monitor risks to stability in our complex and rapidly evolving financial system. The framework distinguishes between shocks, that is, trigger events that can be hard to predict or influence, and vulnerabilities, defined as features of the financial system that amplify shocks.

The report is organized around four broad vulnerabilities that have been prominent in financial crises through the centuries. Each of these vulnerabilities is often found to some degree even in healthy market-based systems, and there is not, at present, any generally accepted standard for assessing at what level the vulnerabilities begin to pose serious stability risks.

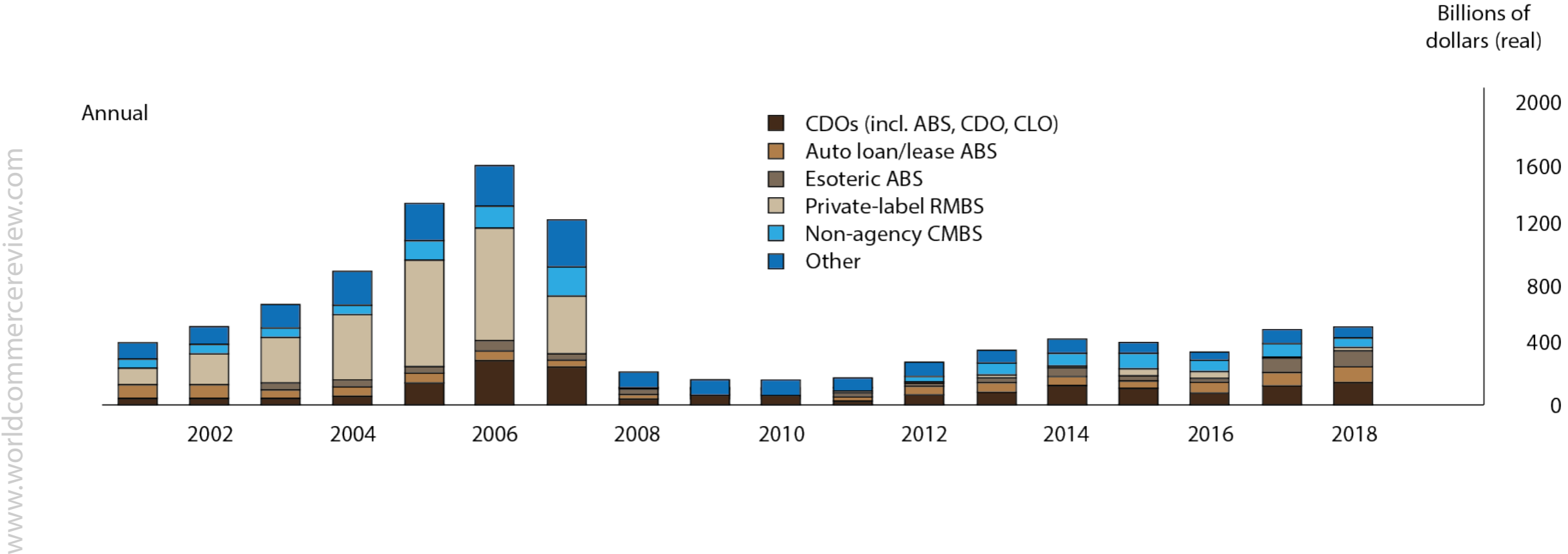
Figure 3. Domestic money market fund assets



Note: The data are converted to constant 2018 dollars using the consumer price index. Key identifies regions in order from top to bottom.

Source: Federal Reserve Board staff calculations based on Investment Company Institute data; Bureau of Labor Statistics, consumer price index via Haver Analytics.

Figure 4. Issuance of private label securitized products, by asset class



Note: The data from the first three quarters of 2018 are annualized to create the 2018 bar. Esoteric asset-backed securities (ABS) are backed by unsecured personal loans, mobile phones, reperforming residential mortgages, aircraft and shipping container leases, marketplace lending, and franchise payments. CMBS is commercial mortgage-backed securities; CDO is collateralized debt obligation; CLO is collateralized loan obligation; RMBS is residential mortgage-backed securities. The "Other" category consists of subprime mortgages, real estate mortgage investment conduit (Re-REMIC) RMBS, Re-REMIC CMBS, and ABS backed by credit card debt, student loans, equipment, and floorplans. The data are converted to 2018 dollars using the consumer price index. Key identifies bar segments in order from bottom to top.

Source: Harrison Scott Publications, Asset-Backed Alert (ABAlert.com) and Commercial Mortgage Alert (CMAAlert.com); Bureau of Labor Statistics, consumer price index via Haver Analytics.



In lieu of such a standard, we flag cases in which the vulnerabilities rise well beyond historical norms, and then form judgments about the stability risks those cases present.

The first vulnerability is excessive leverage in the financial sector⁷. If a highly leveraged segment of the financial system is buffeted by adverse events, the affected entities may all need to deleverage at the same time by selling assets, leading to what is called a 'fire sale.'

Both the resulting decline in asset prices and the impaired ability of the segment to play its role in the economy can amplify the effects of a downturn. We saw this chain of events play out repeatedly in various parts of the financial sector in the weeks following the failure of Lehman Brothers in 2008.

In our surveillance, we examine leverage across many types of financial institutions, including banks, insurance companies, hedge funds, and various funding vehicles. Currently, we do not detect a broad-based buildup of abnormal or excessive leverage. As with banks, capital levels at insurance companies and broker-dealers appear robust.

In addition, securitization levels are far below their pre-crisis levels, and those structures that do exist rely on more stable funding (see Figure 4). Our view into leverage and risk-taking outside the banking sector is admittedly incomplete, however, and we are always working to get a better view of emerging leverage excesses⁸.

The second vulnerability is funding risk, which arises when banks or nonbank financial entities rely on funding that can be rapidly withdrawn. If depositors or market participants lose faith in the soundness of an institution or the system as a whole, unstable funding can simply vanish in what is called a 'run.'

During the crisis, we saw widespread runs, including at broker-dealers, some segments of the repo market, and money market mutual funds. These runs did severe damage, contributing to a generalized panic at the time. Had the authorities not stepped in, the damage could have been even more severe.

Today we view funding-risk vulnerabilities as low. Banks hold low levels of liabilities that are able and likely to run, and they hold high levels of liquid assets to fund any outflows that do occur. Money market mutual fund reforms have greatly reduced the run risk in that sector. More generally, it is short-term, uninsured funding that would be most likely to run in a future stress event, and the volume of such funding is now significantly below pre-crisis peaks.

Taken together, the evidence on these first two vulnerabilities strongly supports the view that financial institutions and markets are substantially more resilient than they were before the crisis. Indeed, the American financial system has successfully weathered some periods of significant stress over the past several years⁹.

The third vulnerability is excessive debt loads at households and businesses. Credit booms have often led to credit busts and sometimes to painful economic downturns. When the bust comes, those who have overborrowed tend to sharply reduce their spending. Defaults typically rise faster than had been expected, which may put financial institutions into distress. These effects may combine to bring a serious economic downturn.

This boom-bust pattern was clear in measures of household debt around the crisis period, with mortgage debt rising far above its historical trend and then contracting sharply (see Figure 5). After the contraction, household debt has grown only moderately. The net increase in mortgage debt has been among borrowers with higher credit scores. While heavily indebted households always suffer in a downturn, all of this suggests that household debt would not present a systemic stability threat if the economy sours.

Nonfinancial business borrowing presents a subtler story. With corporate debt, the United States has not faced a massive credit boom like that experienced with residential mortgages before the recent crisis. Instead, after controlling for its trend, business borrowing relative GDP has risen during expansions, no doubt reflecting business optimism, and then fallen when the cycle turned, as some of that optimism proved unfounded (see Figure 6).

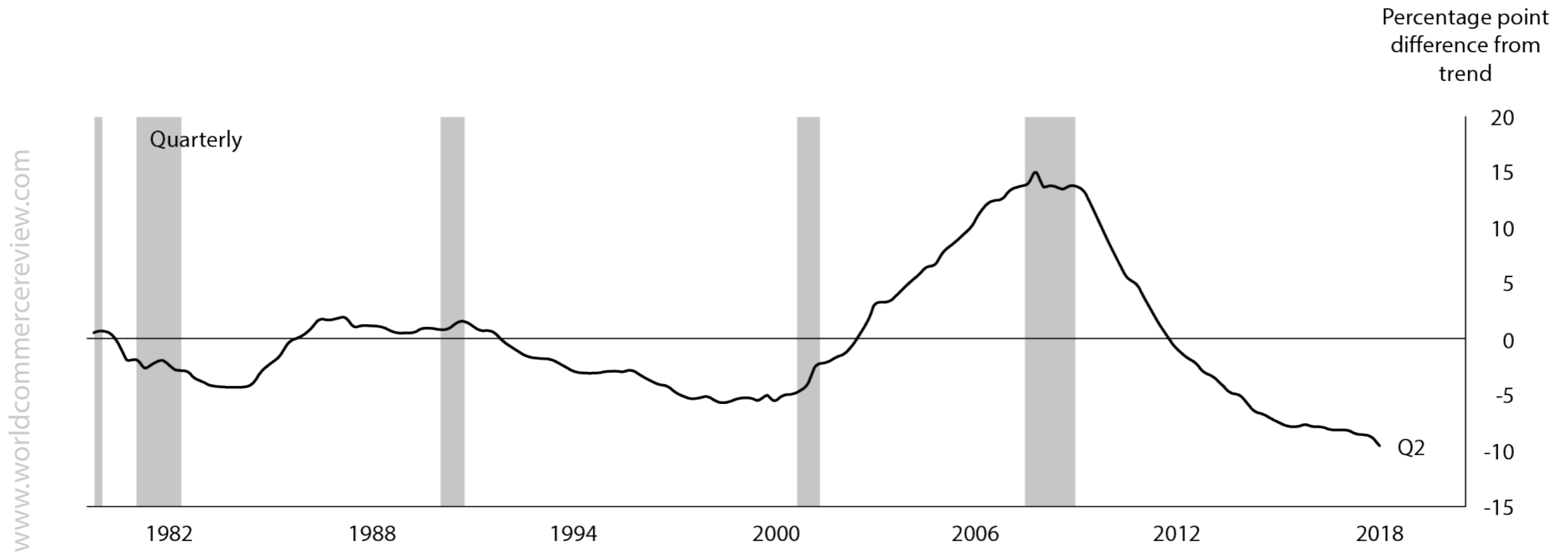
By this measure, the ratio of corporate debt to GDP is about where one might expect after nearly a decade of economic expansion: it is well above its trend, but not yet at the peaks hit in the late 1980s or late 1990s. Further, the upward trend in recent years appears broadly consistent with the growth in business assets relative to GDP.

There are reasons for concern, however. Information on individual firms reveals that, over the past year, firms with high leverage and interest burdens have been increasing their debt loads the most (see Figure 7). In addition, other measures of underwriting quality have deteriorated, and leverage multiples have moved up.

Some of these highly leveraged borrowers would surely face distress if the economy turned down, leading investors to take higher-than-expected losses - developments that could exacerbate the downturn. The question for financial stability is whether elevated business bankruptcies and outsized losses would risk undermining the ability of the financial system to perform its critical functions on behalf of households and businesses.

For now, my view is that such losses are unlikely to pose a threat to the safety and soundness of the institutions at the core of the system and, instead, are likely to fall on investors in vehicles like collateralized loan obligations with stable funding that present little threat of damaging fire sales¹⁰. Of course, we will continue to monitor developments in this sector carefully.

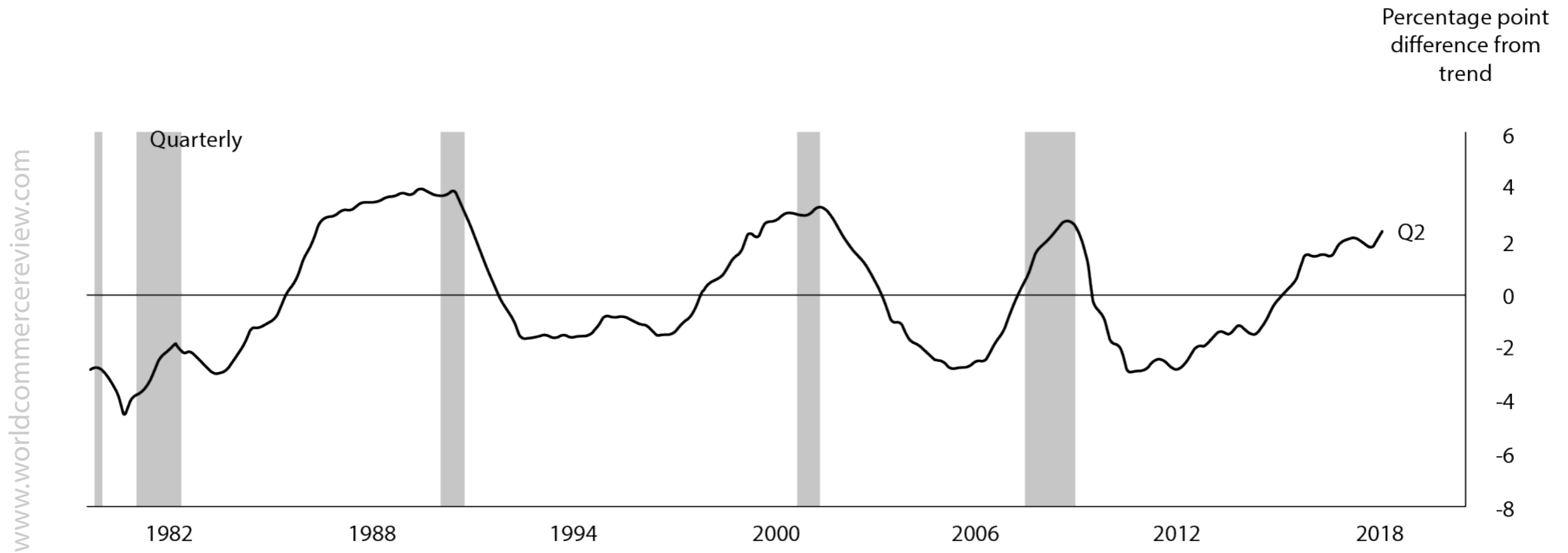
Figure 5. Household sector credit-to-GDP gap



Note: Calculated using a Hodrick-Prescott filter with $\lambda = 400,000$. Shaded bars represent periods of recession as defined by the National Bureau of Economic Research: January 1980-July 1980, July 1981-November 1982, July 1990-March 1991, March 2001-November 2001, and December 2007-June 2009.

Source: Federal Reserve Board staff calculations based on Bureau of Economic Analysis, national income and product accounts, and Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

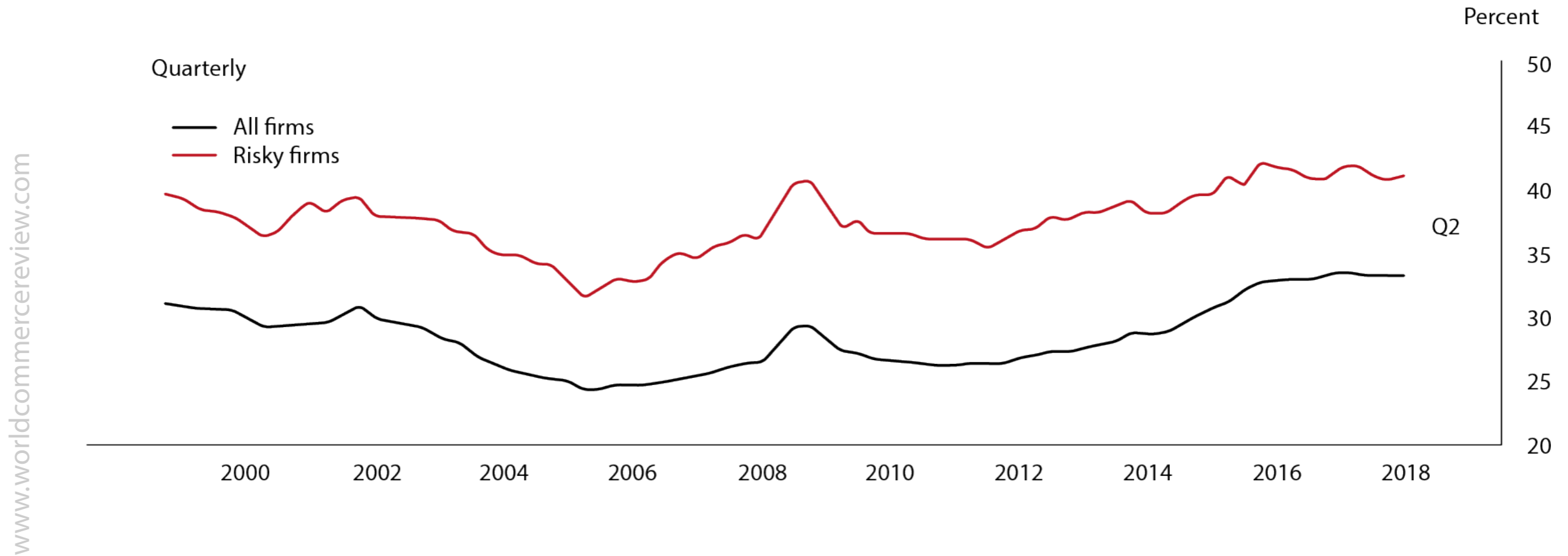
Figure 6. Corporate business sector credit-to-GDP gap



Note: Calculated using a Hodrick-Prescott filter with $\lambda = 400,000$. Shaded bars represent periods of recession as defined by the National Bureau of Economic Research: January 1980-July 1980, July 1981-November 1982, July 1990-March 1991, March 2001-November 2001, and December 2007-June 2009.

Source: Federal Reserve Board staff calculations based on Bureau of Economic Analysis, national income and product accounts, and Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

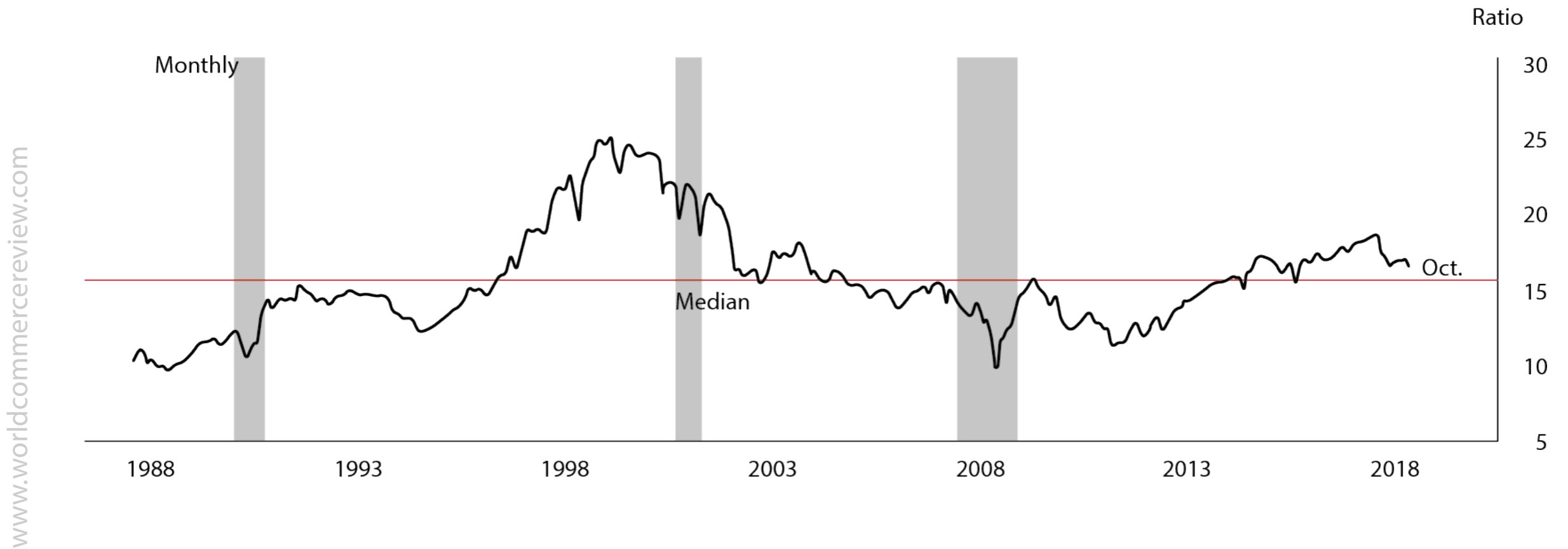
Figure 7. Gross balance sheet leverage of public nonfinancial corporations



Note: Gross leverage is the ratio of the book value of total debt to the book value of total assets. The sample of risky firms is composed of firms with positive short-term or long-term debt that either have an S&P firm rating of speculative-grade or have no S&P rating.

Source: Federal Reserve Board staff calculations based on S&P Global, Compustat.

Figure 8. Forward price-to-earnings ratio of S&P 500 firms



Note: Median = 15.57. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research: July 1990-March 1991, March 2001-November 2001, and December 2007-June 2009. Aggregate forward price-to-earnings ratio of S&P 500 firms. Based on expected earnings for 12 months ahead.

Source: Federal Reserve Board staff calculations using Refinitiv (formerly Thomson Reuters), IBES Estimates.

The fourth and final vulnerability arises when asset values rise far above conventional, historically observed valuation benchmarks—a phenomenon popularly referred to as a ‘bubble.’ The contentious term ‘bubble’ does not appear in our work, however¹¹. Instead, we focus on the extent to which an asset’s price is high or low relative to conventional benchmarks based on expected payoffs and current economic conditions.

Historically, when asset prices soar far above standard benchmarks, sharp declines follow with some regularity, and those declines may bring economic misery reaching far beyond investors directly involved in the speculative boom. We therefore pay close attention when valuations get to the extreme ends of what we have seen in history.

Looking across the landscape of major asset classes, we see some classes for which valuations seem high relative to history. For example, even after standard adjustments for economic conditions, valuations on riskier forms of corporate debt and commercial properties are in the upper ends of their post-crisis distributions, although they are short of the levels they hit in the pre-crisis credit boom.

We see no major asset class, however, where valuations appear far in excess of standard benchmarks as some did, for example, in the late 1990s dot-com boom or the pre-crisis credit boom.

The asset class that gets the most attention day-to-day is, of course, the stock market. Today, equity market prices are broadly consistent with historical benchmarks such as forward price-to-earnings ratios (see Figure 8). It is important to distinguish between market volatility and events that threaten financial stability. Large, sustained declines in equity prices can put downward pressure on spending and confidence. From the financial stability perspective, however, today we do not see dangerous excesses in the stock market.

Monitoring likely triggers for financial distress

I mentioned the distinction between vulnerabilities and shocks, or triggers. In addition to monitoring vulnerabilities under our four-part framework, we also consult a broad range of contacts regarding sources of risk that might trigger distress at any given time.

For example, discussions with contacts currently point to risks emanating from the normalization of monetary policy in the United States and elsewhere, the unsettled state of trade negotiations, Brexit negotiations, budget discussions between Italy and the European Union, and cyber-related disruptions¹².

Having identified possible triggers, we can assess how a particular trigger is likely to interact with known vulnerabilities. A good current example is that of Brexit. US banks and broker-dealers participate in some of the markets most likely to be affected by Brexit.

The Fed and other regulators have been working with US financial institutions that have operations in the European Union or the United Kingdom to prepare for the full range of possible outcomes to the negotiations. In addition, the scenarios used in the stress tests routinely feature severe global contractions and show that US banks have the capital to weather even highly disruptive events.

Bottom line: financial stability risks are moderate

I have reviewed a few of the key facts that inform our thinking about financial stability, and you will find a great deal more detail in our new report. You will also find that the report does not come to a bottom line conclusion. As I noted earlier, we have limited experience with this monitoring, and there is no widely accepted basis for reaching a bottom line.

Thus, the purpose of the report is to provide a common platform and set of readings from which policymakers and other interested parties can form their own views. Individual policymakers will sometimes differ in their assessments and on the relative weight they put on particular vulnerabilities. My own assessment is that, while risks are above normal in some areas and below normal in others, overall financial stability vulnerabilities are at a moderate level¹³.

In my view, the most important feature of the stability landscape is the strength of the financial system. The risks of destabilizing runs are far lower than in the past. The institutions at the heart of the financial system are more resilient. The stress tests routinely feature extremely severe downturns in business credit, and the largest banks have the capital and liquidity to continue to function under such circumstances.

Because this core resilience is so important, we are committed to preserving and strengthening the key improvements since the crisis, particularly those in capital, liquidity, stress testing, and resolution.

Conclusion

I'd like to conclude by putting financial stability and our two new reports in a longer-term context. To paraphrase a famous line, *"eternal vigilance is the price of financial stability."* We will publish these reports regularly as part of our vigilance.

Over time, some may be tempted to dismiss the reports entirely or to overdramatize any concerns they raise. Instead, these reports should be viewed as you might view the results of a regular health checkup. We all hope for a report that is not very exciting. Many baby boomers like me are, however, reaching an age where a good report is, *"Well, there are a number of things we should keep an eye on, but all things considered you are in good health."* That is how I view the recent *Financial Stability Report*.

We hope that this report and the *Supervision and Regulation Report* will be important tools, sharing Federal Reserve views and stimulating public dialogue regarding the stability of the financial system. ■

Jerome H Powell is Chairman of the Federal Reserve

Endnotes

1. See remarks of WPG Harding at a dinner of the Economic Club of New York on March 18, 1929, as reported in "Clash on Policies of Reserve Board" by the *New York Times* on March 19, 1929, p. 52; and in "Reserve Policy Upheld and Hit" by the *Wall Street Journal* on March 19, 1929, p. 21. Also see "Wall Street News and Comment," Special Dispatch to the [Daily Boston] *Globe*, on March 24, 1929, p. A60.
2. Many factors after the initial crash, including what are now seen as major policy errors, contributed to the Great Depression. See Milton Friedman and Anna Jacobson Schwartz (1963), *A Monetary History of the United States, 1867-1960* (Princeton, N.J.: Princeton University Press); and Ben S Bernanke (1983), "[Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression](#)," *American Economic Review*, vol. 73 (June), pp. 257-76.
3. Hyman Minsky had long emphasized this point. For instance, see Hyman P Minsky (1991), "[Financial Crises: Systemic or Idiosyncratic \(PDF\)](#)," Working Paper 51, prepared for presentation at "Crisis in Finance," a conference of the Jerome Levy Economics Institute, Bard College, April.
4. See the Federal Reserve's November 2018 *Supervision and Regulation Report*, available on the Board's [website](#).
5. Given that government money fund asset holdings are limited to safe assets, they are allowed to maintain a \$1 share price.
6. See Minsky, "Financial Crises," in note 3.
7. A more highly leveraged sector is one that relies more heavily on borrowed money.

8. Sometimes we look to bank lending for information. Data from the stress tests suggest that the nation's largest banks have committed about \$1 trillion in lines of credit to nonbanks.
9. Examples include episodes of intensified concerns over euro area fiscal challenges, the discontinuous and large appreciation of the Swiss franc in January 2015, and the market volatility associated with global growth concerns in late 2015.
10. See Jerome H Powell (2015), "[Financial Institutions, Financial Markets, and Financial Stability](#)," speech delivered at the Stern School of Business, New York University, New York, N.Y., February 18.
11. Analysts differ over how to define the term 'bubble,' and debate continues about the degree to which economic fundamentals might explain even the most famous apparent bubble cases from history. On the topic of tulip mania, for example, see Peter M Garber (1989), "[Tulipmania](#)," *Journal of Political Economy*, vol. 97 (June), pp. 535-60.
12. The Financial Stability Report does not currently have a standard set of metrics for determining the resiliency of critical financial systems to cyber disruptions. Nonetheless, cyber risks are the subject of ongoing policy efforts at that Federal Reserve and other relevant agencies, and these entities are working to develop resiliency expectations and measures, which may be part of future discussions in the stability report.
13. The staff have also assessed financial stability vulnerabilities as moderate. For instance, see the minutes of the Federal Open Market Committee meeting, July 31-August 1, 2018, available on the Board's website.

This article is based on a [speech](#) delivered at The Economic Club of New York, New York, New York, November 28, 2018

True finance – ten years after the financial crisis

Mark Carney reflects on how the global financial system has become safer, simpler and fairer over the past ten years. This new financial system is a system that can serve households and businesses in bad times as well as good

Recently global financial policymakers gathered in Bali for the Annual Meetings of the IMF and World Bank. These meetings came a decade after the global financial crisis, two decades after the Asian crisis, and three decades after the Latin American debt crisis. Anyone spot a pattern? Despite the past decade of financial reform, many are asking whether anything has really changed.

I am going to argue that such weary fatalism is at odds with reality. That the radical programme of G20 reforms has made the global financial system safer, simpler and fairer. That these measures are creating a system that can serve households and businesses in bad times as well as good. That true change is creating true finance, a system that can deepen financial inclusion, better meet the needs of ageing populations and help fund the transition to a low carbon economy.

But I will also caution that we will forfeit these gains if we once again fall under the spell of the three lies of finance that helped cause the global financial crisis. To resist their siren calls, we must maintain the new institutional frameworks created in its wake.

Globally, the most important of these is the Financial Stability Board (FSB). Having agreed all the major international reforms to address the causes of the crisis, the FSB is now pivoting to focus on their timely, effective and consistent implementation. Mindful of history, the FSB is also scanning the horizon to identify and address new vulnerabilities that emerge as the structure of our economies and financial systems change.

We know we cannot rest on our laurels. Financial history rhymes all too frequently, with enormous costs to our citizens. We must remain vigilant, resist the three lies of finance, and reinforce some core financial truths.

The three lies of finance

"This time is different"

The first lie of finance is the four most expensive words in the English language: *"This time is different."* This misconception is usually the product of an initial success, with early progress gradually building into a blind faith in a new era of effortless prosperity.

It took a revolution in macroeconomic policy to help win the battles against the high and unstable inflation, rising unemployment and volatile growth of the 1970s and 1980s. Stagflationary threats were tamed by new regimes for monetary stability that were both democratically accountable and highly effective.

By resisting the three lies of finance and by voicing truths seldom told, we can build true finance to better serve our citizens in bad times as well as good

Clear remits. Parliamentary accountability. Sound governance. Independent, transparent and effective policy-making. These were the great successes of that time and their value endures today. But these innovations did not deliver lasting macroeconomic stability. Far from it.

Price stability was no guarantee of financial stability. An initially healthy focus would become a dangerous distraction. Against the serene backdrop of the so-called Great Moderation (Chart 1), a storm was brewing as total non-financial debt in the G7 rose by the size of its GDP (Chart 2).

Several factors drove this debt super-cycle including demographics and the stagnation of middle-class real wages (itself the product of technology and globalisation). In the US, households had to borrow to increase consumption. *“Let them eat cake”* became *“let them eat credit”*.

Financial innovation made it easier to do so. And the ready supply of foreign capital made it cheaper. Most importantly – and this is the lie – complacency among individuals and institutions, fed by a long period of macroeconomic stability and rising asset prices, made this remorseless borrowing seem sensible.

When the crisis broke, policymakers quickly dropped the received wisdoms of the Great Moderation and scrambled to re-learn the lessons of the Great Depression. Minsky became mainstream.

Lie II: “Markets always clear”

A deep-seated faith in markets lay beneath the new era thinking of the Great Moderation. Captured by the myth that finance can regulate and correct itself spontaneously, authorities retreated from their regulatory and supervisory responsibilities.

Chart 1. The Great Moderation in the United Kingdom

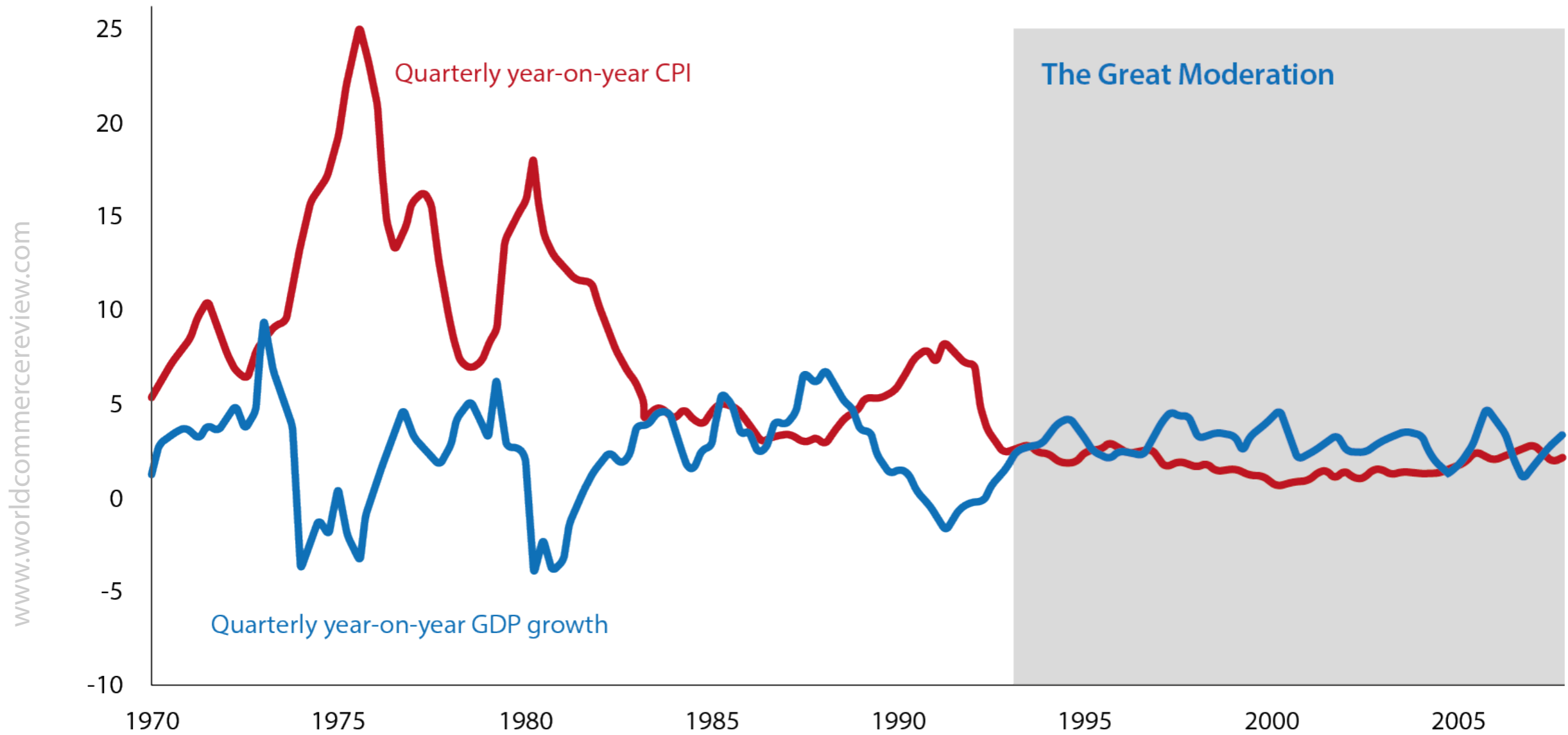
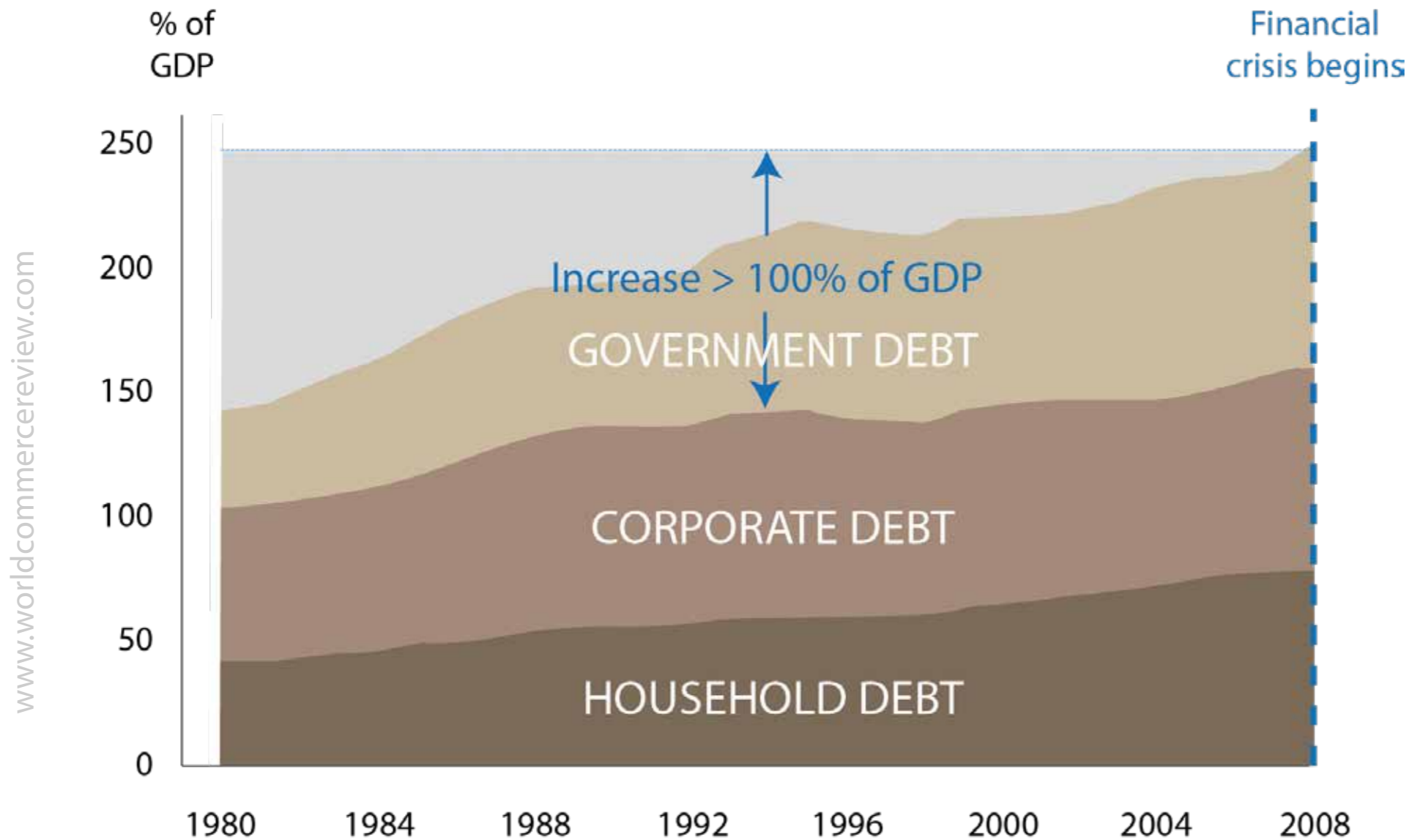


Chart 2. G7 debt increased before the financial crisis



Source: IMF data and Bank calculations

The second lie, the belief that 'markets always clear,' has two dangerous consequences. First, if markets always clear, they can be assumed to be in equilibrium— or said differently 'to be always right'. If markets are efficient, then bubbles can neither be identified nor can their potential causes be crisis.

Second, if markets always clear, they should possess a natural stability. Evidence to the contrary must be the product of either market distortions or incomplete markets.

Much of financial innovation springs from the logic that the solution to market failures is to build new markets on old ones. Progress through infinite regress.

During the Great Moderation, this view became an organising principle for financiers and policymakers. The latter pursued a light touch regulatory agenda in quest for a perfect real world of complete markets first described as abstract theory by Arrow and Debreu.

Of course, markets only clear in textbooks. In reality, people are irrational, economies are imperfect, and nature itself is unknowable. When such imperfections exist, adding markets can sometimes make things worse.

Take synthetic credit derivatives, which were supposed to complete a market in default risk and thereby improve the pricing and allocation of capital. Financial alchemy appeared to have distributed risk, parcelling it up and allocating it to those who wanted most to bear it.

However, the pre-crisis system had only spread risk, contingently and opaquely, in ways that ended up increasing it. Once the crisis began, risk quickly concentrated on the balance sheets of intermediaries that were themselves

capital constrained. And with the fates of borrowers and lenders tied together via hyper-globalised banks and markets, problems at the core spread violently to the periphery.

A truth of finance is that the riskiness of an asset depends on who owns it. When markets don't clear, agents may be surprised to find what they own and for how long. When those surprises are – or are thought to be – widespread, panic ensues (Chart 3).

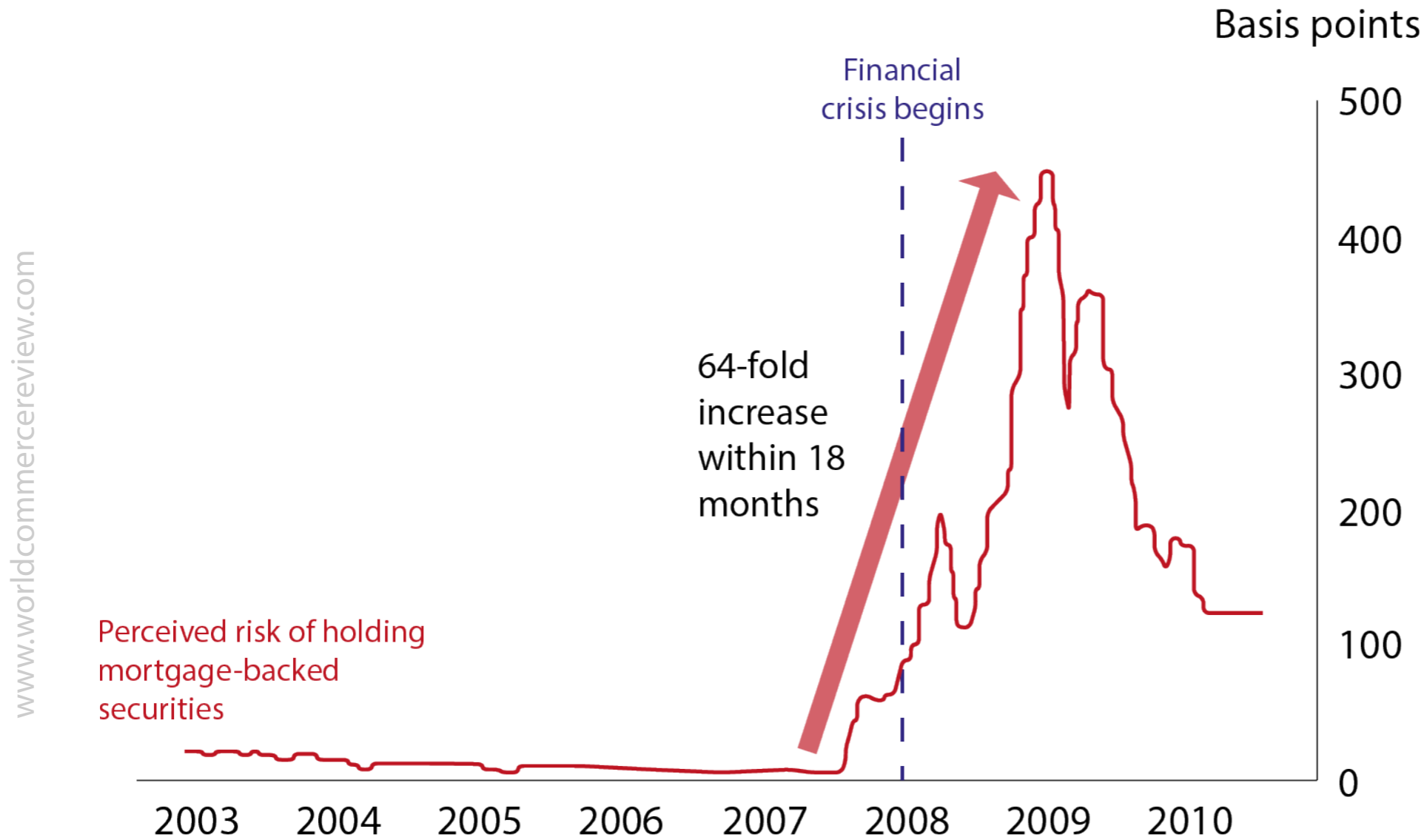
Even if markets could be perfected, nature itself is unknowable. That is genuine uncertainty, as opposed to risk, the distinction made by Frank Knight in the 1920s. And it means that market outcomes reflect individual choices made under a pretence of knowledge.

The swings in sentiment that result – pessimism one moment, exuberance the next – do not reflect nature's odds, but our own assessments of them, inevitably distorted by Keynes' optimistic "*animal spirits*" and his cynical "*beauty contests*".

These are dynamics that can afflict not just sophisticated investors, but mortgage lenders and homebuyers, especially during a 'new era'. If house prices can only go up, it is possible to borrow large multiples and pay off future obligations with the capital gains that will follow. Such 'rational' behaviour fuelled the credit binge that ultimately led to the global crisis.

In the end, belief that 'markets are always right' meant that policymakers didn't play their proper roles moderating those tendencies in pursuit of the collective good.

Chart 3. Risk of holding mortgage-backed securities perceived to be low; until it wasn't



Source: UK AAA-rated residential mortgage-backed securities – 5 years spread to swap

Lie III: "Markets are moral"

The third lie, that markets are always moral, takes for granted the social capital that markets need to fulfil their promise. The crisis showed that if left unattended, markets can be prone to excess and abuse.

In financial markets, means and ends can be conflated too easily. Value can become abstract and relative. And the pull of the crowd can overwhelm the integrity of the individual.

Consider the example of fixed income, currencies and commodities (FICC) markets, which have historically relied heavily on informal codes and understandings. Repeated episodes of misconduct – such as the Libor and FX scandals – called into question the social licence that markets need to innovate and grow.

Rather than being professional and open, markets became informal and clubby. Rather than competing on merit, participants colluded online. Rather than everyone taking responsibility for their actions, few were held to account. The crisis reminded us that real markets don't just happen; they depend on the quality of market infrastructure for their effectiveness, resilience and fairness.

Robust market infrastructure is a public good in constant danger of under-provision, not least because the best markets innovate continually. This risk can only be overcome if all market actors, public and private, recognise their responsibilities for the system as a whole.

True finance

So this time is no different. Markets don't always clear. And we can suffer from their amorality. What to do with such knowledge? And how to retain it?

To resist the siren calls of the three lies of finance, policymakers and market participants must bind themselves to the mast. That means building institutional frameworks that make it easier to resist as the lies regain their seductive power. If we can, we will build true finance, an enduring platform for strong, sustainable and balanced growth.

Over the past decade, great strides have been made. Let me begin with the global reforms that have addressed the third lie that *"markets are moral"*. In the cycle of scandal, response, integrity, drift, and new scandal, potential solutions have oscillated between the extremes of Light Touch Regulation and Total Regulation.

There are problems with each. By undervaluing the importance of hard and soft infrastructure to the functioning of real markets, light touch regulation led directly to the financial crisis.

Market standards were poorly understood, often ignored and always lacked teeth. Too many participants neither felt responsible for the system nor recognised the full impact of their actions. Bad behaviour went unchecked, proliferated and eventually became the norm.

Yet a system reliant on total regulation and large ex post sanctions is similarly bound to fail because it promotes a culture of complying with the letter of the law, not its spirit, and because authorities will inevitably lag developments in fast-changing markets.

A more comprehensive and lasting solution combines public regulation with private standards and then buttresses both with incentives to increase materially the understanding and accountability of individuals.

In the UK, new laws and regulations are doing just that. Compensation rules now align risk and reward, with a significant proportion of variable compensation deferred for up to seven years across the banking industry.

Regulatory references mean that the histories of those with a record of misconduct will be known to anyone considering hiring them.

Authorities have also used their convening powers to encourage market participants to develop standards of market practice, such as the new Global FX Code and the FMSB standards for FICC markets.

The UK Senior Managers' Regime (SMR) gives teeth to voluntary codes by incentivising firms to embed them and by re-establishing the link between seniority and accountability. Under the SMR, the most senior decision-makers of banks, insurers and major investment firms can now be held individually accountable if they fail to take reasonable steps (including training or proper oversight) to prevent regulatory breaches in their areas of responsibility.

The FSB has identified a similar menu of tools under its Misconduct Action Plan, which its members can draw from. Thus far, however, action to promote good conduct has varied widely across the G20.

The FSB's compensation standards have been written into G20 regulatory rules, but not yet fully deployed. Although adjusting in-year pay is common, clawing back bonuses later on is not, even though it typically takes several years for evidence of misconduct to emerge. And few jurisdictions have put in place either formal mechanisms to ensure that boards and senior managers are explicitly responsible and accountable for what happens at their regulated firms or regulatory references to stop those with poor conduct records moving from firm to firm.

Absent a more comprehensive response, it is hard to see how we will prevent the ethical drift which periodically undermines market integrity and impairs finance's ability to function effectively.

And most fundamentally, without greater individual responsibility, it is hard to see how social capital can be fully regained. The recognition that *"markets don't always clear"* has spurred major reforms to make markets less complex and more robust.

A decade ago, OTC derivative trades were largely unregulated, unreported and bilaterally settled. When Lehman fell, uncertainty about such exposures sparked panic. Since then, the FSB has designed a series of reforms to make these markets safer and more transparent, including by requiring trade reporting and by encouraging central clearing of over-the-counter (OTC) trades.

These reforms are having their desired effects. Supervisory authorities and market participants can now readily monitor activity and exposures. 90% of new OTC single-currency interest rate derivatives are now centrally cleared in the US. And an additional \$1 trillion of collateral is now held globally against all derivative trades.

Central counterparties (CCPs) reduce systemic risk, provided they meet the highest standards of resilience, recoverability and resolvability. That is why G20 reforms have significantly increased the standards to which CCPs are held, ranging from higher margins and liquidity to better operational and cyber resilience. To finalise its policy work, the FSB will report to G20 Leaders next month on the need for guidance on CCP financial resources in resolution.

Now is the time for FSB members to address any gaps in their supervisory and resolution frameworks for CCPs. For example, some authorities do not yet have all of the resolution powers expected under FSB standards. And it's time for the FSB (in conjunction with CPMI-IOSCO) to assess whether, when taken together, reforms to resilience, recoverability and resolvability are sufficient and are working as intended.

A decade on from the financial crisis, a series of measures are eliminating the fragile forms of shadow banking while reinforcing the best of resilient non-bank financial intermediation. The toxic forms of shadow banking at the heart of the crisis – with their large funding mismatches, high leverage and opaque, off- balance-sheet arrangements – no longer represent a global stability risk (Chart 4).

And other, more constructive forms of non-bank finance, including money market funds and repo markets, are subject to new policy measures that reduce their risks and reinforce their benefits. However, as the old fault lines close in advanced economies, they are widening in some emerging market economies.

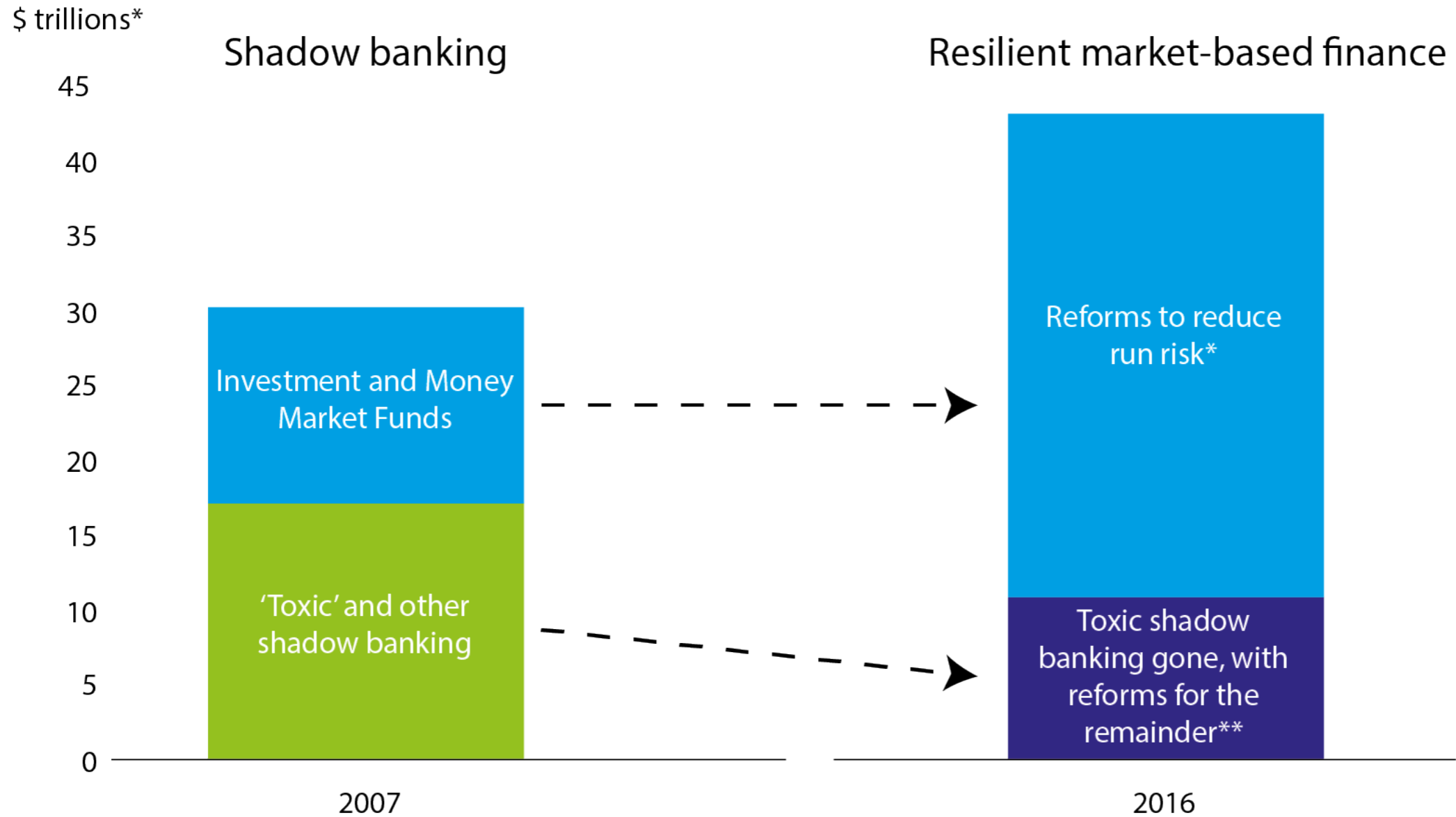
For example, while China's economic miracle over the past three decades has been extraordinary, its post- crisis performance has increasingly relied on a large build-up of debt and an associated explosion of shadow banking (Chart 5).

The non-bank finance sector has increased from around 10% of GDP a decade ago to over 100% now, with developments echoing those in the pre-crisis US such as off-balance sheet vehicles with large maturity mismatches, sharp increases in repo financing, and large contingent liabilities of borrowers and banks.

The Chinese authorities recognise that 'this time may not be different' and have begun taking measures to manage the risks. More broadly, a potentially major new vulnerability has emerged across the G20.

This risk starts, as is often the case, with a positive development. Global assets under management have grown from around \$50 trillion a decade ago to \$80 trillion in 2017, and have accounted for all the increase in foreign lending to EMEs since the crisis.

Chart 4. Shadow banking has transformed into resilient market-based finance

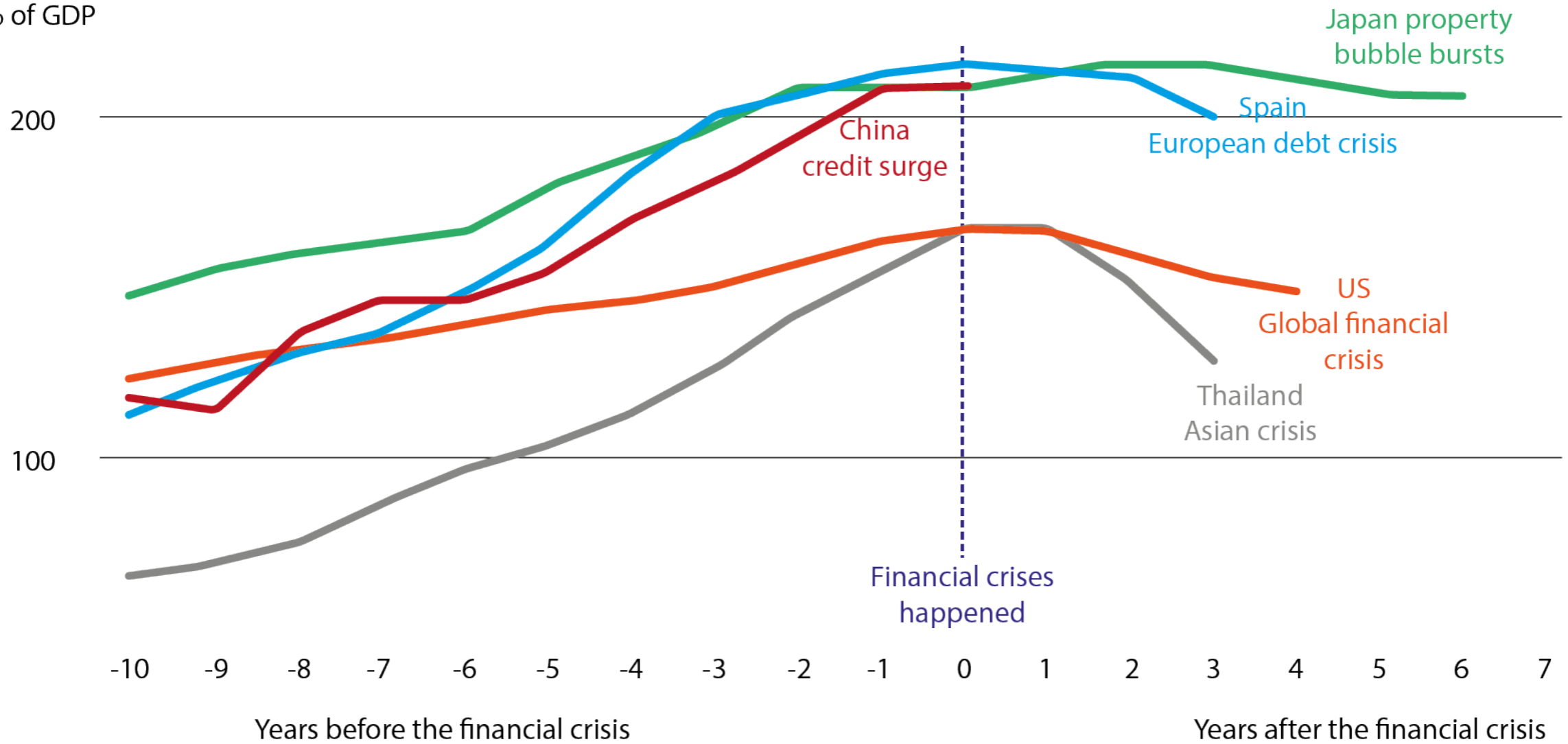


Source: FSB Global Shadow Banking Monitoring Report
 * FSB asset management recommendations and MMF reforms (notably EU, US)
 ** Securitisation reforms, Market intermediation reforms

Chart 5. China's credit boom in a historical context

Debt as a % of GDP

www.worldcommercereview.com



Source: BIS data and Bank of England calculations

This is bringing welcome diversity to the financial system. At present, however, asset management's growing importance could increase the risks of sudden stops and feed more intense capital flow reversals from emerging markets. That is because more than \$30 trillion of assets are held in funds that promise daily liquidity to investors despite investing in potentially illiquid underlying assets. In other words, they are built on the lie that markets always clear.

To assess the risks of fire sales and contagion across emerging and credit markets, authorities need to gather and share data on asset management. In this context, the FSB expects that consistent and decision- useful measures of leverage will be developed to support an effective global risk assessment. I would encourage industry to engage with the upcoming IOSCO consultation on this issue.

The FSB is also refining its Systemic Stress Initiative to explore how funds and other non-bank financial institutions might collectively act in ways that amplify shocks.

Data and analysis are only the first steps in honouring the FSB's commitment to G20 Leaders to address the structural vulnerabilities associated with asset management. Authorities and firms must implement the FSB's recommendations for greater consistency between funds' redemption terms and their assets and investment strategies. Funds should have the liquidity management tools to deal with stressed conditions. And these tools must be able to dampen the impact of first mover advantage on systemic risk.

Given the scale and proximity of the potential risks, in the Bank of England's view, authorities should review the adequacy both of its recommendations and their implementation sooner rather than later. Policymakers must be alert situations where market innovation once again introduces complexity and opacity, and excessive reliance on markets always clearing.

For example, global leveraged lending is growing at rates – and has reached a scale – comparable to the subprime on the eve of the crisis. Underwriting criteria have loosened as rapidly, the requirement that managers retain a portion of their securitisations has been overturned by US courts, and there is limited information on the ability of the ultimate holders of the debt to absorb losses.

To be clear, there are important differences between leveraged lending and sub-prime. In particular, the banks at core of the system are significantly more resilient and have limited direct or indirect exposures.

But recall that the last two vintages of subprime pre-crisis were twice as likely to default as their predecessors, and that the leveraged loan market shows few signs of slowing.

Turning finally to the lie that *“this time is different”*. If the experience of the financial crisis teaches us anything, it’s humility. We cannot anticipate every risk or plan for every contingency. But we can, and must, plan for failure. That is how we can create an anti-fragile system that is robust to both the intensification of known risks and the crystallisation of Rumsfeldian unknowns.

An anti-fragile system requires resilient banks. A decade ago, major banks were woefully undercapitalised, with complex business models that relied on the goodwill of markets and, ultimately, taxpayers.

Large global banks can now stand on their own. Their common equity requirements and buffers are now ten times higher than the pre-crisis standard. And to protect the system from risks we think are low but prove not, banks are subject to a simple, minimum leverage ratio, which is robust to model risk.

Regulation has made banks less complex and more focused. Business strategies that relied on high leverage, risky trading activities and wholesale funding are disappearing, as intended. Trading assets have been cut in half, and interbank lending is down by one-third.

Not least due to new global liquidity standards, banks have changed their funding models and now hold substantially more liquid assets relative to the liabilities that can readily run. In the UK, such contingent liquidity has increased tenfold since the crisis.

An anti-fragile system requires ending Too Big to Fail. But higher capital and liquidity requirements are necessary but not sufficient. Banks must also be able to fail without systemic consequences.

A decade ago, large complex banks operated in a 'heads I win tails you lose' bubble. They privatised profits in the run-up to the crisis before socialising the losses when the music stopped.

The complete loss of confidence in private finance that crystallised in the autumn of 2008 could only be arrested by public support over the following year that totalled \$15 trillion in bail-outs, government guarantees of bank liabilities and special central bank liquidity schemes.

To bring back the discipline of the market and end reliance on public funds, FSB members agreed standards to ensure that globally systemic banks (G-SIBs) can fail safely in the future. These banks have had to make themselves easier to resolve. They must now hold sufficient debt such that, in the event one fails, its successor can be recapitalised to support the continued operation of its most important activities.

The powers and tools authorities need to deal with failing banks have been fully implemented in the UK. Our major banks have ring-fenced their domestic activities. They already hold total loss-absorbing resources (or TLAC) of 25% of their risk-weighted assets, well within sight of their 2022 requirement of 28%. As a consequence, market discipline is back, with the public subsidy enjoyed by the UK's largest banks having fallen by 90% (Chart 6).

Given the importance of these reforms to both global financial stability and trust in the system, the FSB will undertake a thorough assessment of their effectiveness over the next year and report to G20 leaders. Key considerations will be the adequacy of the resolution plans, or Living Wills, whether G-SIBs will have sufficient liquidity in resolution, and whether it will be feasible – both in practical and political terms – to impose losses on the holders of TLAC in resolution.

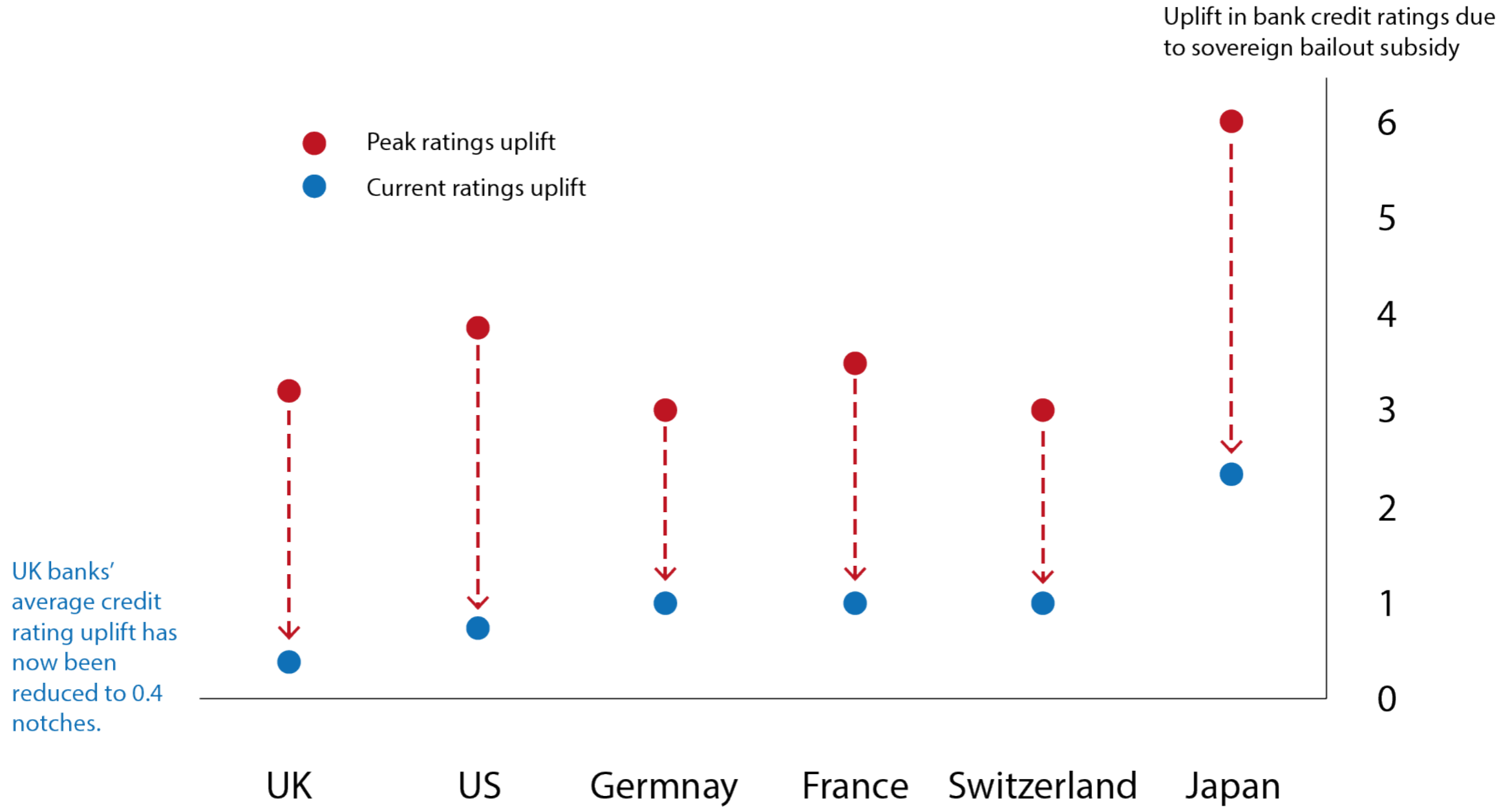
An anti-fragile system must be as robust to operational failures as to financial ones. While past crises had their roots in financial losses, in our digital era systemic shocks can also come from non-financial sources, including cyber-attacks.

To improve firms' cyber defences, the largest banks and market infrastructure at the core of the UK financial system are subject to penetration tests (known as CBEST) and are required by their supervisors to address any deficiencies uncovered.

In parallel, we are literally planning for failure. In the UK, we have begun setting standards for how quickly critical financial institutions must be able to restore vital services following a successful cyber-attack. We will conduct cyber stress tests of firms' ability to meet our impact tolerances in 'severe but plausible' scenarios, and prescribe remedial action plans if they fail.

Chart 6. Markets no longer rely on government support

www.worldcommercereview.com



Source: Moodys and Bank calculations

Internationally, we are working closely with the US Treasury as co-chairs of the G7 Cyber Expert Group to develop and disseminate best practice in information sharing, penetration testing and as of next year, cyber recovery.

And an anti-fragile system requires a Comprehensive Macroprudential Framework. Macroprudential frameworks encourage authorities to meet the next challenge, not simply fight the last war. They prompt exploration of 'what could happen?' not the false comfort of being ready for what is most likely to happen.

Macroprudential authorities must consider the safety of the financial system as a whole. That requires both comprehensive and varied stress testing of the core as well as regular examination of the risks that may lie beyond the regulatory perimeter.

Macroprudential policy should be countercyclical, building resilience when risks are increasing and drawing on that resilience when risks crystallise. And it must address the macro-financial implications of major imbalances in the real economy, whether in housing markets or the balance of payments.

Brexit: macroprudential policy in practice

Consider a topical example: the Bank of England's macro-prudential approach to Brexit led by the Bank's independent Financial Policy Committee (FPC).

When it comes to Brexit, the Bank of England does not focus on the most likely outcome, but rather the possible consequences of a disorderly, cliff-edge exit from the EU, however unlikely that may be. In other words, we aren't hoping for the best, we're preparing for the worst in several ways. First, we're ensuring that our banks are ready for Brexit.

In recent years we have subjected major UK banks to severe but plausible stress tests. In our 2017 stress test, UK GDP fell by 4.5%, commercial real estate prices by 40%. UK house prices dropped by a third, Bank Rate increased by 4 percentage points and unemployment rose to 9½%. In addition, there was a major emerging market shock and substantial additional misconduct costs. The FPC found that UK banks would have been able to withstand that stress and still have more than adequate capital to maintain lending to households and businesses (Chart 7).

In the FPC's judgment, our stress test last year also encompassed an appropriately wide range of UK macroeconomic risks and associated losses that could be associated with Brexit.

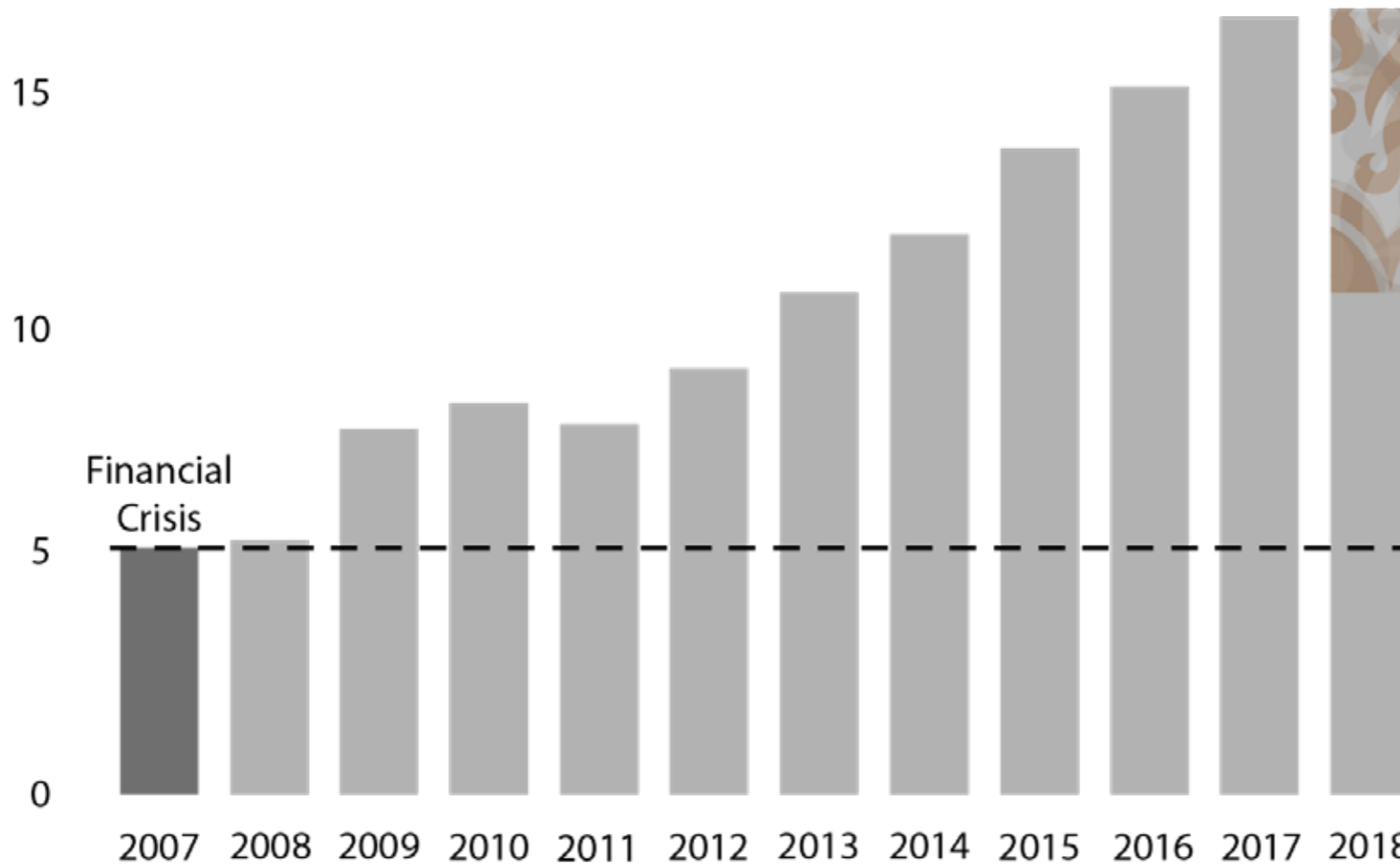
Moreover, we judge that the UK banking system has the capacity to absorb not only the consequences of a 'no deal no transition' Brexit, but also the losses that could be associated with intensifying trade tensions, a further sharp tightening of financing conditions for emerging markets, and substantial additional misconduct costs.

Second, liquidity is an important part of our contingency planning for Brexit. UK-based banks (and CCPs) currently have around £300 billion of borrowing capacity at the Bank through collateral pre-positioned in our facilities. That broadly matches the Bank's peak lending to the financial system during the crisis, and liquidity positions have improved significantly since then.

Third, the Bank takes a countercyclical approach. The UK deploys a Counter Cyclical Capital Buffer (CCyB) through which capital is accrued in the good times for release in the bad. Two years ago, amid heightened uncertainty following the Referendum, we cut the CCyB by £6 billion, releasing £150 billion of additional lending capacity. As the immediate uncertainty receded, we then required banks to rebuild it. Today their capital buffers are twice as high, meaning the FPC could unlock over £300 billion of lending capacity, if required.

Chart 7. Our 2017 stress test showed that UK banks could withstand severe UK and world recessions and a market crash

% capital relative to risk-weighted assets



Even after loses in last year's stress test, banks would still have significantly more capital than in 2007

Fourth, the FPC has identified the major cross-border risks to financial services that could arise in a cliff-edge Brexit.

The biggest risks relate to contract continuity. 16 million insurance policyholders in the UK and 38 million in the EEA have policies that firms might lose the permission to perform in a no deal scenario. Around £100 trillion of cross-border derivative contracts could be disrupted by the loss of the regulatory permissions required to service them and loss of recognitions for CCPs.

The Bank has been working with the relevant parties over the past two years to ensure they have contingency plans for the worst-case scenario. In some cases, particularly in insurance, UK financial companies are restructuring so they can continue to serve their EU customers. If all current plans are delivered successfully, the number of EU policyholders at risk will fall to 9 million.

For risks that private financial institutions cannot self-solve, the UK Government is taking forward legislation that will allow UK households and businesses to access financial services provided by EU companies.

Where joint action is required, we have been working with the European Central Bank. There has been considerable progress in the UK to address these risks, but only limited progress in the EU. Timely action by EU authorities is needed to mitigate risks to financial stability, particularly those associated with derivative contracts and the transfer of personal data.

Throughout the Bank's preparations for Brexit, we have been clear that we will maintain the traditions that have underpinned the UK position as a leading international financial centre. In particular, we will maintain current levels of resilience and our commitment to openness.

Conclusion

800 years of economic history teaches us that financial crises occur roughly once a decade. A frequency that reflects in part the short institutional memories in finance.

Our citizens have not forgotten the last crisis. Certainly not in the UK where average real incomes are still below pre-crisis levels. Or in the US where confidence in banks remains near historic lows. The reforms of the past decade have put in place a new financial system that could, with time, regain people's confidence.

However, the challenge for policymakers is that, when it comes to financial stability, success is an orphan. As memories fade, complacency sets in and pressure to compromise re-emerges. We all bear heavy responsibilities to safeguard recent progress and address emerging vulnerabilities.

Safeguarding progress does not mean defending all aspects of reform at all costs. The FSB is now assessing what is working as intended and addressing any inefficiencies or unintended consequences. The results of its first two evaluations – on the interaction of derivatives reforms and bank capital measures as well as the impact of G20 reforms on financing of infrastructure investment – will be reported to G20 Leaders in Buenos Aires in November.

We need to tailor not taper. It is critical that the process of evaluation and adjustment does not compromise overall system resilience.

Addressing emerging vulnerabilities means having the foresight to anticipate new risks from cyber to CCPs, from accountability to asset management. And it means having the discipline to build an anti-fragile system that is robust to the risks we do not anticipate.

We will not abolish crises (which have their roots in changes to the real economy and irreducible uncertainty). But we can reduce their frequency and lessen their impact.

By resisting the three lies of finance and by voicing truths seldom told, we can build true finance to better serve our citizens in bad times as well as good. ■

Mark Carney is Governor of the Bank of England

Endnotes

1. For an extensive survey, see Reinhart, C and Rogoff, R, (2009), *This time is different: eight centuries of financial folly*, Princeton University Press.
2. Raghuram Rajan (2010), "Fault Lines: How Hidden Fractures Still Threaten the World Economy".
3. This emphasis on the endogenous tendency of financial systems to become unstable is reminiscent of Hyman Minsky's "financial instability hypothesis" (Minsky (1992)).
4. See for example, Krugman, P, (1999, updated and reissued 2008), *The Return of Depression Economics and the crisis of 2008*, Penguin.
5. Indeed, in a July 2016 article, *The Economist* noted that Minsky had been referred to only once in their publication during his working life from the 1950s through to 1996 when he died, but that he had been mentioned around 30 times since the crisis broke in 2007.
6. For a review of this broader phenomenon, see Padoa-Schioppa, T (2010), "Markets and government before, during and after the 2007- 20xx crisis", *The Per Jacobsson Lecture*, June.
7. See also Turner, A (2010), "Market efficiency and rationality: why financial markets are different", Lionel Robbins

Memorial Lectures, London School of Economics.

8. Such naïveté is striking given that evidence of disequilibria abounds in markets for goods and labour. In goods markets, there is 'sluggishness everywhere'. Left to themselves, economies can go for sustained periods operating above or below potential, resulting, ultimately, in excessive or deficient inflation. Yet efficient market forces 'should' bring about changes in prices sufficient to equate demand with potential, leaving inflation as a purely monetary phenomenon. In labour markets, there is 'rigidity everywhere'. Rather than fluidly adjusting to equate the demand for labour with its supply, periods of deficient labour demand can persist, sustaining mass unemployment and joblessness. Yet efficient market forces 'should' eliminate these disequilibria by having wages adjust to ensure full employment always and forever. Monetary Policy is not only a response to these rigidities; it is made effective by them.

9. But economists of a more nuanced persuasion pointed out as far back as the 1950s that this logic is flawed. See Lipsey, R and Lancaster, K (1956), "The general theory of the second best", *Review of Economic Studies*, 24(1).

10. Their world imagines self-interested, atomistic agents, coolly calculating odds over all future possible states of the world, writing and trading contracts with each other, all frictionlessly enforced, all achieving mutually beneficial – indeed socially optimal – outcomes. Arrow, K and Debreu, (1954), "Existence of an equilibrium for a competitive economy", *Econometrica*, 22 (3).

11. The bankers who played a leading role in developing the credit derivatives market declared "Credit derivatives are a mechanism for transferring risk efficiently around the system" and that defaulted loans that would have knocked a hole in a bank's balance sheet ten years ago were "now hits that we have spread around the system, and represent tiny blips on the balance sheet of hundreds of financial institutions", see p99, Tett, G, "Fool's Gold", (2009).

12. Recall that the Arrow-Debreu world relies on people being able to calculate the odds of each and every possible scenario. Then they can trade contracts and insure each other against risks they are unwilling to bear. Even a moment of introspection reveals the absurdity of these assumptions as a description of the actual world. More often than not, even describing the universe of possible outcomes is beyond the means of mere mortals, let alone ascribing subjective probabilities to those outcomes.

13. Knight, F (1921), *Risk, uncertainty and profit*, Signalman Publishing.
14. FA Hayek Nobel prize speech 1974 "The pretence of knowledge".
15. In Keynes (1936), Chapter 12, he wrote: "Even apart from the instability due to speculation, there is the instability due to the characteristic of human nature that a large proportion of our positive activities depend on spontaneous optimism rather than on a mathematical expectation, whether moral or hedonistic or economic. Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as a result of animal spirits – of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities." Keynes, JM (1936), *The General Theory of Interest, Employment and Money*, Palgrave Macmillan.
16. Carney (2014), *Inclusive capitalism: creating a sense of the systemic*.
17. They have also, over the centuries, been beset by poor behaviour, as shown by the FMSB's comprehensive review of misconduct over the past two centuries. The history of financial fraud has rhymed all too frequently. See FMSB Annual Report (2017).
18. The scale of misconduct impaired banks' ability to function fairly and effectively. Global banks' misconduct costs have exceeded \$320 billion, capital that could otherwise have supported around \$5 trillion of lending to households and businesses. More worrying still, in a system where trust is fundamental, it ought to be of grave concern that only 20% of UK citizens now think that banks are well run, compared to 90% in the 1980s.
19. "Hard infrastructure" refers to the way in which markets are organised. "Soft infrastructure" refers to the standards and norms, including regulation, market standards and codes, by which markets operate.
20. *Fair and Effective Markets Review Final Report*, HM Treasury, Bank of England and FCA (June 2015).
21. PRA Supervisory Statement | SS28/15 *Strengthening individual accountability in banking*, May 2017.
22. *FX Global Code* (2018).
23. FMSB stands for *Fixed Income, Currencies and Commodities Markets Standards Board*. See Carney (2017), *Turning back the tide*.

24. Allen, T, (Q3 2018), *Strengthening the link between seniority and accountability: the Senior Managers and Certification Regime*, Bank of England Quarterly Bulletin
25. FSB (April 2018), *Strengthening Governance Frameworks to Mitigate Misconduct Risk: A Toolkit for Firms and Supervisors*.
26. FSB, (2017), *Implementing the Principles for Sound Compensation Practices and their Implementation Standards, Fifth Progress Report*.
27. See FMSB Annual Report (2017) for examples of misconduct over two centuries.
28. See CMPI-IOSCO's Principles for Financial Market Infrastructure (PFMI).
29. FSB Chair's Letter to G20 Finance Ministers and Central Bank Governors, March 2018.
30. IMF Article IV Consultation for the People's Republic of China (2018).
31. See Boston Consulting Group estimate of global AUM in *Global Asset Management 2018*.
32. See FSB Global Shadow Banking Monitoring Report (2017).
33. The Bank of England is working to better understand such dynamics as well. See Baranova, Y, Coen, J, Lowe, P, Noss, J, and Silvestri, L "Simulating stress across the financial system: the resilience of corporate bond markets and the role of investment funds", Bank of England Financial Stability Paper, (2017).
34. See FSB Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities (2017).
35. FPC record (Q3 2018).
36. Over the past year, leveraged lending has grown by around 15% (or 10% of total advanced economy credit to corporates) as compared with an estimated 13% growth (or 13% of the total share of US mortgages), for the sub-prime market to 2007.
37. With maintenance covenants falling from close to 100% in 2010 to around 20% now.
38. Both as a proportion of the exposures of the 30 banks identified by the FSB as being G-SIBs.
39. FSB Key Attributes of Effective Resolution Regimes for Financial Institutions.
40. Across the G20 as a whole more than 80% of all G-SIBs already hold TLAC which meets the 2019 requirement of 16%

*and 60% already meet the 2022 requirement of 18% of risk-weighted assets (excluding capital buffers).
41. Alex Brazier 'How to: Macropru', 2017.*

I am grateful to Alice Carr, James Benford and Clare Macallan for their assistance in preparing these remarks, and to Paul Brione, Chris Ford, Alex Michie, Harry Jackson and David Nicholls for background research and analysis.

Based on a [speech](#) delivered at the Economic Club of New York, 19 October 2018

The ECB and financial stability

Central banks have shown that they are effective crisis managers, but they often lack the tools to pre-emptively address financial stability risks, says Luis de Guindos. The ECB now has the necessary competences to identify such risks

The global financial crisis erupted more than ten years ago and triggered a lengthy process of transformation for central banks and supervisory authorities. The G20 summits in 2009 set in motion the global efforts to strengthen our institutional framework by creating more effective oversight of key financial players, products, and markets.

In Europe, we have seen the establishment of the European Systemic Risk Board in 2010 with the power to issue warnings and recommendations, the Single Supervisory Mechanism in 2014 and the Single Resolution Mechanism in 2015, with formal supervisory and resolution competences at the European level.

The sheer number of institutions involved in financial stability raises the question of governance. As a central banker, I would like to address the question of what role central banks play in safeguarding financial stability.

This conference addresses the question from the specific perspective of crisis management. I would like to take a step back and cover the broader institutional set-up and in particular the role of central banks. I will focus on the interplay between monetary policy, banking supervision and macroprudential policy, and elaborate on how central banks fit into this trilogy of public policy responsibilities.

I will first discuss how the responsibility for financial stability is shared among many authorities and the prominent role played by central banks. I will then address the very specific relevance of financial stability for central banks and the toolkit to safeguard it. I will look at the set-up within the Economic and Monetary Union and how recent changes in the European institutional set-up can further enhance financial stability. Finally, I will say a few words about a very topical issue related to financial system resilience: the results of the 2018 EU-wide stress test of the banking sector just published by the European Banking Authority.

Financial stability – a responsibility shared among many institutions

Today's financial system builds on the interactions between many specialised financial institutions. While banks remain at the heart of financial intermediation, insurance companies, pension funds and asset management companies, including investment and hedge funds, play an increasingly important role. All these financial intermediaries face and manage risks, resulting in a financial system which faces systemic risk from multiple sources.

The overall high level of resilience achieved by the euro area banking system should not hide the fact that areas of vulnerability remain

To account for these multiple dimensions, the ECB relates financial stability to the stability of core functions provided by the financial system and, ultimately, to economic growth. Supporting and ensuring the provision of these core functions is the role of public policy. The multi-faceted nature of systemic risk requires the involvement of multiple policy areas to ensure financial stability across the entire system.

The responsibility for safeguarding financial stability is held by three inter-related policy areas.

- First, microprudential supervision is tasked with ensuring the stability of individual financial institutions.
- Second, macroprudential policy is responsible for ensuring the stability of the banking and financial system as a whole, across individual institutions and over time.
- Third, in times of crisis, monetary policy provides liquidity to the financial system as lender of last resort. In normal times, price stability helps to promote financial stability.

The reason why three policy areas are now involved in financial stability is clear. The great financial crisis taught us that microprudential supervision alone cannot safeguard the stability of the banking system as a whole. It focuses on the stability of individual institutions and does not sufficiently account for the systemic aspect of financial stability created by amplification and contagion mechanisms. For its part, monetary policy cannot sufficiently contain the costs of a financial crisis once it erupts.

Indeed, crisis management instruments may have averted worse outcomes, but the effective lower bound on interest rates stood in the way of efforts to promptly restore macroeconomic stability through monetary policy.

To pre-empt such situations, academics and commentators have often invoked the need for monetary policy to lean against financial imbalances, but this would imply a deviation from its price stability mandate, at least in the short-run. Monetary policy is able to “*get into all the cracks*” of the financial system. But it is too blunt a tool to address specific risks and imbalances and would be likely to generate large macroeconomic costs if it tried, as many have argued. In a nutshell, the ‘leaning’ versus ‘cleaning’ debate has, in my view, focused too narrowly on monetary policy alone.

Instead, additional pre-emptive policies need to be called upon. Macroprudential policy is forward-looking and pre-emptive with a clear focus on financial stability. Its objective is to prevent and mitigate systemic risk by strengthening the resilience of the financial system and by smoothing the financial cycle.

The question is then how can the institutional architecture be set up to ensure financial stability by building on the respective responsibilities of supervisory, macroprudential and monetary policy?

Financial stability and the role of central banks

Central banks have always had a keen interest in financial stability, irrespectively of any specific statutory financial stability mandate. Historically, one reason for setting up a central bank was to reduce bank panics through the lender of last resort function.

In today’s world, a central banker’s interest in financial stability goes far beyond the mere lender-of-last-resort function. Indeed, financial stability is a pre-condition for monetary policy to achieve its price stability objective. Monetary policy impulses cannot transmit to the real economy without a stable and well-functioning banking system.

At the heart of the complementarity between price and financial stability is the shared responsibility of central banks and commercial banks for money creation. Central banks have the monopoly for creating outside (high-powered) money, whereas commercial banks provide inside money to facilitate transactions and to finance the broader economy.

The shared responsibility between central banks and commercial banks in this process implies that the value of money relies not just on the provision of outside money by central banks but also on the overall creditworthiness of commercial banks. A stable financial environment ensures that money created by commercial banks remains fully fungible with central bank money across all parts of the financial system.

A stable banking system is a precondition for any central bank to achieve its main mandate of safeguarding the stability of its currency. It is thus only natural that a central bank holds financial stability responsibilities in addition to those it has for monetary stability.

Traditionally, the two central bank instruments that interact with financial stability have been the monetary policy rate and crisis management instruments. As I already mentioned, the monetary policy rate is in most cases too blunt a tool to address the build-up of financial imbalances.

Emergency liquidity assistance, on the other hand, is a crucial tool for central banks in times of crisis, enabling them to ensure that payment and settlement systems remain operational. Deploying it effectively requires detailed information on market conditions and market infrastructures, as well as supervisory information on individual financial institutions, which should ideally be promptly available to the central bank in the event of a crisis.

Beyond crisis management, ensuring stable conditions requires stronger regulation and sounder supervisory practices. It also involves pre-emptive macroprudential policies that limit the build-up of imbalances and increase resilience ahead of future stress events. These pre-emptive macroprudential instruments can steer market participants towards maintaining conditions that do not endanger financial stability.

The question that frequently arises is whether banking supervision and macroprudential policy should become explicit responsibilities of central banks. The various frameworks in place around the world cover a wide range of institutional arrangements. But irrespectively of the specific institutional set-up, all arrangements assign a significant role to central banks in safeguarding financial stability.

The reasons for this are straightforward. First, monetary policy and macroprudential policy can be seen as strategic complements. In addressing risks from financial imbalances particularly resulting from asset price overvaluations, more active macroprudential policy allows monetary policy stance to remain accommodative and support a macroeconomic recovery in line with price stability. This strategic interaction requires cooperation between both sets of policy-makers, which is more efficiently achieved within one institution, while observing the appropriate Chinese walls.

One of the main reservations about allocating banking supervision and macroprudential decision-making to central banks stems from the concern about the interaction and possible trade-offs between the financial stability and the price stability objective. In the case of the ECB, the scope for trade-offs is clearly contained, as the primary objective of the ECB continues to be price stability.

And I would argue that there is merit in assigning responsibility for decisions in all three policy areas at the central bank, given that price and financial stability reinforce each other. Most importantly, it ensures that decisions are

consistent across policy areas; spillovers from one policy area can be taken into account in an effective manner, while duly observing separation rules governing the policy domains.

Second, central banks have a deep knowledge about the functioning of financial markets. They continuously monitor financial conditions to identify vulnerabilities and threats to financial stability, and their assessment is backed up by broad-based market intelligence and the authority to request relevant data from financial market participants. Central banks are particularly sensitive to macro-financial stabilisation goals in this context and maintain a forward-looking, system-wide perspective which considers macro-financial linkages.

Adding banking supervision and, in particular, macroprudential policy to the central bank's tasks, shifts the emphasis more strongly towards preventive policies. Macroprudential policy can address financial stability risks in the specific areas where they arise, be it at the level of a country, a sector or a financial institution. It can also effectively free monetary policy from the temptation to counter financial imbalances when systemic risks increase. This reduces the apparent need for leaning. At the same time, macroprudential policy reduces the likelihood and the severity of downturns should risks materialise.

With these conceptual considerations in mind, let me now examine the specific responsibilities of the ECB, starting with its legal mandate.

The ECB's role in financial stability

The ECB's financial stability mandate is based on Article 127 of the Treaty and comes in addition to its primary objective of price stability. It involves several duties.

First, the Treaty requires the ECB to *“contribute to the smooth conduct of policies pursued by competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system”* (Article 127(5)). Second, it gives the ECB a consultative and advisory role in the rule-making process (Article 127(4) and Article 25(1) of the Statute of the ESCB). Third, it assigns the ECB the task of promoting the smooth operation of payment systems (Article 127(2)). In addition, since November 2014, the SSM Regulation allocates supervisory powers and a clear role for macroprudential policy to the ECB.

The SSM Regulation reflects the decision to allocate microprudential supervision and macroprudential policy responsibilities to the ECB while building as much as possible on national expertise and structures. This implies that, for countries in the euro area, the Governing Council is the ultimate decision-maker on matters of monetary policy, macroprudential policy and microprudential banking supervision.

This institutional arrangement overcomes the ‘double separation’ of policies along the geographical and functional dimension. Monetary policy operated at the level of the euro area and banking supervision at the level of member states. This left a gap requiring close and smooth cooperation and coordination.

The drafters of the Treaty had clearly identified that potential problems might arise from this separation. They therefore explicitly allowed for the powers of the ECB to be amended with a simplified procedure should the interaction between area-wide monetary policy and national supervisory powers need to be strengthened to effectively safeguard financial stability.

This simplified procedure is established in Article 127(6) of the Treaty and states that the European Council could confer *“specific tasks upon the European Central Bank concerning policies relating to the prudential supervision of*

credit institutions and other financial institutions". The great financial crisis evidenced the need for a more integrated approach while assigning different instruments to the respective objectives of price and financial stability.

How is the ECB fulfilling its financial stability mandate?

With the launch of European banking supervision in 2014, the ECB became the microprudential supervisor of the euro area and macroprudential policies became the shared responsibility of the national competent authorities and the ECB. National authorities, with their detailed knowledge of the domestic banking system and financial structures, are well placed to assess financial stability risks. This goes hand in hand with the responsibility to address financial imbalances and to counter systemic risks using the available instruments.

The ECB, with its cross-country perspective complements the national authorities' responsibilities and can, if deemed necessary, *"instead of the national authorities"*, apply higher capital buffer requirements and more stringent measures than those adopted by the national authorities to address systemic or macroprudential risks at the level of credit institutions.

Such macroprudential measures have been applied to more than 100 systemically relevant banks in the form of systemic institution buffers, systemic risk buffers or the countercyclical capital buffer for exposures to entire countries.

The aim of establishing the banking union with a single supervisor is to enable banks in the euro area to operate under the same conditions regardless of their location. This would increase the soundness of individual banks and foster financial integration, with capital and liquidity flowing freely across borders. While huge progress has been achieved, the banking union is unfortunately not yet complete. A European deposit insurance scheme is still missing. Such a risk-sharing arrangement would lead to further risk reduction and support financial stability.

All in all, central banks have demonstrated that they can be effective crisis managers in times of stress, but they have often lacked the toolkit to pre-emptively address financial stability risks while they are building up.

Pre-emptive macroprudential policy is essential in any economy to complement and unburden monetary policy. Its instruments can tame the financial cycle when imbalances build up and can ensure the appropriate level of resilience to absorb losses should risks materialise. This is all the more important in a monetary union, where economic and financial conditions across member countries can differ significantly.

I have argued that an effective institutional setup involves ensuring consistent decisions across the microprudential, macroprudential and monetary policy areas. Reflecting the economic rationale, the ECB has legal responsibilities in all three areas in accordance with the Treaty and the SSM Regulation.

EU-wide stress tests

Before closing, allow me to deviate from financial stability frameworks to look at the related topic of the resilience of the financial system, and to focus on the resilience of the euro area banking system today.

The European Banking Authority (EBA) recently published the results of the 2018 EU-wide stress test. For the 33 euro area significant institutions that took part in the EBA exercise the average final Common Equity Tier 1 capital (core capital) after stress stood at 9.9%, up from 8.8% in the 2016 EBA exercise. In terms of capital depletion, the 2018 stress test resulted in an adverse scenario reduction of average core capital of 3.8 percentage points, up from 3.3 percentage points in 2016.

I would like to highlight two main points underlying these results. First, the improved strength of euro area banks is due to the strong build-up of capital buffers in recent years: the average capital ratio going into the stress test

stood at 13.7%, up from 12.2% in 2016. At the same time, banks entered the exercise in better condition than before owing to overall improved economic conditions and their continued efforts to reduce legacy assets.

Second, compared with 2016, the adverse scenario in the 2018 stress test was generally more severe for European economies along several dimensions, such as GDP growth, property prices and equity prices. The adverse scenario focused on the repricing of global risk premia, adverse feedback loops between low growth and weak bank profitability, and private and public debt sustainability concerns.

The challenge of the 2018 scenario was that the cut-off point was unusually early, and so the scenario does not account for more recent events, in particular developments in emerging markets and sovereign spreads.

The overall high level of resilience achieved by the euro area banking system should not hide the fact that areas of vulnerability remain. To briefly characterise the summary results, I would group the banks into three broad categories depending on their final core capital ratio in the adverse scenario. Clearly, I am using indicative benchmarks rather than formal thresholds.

First, banks with stressed core capital ratios above 11% reflect strong capital positions and comfortable capacity to withstand shocks. There are 9 banks in this group, representing 15% of total assets of the euro area banking sector.

In the second category, 12 banks had core capital ratios between 9% and 11%, representing about 45% of total assets. These banks displayed a reasonable degree of resilience overall. However, some of these banks still have work to do to enhance capitalisation and reduce their vulnerability to stress.

Finally, banks with core capital ratios in the adverse scenario below 9% display a weaker, though still satisfactory, capital position. These 12 entities, representing almost 40% of total assets of the sector, should increase robustness and enhance capital positions to face challenges ahead and will thus be closely monitored.

In summary, the overall resilience of the banks supervised by the ECB has increased compared with the stress test conducted two years ago. Banks start from a better capital position. Capital depletion in the 2016 and the present exercise stand at similar levels. Risks and vulnerabilities identified across some institutions, business models and constituencies, however, require close monitoring.

Furthermore, the analysis of aggregate results and their interaction with the real economy, going beyond supervisory ratios, confirms that macroprudential pre-emptive policy has an important role to play in safeguarding the stability of the whole system. ■

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Endnotes

1. See [Declaration on Strengthening the Financial System](#) from G20 summit in London (2 April 2009) and [“The Leader’s Statement”](#) from G20 summit in Pittsburgh (24-25 September 2009).
2. For an overview of the European system of financial supervision see the European Commission’s overview on [Financial supervision and risk management](#) and the [legal framework of the SSM](#).
3. The ECB defines financial stability as a state whereby the level of systemic risk is contained. Systemic risk can best be described as the risk that the provision of necessary financial products and services by the financial system will be

impaired to a point where economic growth and welfare may be materially affected. See: <https://www.ecb.europa.eu/pub/fsr/html/index.en.html>

4. See for example for a theoretical explanation: Korinek, A and A Simsek (2016) "Liquidity Trap and Excessive Leverage", *American Economic Review* 2016, 106(3): 699–738, GB Eggertsson and P. Krugman (2012) "Debt, Deleveraging, and the Liquidity Trap: A Fisher-Minsky-Koo Approach", *The Quarterly Journal of Economics*, Volume 127, Issue 3, 1 August 2012, Pages 1469–1513.

5. See for example Bean, C, M Paustian, A Penalver and T Taylor (2010), "Monetary Policy after the Fall," in *Macroeconomic Challenges: The Decade Ahead*, Federal Reserve Bank of Kansas City, Issing, O (2011), "Lessons for Monetary Policy: What Should the Consensus be?", *IMF Working Paper WP/11/97*, April, White, WR (2006), "Is price stability enough?", *BIS Working Papers No. 205*, April, and White, W.R. (2009), "Should Monetary Policy 'Lean or Clean?'" *Federal Reserve Bank of Dallas Working Paper No. 34*.

6. See Constâncio, V (2018) "[Financial stability risks and macroprudential policy in the euro area](#)", Speech by Vítor Constâncio, Vice-President of the ECB, at the ECB and Its Watchers XIX Conference, Frankfurt am Main, 14 March 2018 and references therein, and Svensson, L (2017) "Cost-Benefit Analysis of Leaning Against the Wind," *Journal of Monetary Economics* 90, 193-213.

7. See Cecchetti et al. (2000); Borio (2012), Hanson, Kashyap & Stein (2011).

8. See Crockett, AD "Marrying the micro- and macro-prudential dimensions of financial stability", Remarks before the Eleventh International Conference of Banking Supervisors, held in Basel, 20-21 September 2000. Borio, C (2003), "Towards a macroprudential framework for financial supervision and regulation?", *BIS Working Papers No. 128*. Knight, MD "Marrying the micro- and macroprudential dimensions of financial stability: six years on". Address at the 14th International Conference of Banking Supervisors, Mérida, 4-5 October 2006. Fahr, S and J Fell, (2017) "Macroprudential policy – closing the financial stability gap", *Journal of Financial Regulation and Compliance*, Vol. 25 Issue: 4, pp.334-359.

9. For a historical review of the central bank's role in financial stability see Goodhart (2008) "The Evolution of Central Banks", MIT Press, Cambridge, MA and London, 1988 and Goodhart, C (2011) "The changing role of central banks".

Financial History Review, 18(2), 135-154.

10. See Padoa-Schioppa, T (2002) "Central banks and financial stability: exploring a land in between" in Gaspar, V, P Hartman and O Sleijpen (eds) "The transformation of the European financial system", Second ECB Central Banking Conference.

11. Beyond the benefits of financial stability for the use of money as medium of exchange, it also supports its function as store of value and makes it more accepted as unit of account.

12. Liquidity can be granted through open market operation to the financial system as a whole as well as to individual monetary and financial institutions through emergency lending assistance, building on Bagehot's original principle. See Bagehot, W (1878), "Lombard Street: A Description of the Money Market". New York: Scribner, Armstrong, E

13. See IMF-FSB-BIS (2016) "[Elements of Effective Macroprudential Policies: Lessons from International Experience](#)"

14. See Constâncio, V (2017) "[Macroprudential policy in a changing financial system](#)", Remarks at the second ECB Macroprudential Policy and Research Conference, Frankfurt am Main, 11 May 2017. Schnabel, I (2016) "What role for central banks in safeguarding financial stability?" or more specifically on monetary policy and banking supervision see Goodhart, C and D Schoenmaker (1995), "Should the Functions of Monetary Policy and Banking Supervision Be Separated?"; *Oxford Economic Papers*, Vol. 47, No. 4, pp. 539-560.

15. For a survey on financial stability arrangements pre-crisis see Oosterloo, S and J de Haan (2004): "Central banks and financial stability: a survey, *Journal of Financial Stability*" Volume 1, Issue 2, Pages 257-273. The responsibilities of macroprudential responsibilities across EU countries see ESRB Follow-up Report with overall assessment on "ESRB Recommendation on the macro-prudential mandate of national authorities (ESRB/2011/3): https://www.esrb.europa.eu/pub/pdf/recommendations/2014/ESRB_2014.en.pdf

16. See Smets, F (2014). "Financial Stability and Monetary Policy: How Closely Interlinked?", *International Journal of Central Banking*, *International Journal of Central Banking*, vol. 10(2), pages 263-300, June.

17. See Draghi, M (2017) "The interaction between monetary policy and financial stability in the euro area." Keynote speech at the First Conference on Financial Stability organised by the Banco de España and Centro de Estudios

Monetarios y Financieros, Madrid, 24 May 2017.

18. See Padoa-Schioppa, T (1999) "[EMU and banking supervision](#)" Lecture at the London School of Economics, Financial Markets Group on 24 February 1999.

19. See Article 5(2), Council Regulation (EU) No 1024/2013 of 15 October 2013 (SSM Regulation).

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Moonwalking bears and underwater icebergs: hidden risks in markets

Alex Brazier writes about how risks in markets can be hidden in plain sight or buried under the surface of the financial system

want to focus on hidden risks in markets. In my view there are generally two types of such hidden risk. Let's call them bears and bergs (Slide 1). The bears are the risks that hide in plain sight. These are risks that, after the event, are obvious. Some people are able to see them in real time. Others, because of very human traits, don't.

They are the moonwalking bear in the viral [Transport for London Cyclist Awareness](#) video. For those who haven't seen it, amidst a frenetic basketball game, a person dressed as a bear moonwalks across the screen. When you know it's there, it's obvious. But when, as instructed, people are engrossed in the highs and lows of the basketball game, many fail to notice the bear.

The risk of adjustment in the stretched prices (and compressed yields) in corporate debt markets are my moonwalking bear, hidden in plain sight. The icebergs can lurk beneath the surface of the system. They make navigation of markets uncertain and hazardous. Assessment of them requires diving into the cold, murky depths of the financial system.

Excessive leverage and liquidity mismatches were the bergs of the financial crisis. They forced investors into firesales of assets, magnifying market adjustments, and sometimes even disrupting market functioning. In other words, they compromised market resilience. Those risks have been addressed. But we must stay alert to any possible new bergs of the future. To spot them emerging we need to dive into the detail of the system, to look at the incentives and constraints facing the participants.

We'll don our diving equipment later. Before we do, it's worth asking who should care about hidden risk? Any manager focussed on risk and return will be interested in these bears and bergs. Failure to acknowledge them can damage performance. But while the risks mean some investors can have a bad day and others a good one, the ups and downs of asset markets don't necessarily concern policymakers.

Our focus is on the macro prudential; on ensuring the financial system serves the wider economy in bad times as well as good. And risks in markets do not translate automatically into risks to that. So our objective is not to protect investors from ups and downs in financial markets or to target some level for asset prices. The objective is to protect the wider economy from disruption if market risks materialise.

The nature of corporate finance has shifted decisively in the past decade. Since the crisis, nearly all of the increase in debt of companies in the UK can be accounted for by bond issuance. The scale of business borrowing through markets is now on a par with their borrowing from banks.

A series of measures are eliminating toxic forms of shadow banking like these 'constant net asset value' money market funds

This shift in the balance of corporate finance should be positive for stability. A more diverse system can be a safer system. Bond finance has been the spare tyre that kept credit flowing while the banking system was punctured after the crisis.

So these markets are clearly delivering for the economy. But conditions could develop in which they have the potential to disrupt¹.

If debt levels of companies, particularly banks, were to come to rely on stretched credit markets and those markets were then to adjust. Or if credit markets were to prove lacking in resilience so that they amplified any market adjustment, driving overshooting and tightening conditions for businesses.

So as we consider the bear of stretched valuations in credit markets and the bergs of leverage and liquidity that could affect the resilience of those markets, I'll look at whether each is an issue just for market risks or also of relevance to the wider economy too. Let's begin with the moonwalking bear in debt markets.

Consider this. The yield on a basket of dollar-denominated corporate bonds is now closer to the expected average short-term risk-free rate over the life of those bonds than at any time in the past twenty years (see Slide 2). The premium investors earn for taking interest rate and credit risk is squeezed.

On the face of it that suggests an unusual degree of investor confidence about the interest rate outlook and corporate prospects generally². This compression of the premium has meant that – unusually – dollar corporate bond yields haven't risen, even as the US risk-free rate has (Slide 3). Perhaps companies, globally, have become less risky? That seems to be the view in the market for credit default swaps at least.

Two years ago, the average annual premium of insuring against investment-grade corporate default was 85bp of the amount insured. Today, it is 50bp. For nearly 20% of companies the premium was more than 150bp. Today, in almost no case is it more than 150bp (Slide 4).

But according to the models used by banks to assess creditworthiness, based on company balance sheet characteristics, default probabilities have barely changed³. In global debt markets, investors seem to be willing to take the same risk for less compensation. Appetite for risk taking has increased.

Now, coming closer to home, consider this. As I noted back in February, the premium on a basket of sterling-denominated investment grade bonds is close to zero⁴ (Slide 5).

While the average sterling-denominated investment-grade corporate bond has got riskier in recent years, with a longer duration and lower credit rating, this basket has a fixed composition. And the compression of the yield premium has been even more pronounced at the riskier ('high yield') end of the market.

The focus of explanations of these developments, globally and in the UK, is often on QE. Numerous studies have looked at the impact of central bank asset purchases on a range of market prices, including through the 'portfolio balance' effect of the private sector rebalancing its asset holdings as the central bank removes bonds and injects money⁵.

While there is a range of – uncertain – estimates, it's clear that QE has had some effect on a spectrum of asset prices, including corporate bonds. That was, of course, its intention. But while QE was the basketball game getting the attention, might a bear have walked through the game too?

Slide 1

Two types of hidden risk in markets

Bears: in plain sight



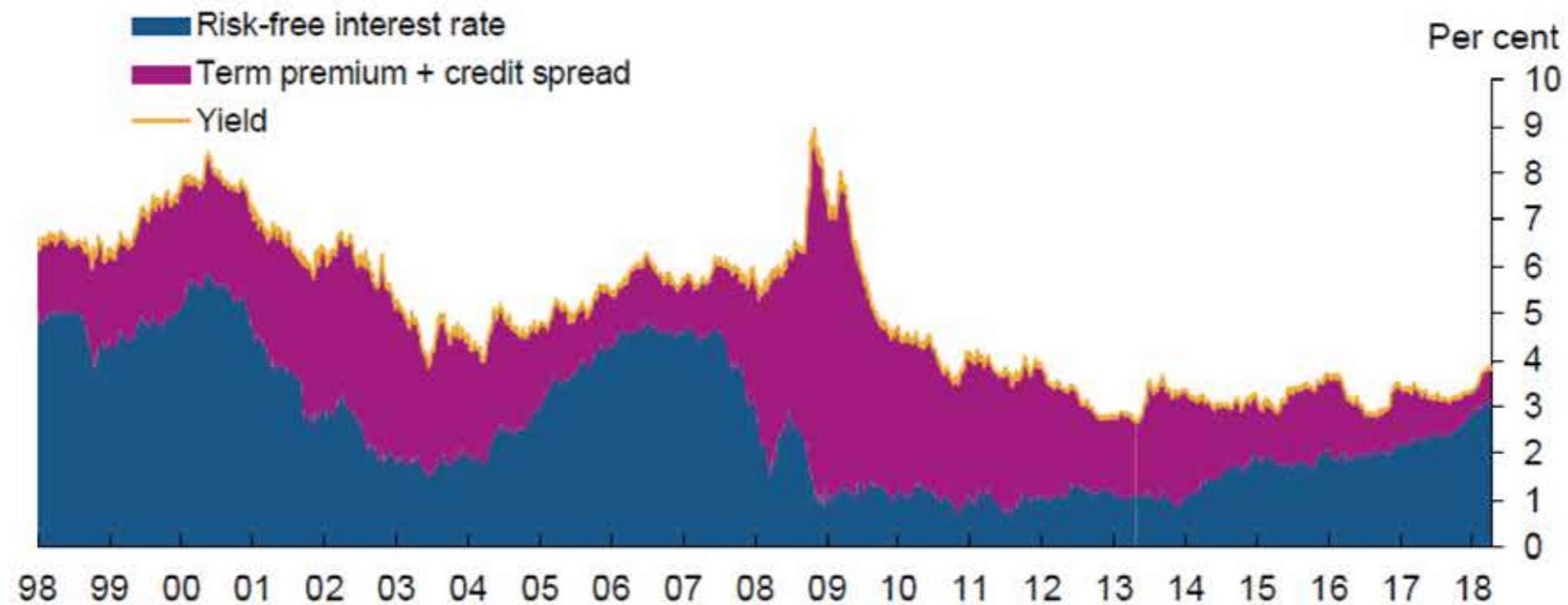
Bergs: in the system



Slide 2

Little compensation for risk in global corporate debt markets

Components of yield on US-dollar investment-grade corporate bond index



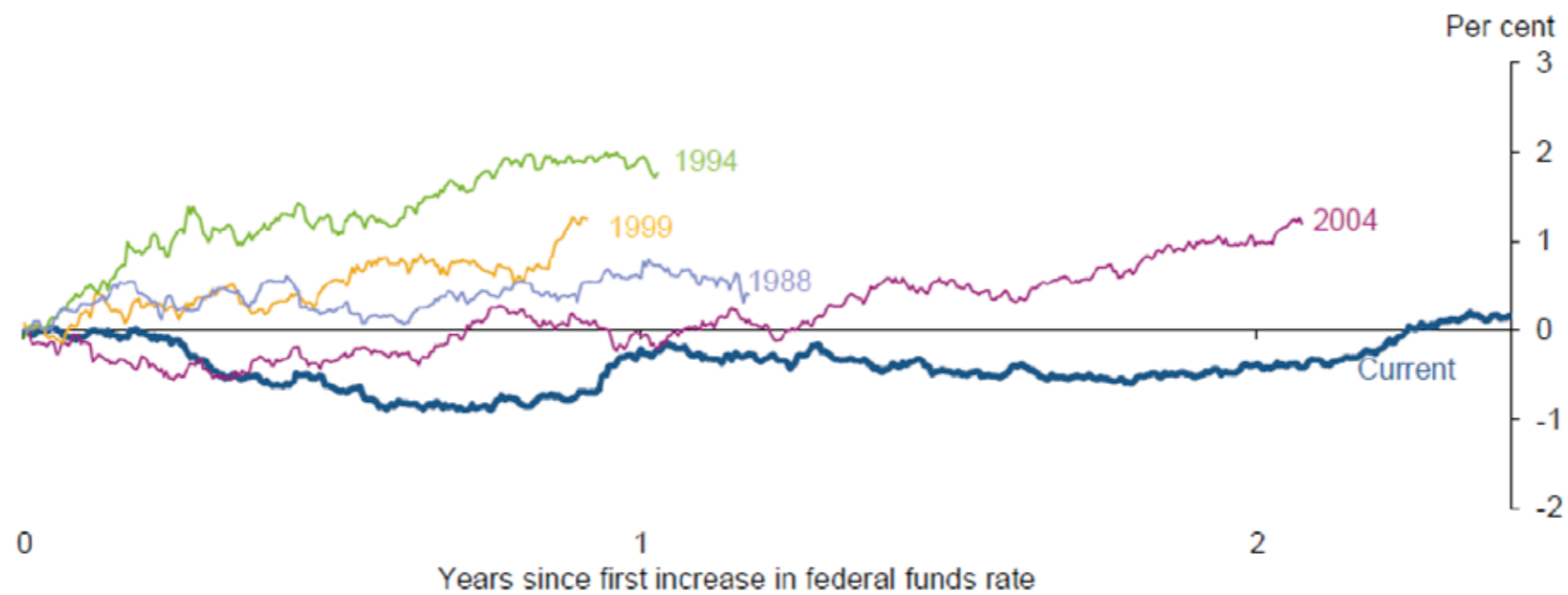
Sources: ICE Bank of America Merrill Lynch, Federal Reserve Bank of New York and Bank calculations.

Note: The chart shows how the yield on an index of US-dollar investment-grade corporate bonds (in orange) splits into two components. The first component (in blue) is the risk-free interest rate, which reflects expected Federal Funds rates over a period equal to the (7-year) duration of the index. The second component (in purple) is the difference between the yield and the first component, and reflects the term premium and credit spread.

Slide 3

...Very unusual in a US monetary policy tightening phase

Cumulative changes in US-dollar investment-grade corporate bond yields



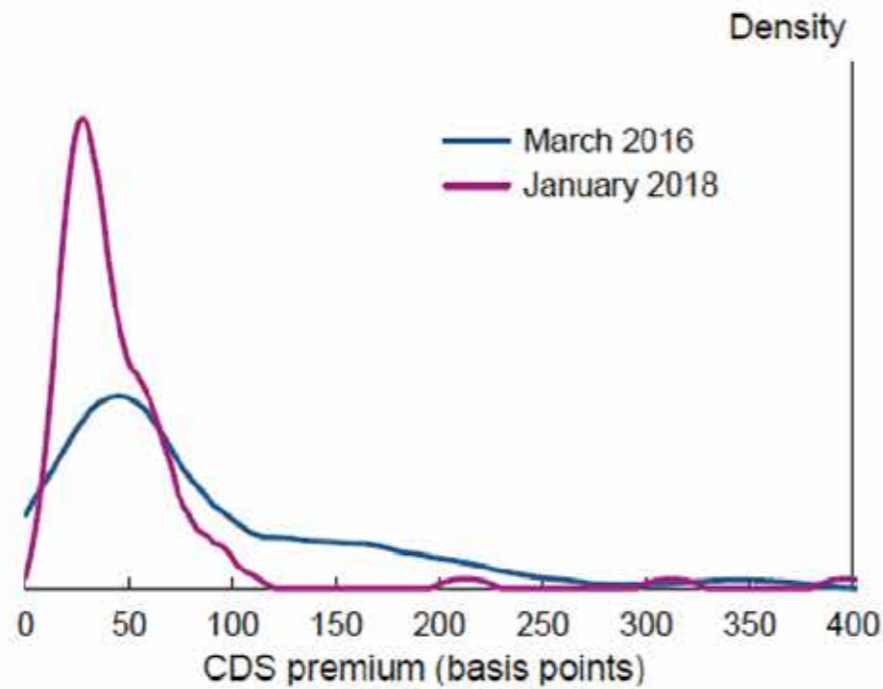
Sources: ICE Bank of America Merrill Lynch and Bank calculations.

Slide 4

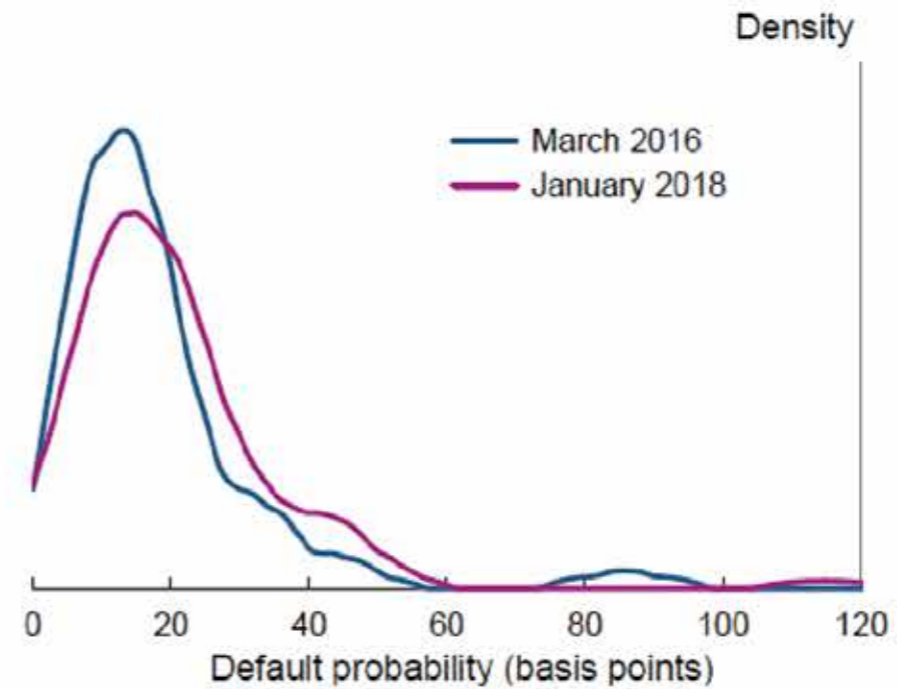
Price of default insurance fallen...

...but risk of default hasn't

Distribution of CDS premia



Distribution of default probabilities



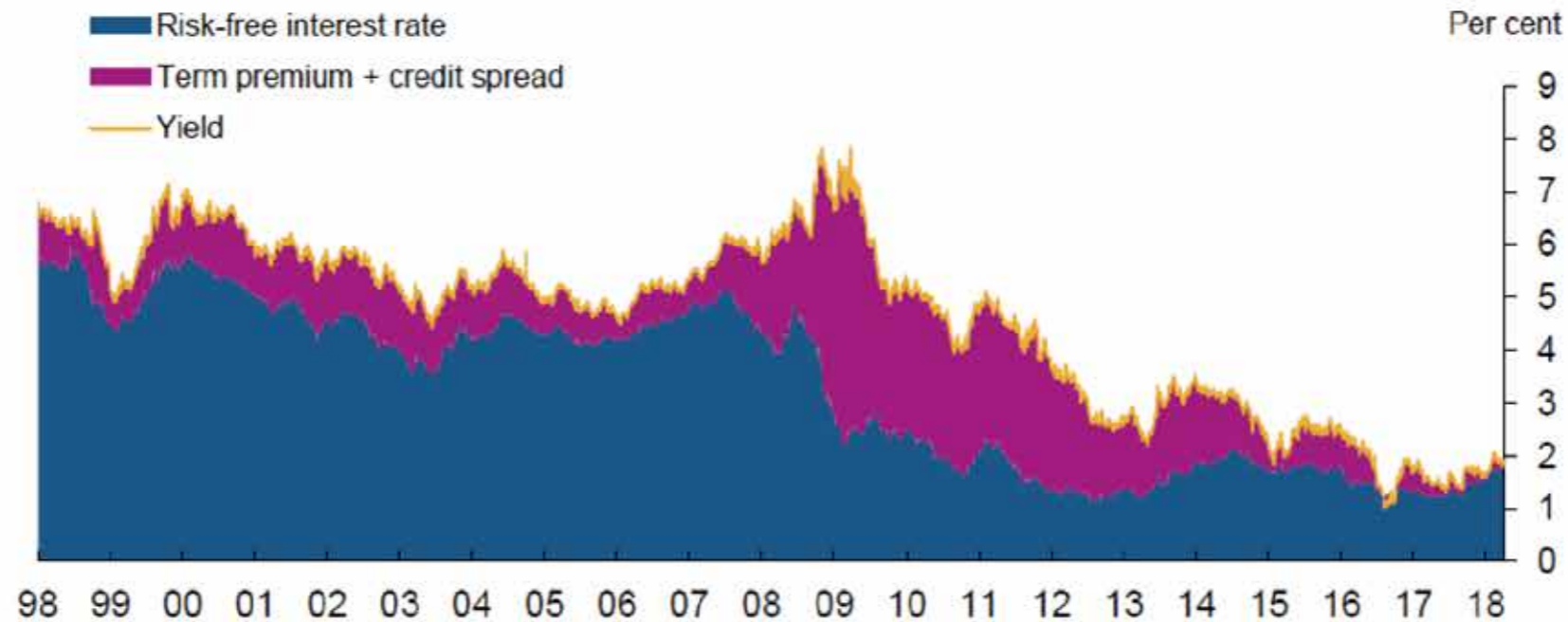
Sources: Bloomberg, Credit Benchmark and Bank calculations.

Note: The charts show fitted densities of CDS premia and default probability estimates for corporate debts referenced in the current CDX.NA.IG credit default swap index. The CDS premia are annual amounts on five-year senior CDS contracts and the default probabilities are aggregates of one-year ahead estimates constructed by financial institutions following an internal-ratings-based approach to regulation.

Slide 5

Little compensation for risk in £ corporate bonds

Components of yield on adjusted sterling investment-grade corporate bond index



Sources: ICE BofAML, Bloomberg, HMT and Bank calculations.

Note: The chart shows GBP investment-grade corporate bond yield and the expected risk free rate (based on a maturity (7 years) that is similar to the duration of the corporate bond index over the period shown). The difference between the corporate bond yield and the expected rate is the term premium plus the credit spread. The adjusted sterling investment-grade spread accounts for changes in credit quality and duration of the index over time.

Some simple, albeit imperfect, facts reinforce that it might. Only a tenth of the compression in the premium for taking interest rate risk and credit risk on sterling corporate bonds, since QE began, took place on announcements of the Bank's intention to purchase assets. And more than a third happened outside periods when any assets were being purchased by the Bank (Slide 6). The moves outside QE periods are enough to explain the current difference between the premium and its long-run average.

So what else could be going on? The developments in risk appetite are suggestive of a search for yield. With returns on a range of assets so low by historical standards, any signs that risks have declined and traditionally higher yielding assets are safer are tempting.

And anyone looking for confirmation of such a bias can find it in recent performance. With low corporate default rates and low market volatility, portfolios of corporate bonds have outperformed cash and sovereign bonds (Slide 7). But of course we know from the small print that the past is not always a good guide the future.

So, as the Bank of England's Financial Policy Committee stated in March: *"...there are material risks associated with interest rate volatility. The principle risks are in debt markets."*⁶

But are these a risk to the wider economy?

It's reassuring that easy conditions in markets have not led the corporate sector to take on an unusually high level of leverage. As a multiple of earnings, corporate debt in this country is around its long term average level. Nevertheless, developments in corporate debt bear close scrutiny, because we cannot take for granted that it will stay this way.

The United States, where corporate debt levels have been testing previous highs, shows this to be more than a hypothetical possibility. The UK's largest companies – those with access to capital markets – report that credit has become easily available⁷. Corporate debt in the UK has been growing at a not insignificant annual rate of 6.2%. And notably, riskier forms of debt – those most sensitive to a change in market conditions – have recently been growing most rapidly. Issuance of leveraged loans and high yield bonds reached a record level last year⁸.

Last year more than half of the issuance was used to refinance existing debts more cheaply. In the early stages of this year, however, there are signs of that changing. Issuance has been higher than in the same period last year and less is being used to refinance⁹ (Slide 8).

These forms of debt accounted for around only 10% of bond and bank loans issued to UK companies last year. But if the pattern of the first 3 months of the year were to continue, they would still – alone – add 3% to the overall stock of corporate debt this year.

So recent developments demand careful scrutiny. If they continue, we'll need to assess, in particular, whether they increase the risks faced by banks.

Banks have demonstrated in recent stress tests their resilience to a sharp adjustment in credit market, and markets, rather than banks, have been the driving force behind recent growth¹⁰. But recent IMF work shows how rapid growth of corporate debt overall, and any skewing of corporate debt towards riskier firms can – by creating a debt overhang – add to medium term risks to economic growth¹¹.

The jury is out on whether what we have seen in the UK is material in this respect. But to keep the wider economy protected from financial disruption, it's important that banks are resilient to these risks if they do become material.

And that's one reason why (as the Financial Policy Committee said in the Record of its March meeting) the FPC intends to *"re-consider the adequacy [of capital levels] in June, with a focus on the evolution of domestic risk appetite."*

Let's move on to the other hidden risks: the underwater bergs that can make markets less resilient. There were certainly plenty of these lurking under the surface of the system of 2008, making it fragile and amplifying market adjustments.

They help to explain how \$300 billion of losses on subprime mortgages turned into well over \$2.5 trillion of write-downs in the global banking system. The post-crisis reform programme has dealt with them. But our duty is not just to prevent the last crisis, it is to keep up with new risks as the financial system evolves and, where needed, take action to address them¹².

So let's look at some of the icebergs present in 2008, what's been done to deal with them, and where dives into the deep are now warranted – by investors and policymakers – to assess whether new – albeit smaller – bergs may be lurking. The first of these icebergs is leverage. Specifically, leverage arising from use of derivatives.

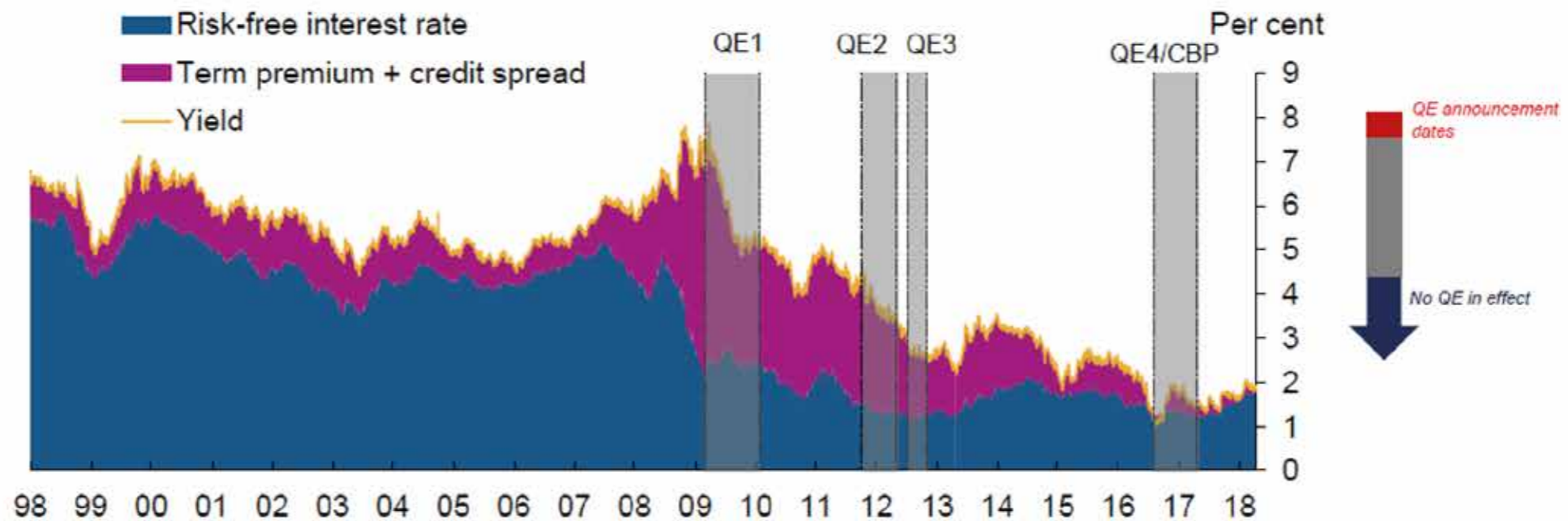
Cast your minds back to 2008 and AIG (see Slide 9). It had written \$400 billion of credit default swaps on mortgage-backed securities. It had in effect taken its insurance business to mortgage bonds. Because of its triple-A credit rating, few of those buying the insurance asked AIG for any collateral¹³.

That had two consequences. First, as its prospective losses on mortgage bond insurance increased and its own credit downgraded, AIG was suddenly required to put up \$40 billion of collateral. As it scrambled to find that collateral, it was forced into firesales of assets.

Slide 6

Something more than QE at work...

Components of yield on adjusted sterling investment-grade corporate bond index



Sources: ICE BofAML, Bloomberg, HMT and Bank calculations.

Note: The chart shows GBP investment-grade corporate bond yield and the expected risk free rate (based on a maturity (7 years) that is similar to the duration of the corporate bond index over the period shown). The difference between the corporate bond yield and the expected rate is the term premium plus the credit spread. The adjusted sterling investment-grade spread accounts for changes in credit quality and duration of the index over time.

Slide 7

A search for yield? Past performance used as guide to future?

Total return since March 2009

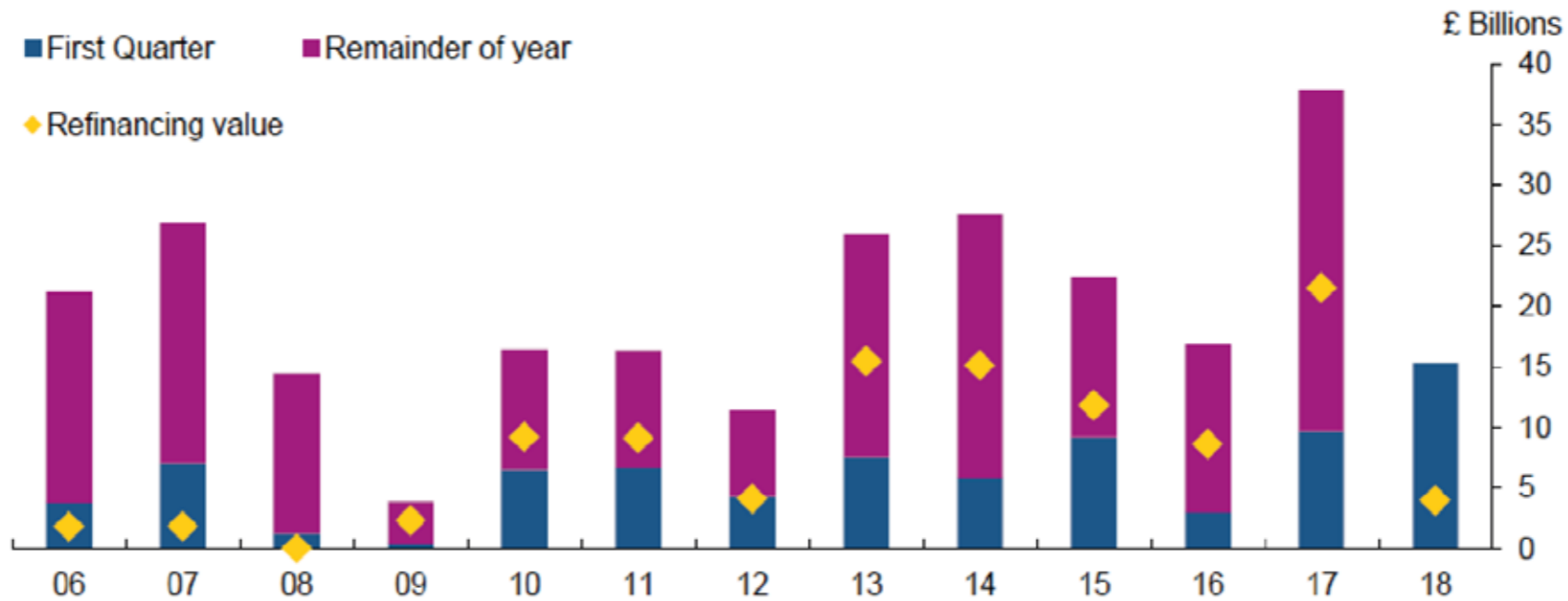


Sources: ICE Bank of America Merrill Lynch, Bank of England and Bank calculations.
Note: Change is calculated between 02/03/2009 and 31/03/2018.

Slide 8

Record issuance of riskier types of corporate debt recently

Issuance of high-yield bonds and leveraged loans

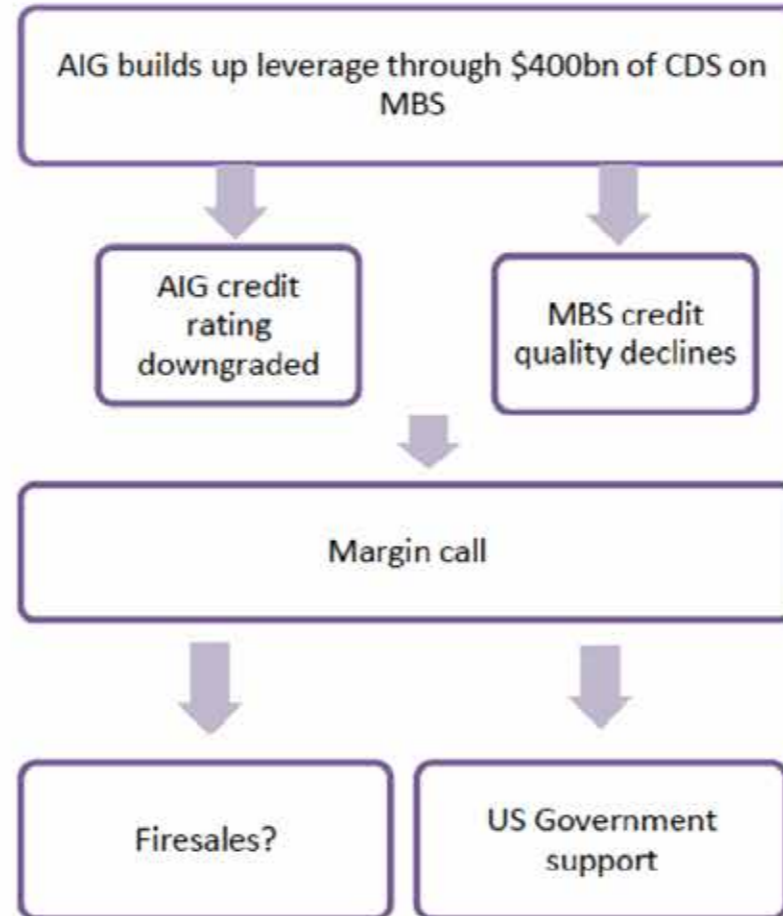


Sources: S&P Global Market Intelligence and Bank Calculations.

Note: Issuance is shown on a gross basis.

Slide 9

In 2008, built up of excessive leverage via derivatives = firesales



Second, as doubts grew about AIG's creditworthiness, questions were raised about who had bought the insurance and was therefore now exposed to uninsured losses on mortgage bonds. The confidence effect rippled through the system.

Today, these problems have been dealt with. Complex networks of derivative exposures have been stripped back through increased use of central counterparties. No longer must doubts about one counterparty raise questions about many others¹⁴.

And derivative exposures must be collateralised properly every day¹⁵. Over \$1 trillion more collateral is now held against derivative exposures than it was before 2008. No longer must questions about a counterparty's creditworthiness lead to a sudden increase in its collateral requirements. It is not something that is called for suddenly in a stress. Collateral is always there to compensate not just for the market value of the derivative position at the time of the default but also additional losses that may be incurred in closing out or replacing the position.

But consistent with our duty to consider the future as well as the past, we are now diving to search for new hazards that could lurk beneath the surface in this area. With collateral now dealing with questions about the solvency of counterparties, our focus is on what its much greater use means for resilience of markets. As Governor Carney has observed: *"Collateral management is a cornerstone of resilient markets"*.¹⁶

Greater reliance on collateral today means that although changes in counterparty credit quality are not met with collateral calls, market adjustments prompt much greater flows. The avoidance of asset fire sales rests on those from whom the collateral is called having the means to meet the call.

So we are investigating how market adjustments could translate into calls for additional collateral from market participants. Perhaps we should term this the sister of Value at Risk: collateral at risk or 'CaR'.¹⁷

And we are investigating how those calls would be met. Do participants have liquid assets to meet them or would they need to sell less liquid assets to get them? (Slide 10). Regulations are in place that require banks to hold a buffer of liquid assets to be able to meet derivative margin calls – and other outflows – over a 30-day window.

So our focus is on non-banks; on insurance companies, pension funds and investment funds of all sorts. The jury is out here too. I do not start from the presumption that there is an iceberg here. Our duty is to assess whether they could be one. But in order to assess properly the risks in this area we need much better diagnostic tools. So we are developing them.

We are fortunate in being able to draw on data from Trade Repositories which now record all new derivative trades between counterparties and report each day on the outstanding positions between them.

We are fortunate that these issues are the topic of international collaboration, with the International Organisation of Securities Commissions leading work to develop consistent measures of leverage – that incorporate derivatives usage – for investment funds.

We are fortunate that - as I told the Treasury Committee of the House of Commons recently – we and the FCA are able to work closely together on these issues.

And we are fortunate that the Bank of England's wider programme of intelligence gathering allows us to explore these issues alongside market participants.

For while only policymakers may end up going the final step to assess what all this could mean for the real economy, everyone has an interest in continuing to think about what collateral management means for the resilience of markets.

The second possible iceberg is the liquidity mismatch in investment funds. The 2008 variant of this was egregious. Many of you will recall looking on in horror as \$400 billion of redemptions by their investors forced money market mutual funds into fire sales of their assets, including commercial paper.

These funds had offered redemption of each \$1 share at par. They walked like a bank and quacked like a bank. They were shadow banks. So when the Reserve Primary Fund, which held \$785m of Lehman Brothers' commercial paper, announced it would no longer be able to meet its offer and 'broke the buck', a run developed on these funds (Slide 11).

Corporate funding markets, particularly for banks, went into meltdown. The United States government stepped in to guarantee redemption at par from money market funds—effectively a form of deposit insurance. That iceberg has now melted. A series of measures are eliminating toxic forms of shadow banking like these 'constant net asset value' money market funds¹⁸. As a result, markets are safer to navigate. Shadow banking of old is transforming to more resilient market-based finance of today.

So what need is there to dive into liquidity mismatch in investment funds? It's certainly the case that any remaining risks are much smaller and more subtle than those around money market funds.

Since the crisis, funds have flowed into open-ended investment funds that make no promise of redemption value: the investor bears the risk from the outset. They have few of the problems of the crisis money market funds.

But these funds are increasingly invested in less liquid assets while continuing to offer next day redemption to investors. The share of corporate bonds held in open-ended funds in the UK and the euro area has increased by 70% since the crisis (Slide 12). And their structure may create incentives for their investors to redeem in a stress, forcing fire sales of illiquid assets.

I emphasise 'may' because we have not seen this on large scale in the past. Nevertheless, our duty is to ask whether we could see it in the future. The possibility at least arises because the price offered to redeeming investors is the 'net asset value' of the fund, calculated from quoted market prices of the assets they hold.

Such quotes normally reflect standard trade sizes and prevailing market conditions. But a fund selling material amounts of less liquid assets in one day to meet redemption pressures could find itself receiving less than these quoted prices¹⁹.

Without other measures, redemptions from funds invested in less liquid assets can transfer economic value from remaining to redeeming investors. That could create an incentive to be on the side of the redeemers. It could create a first redeemer advantage.

This isn't much of an issue for funds invested in liquid equity markets, where large amounts can be sold at quoted prices at short notice. But for funds investing in corporate bonds and even less liquid assets, it could be. So perhaps it should be no surprise that funds holding corporate bonds see redemptions that are seven times more sensitive to price moves than in equity funds and twice as sensitive as in sovereign bond funds²⁰ (Slide 13).

Fortunately – as many of you know – there are normally other measures in place, from swing pricing and dilution levies to gates and suspensions. But, in a severe market stress it is not at all clear that such measures can be

calibrated with the necessary precision or (to echo Jon Cunliffe) *“whether their activation would dampen or amplify redemption pressures across the market generally”*.

Moreover, the impact of greater selling pressure under stress could be magnified by the coincident decline in corporate bond market liquidity more generally.

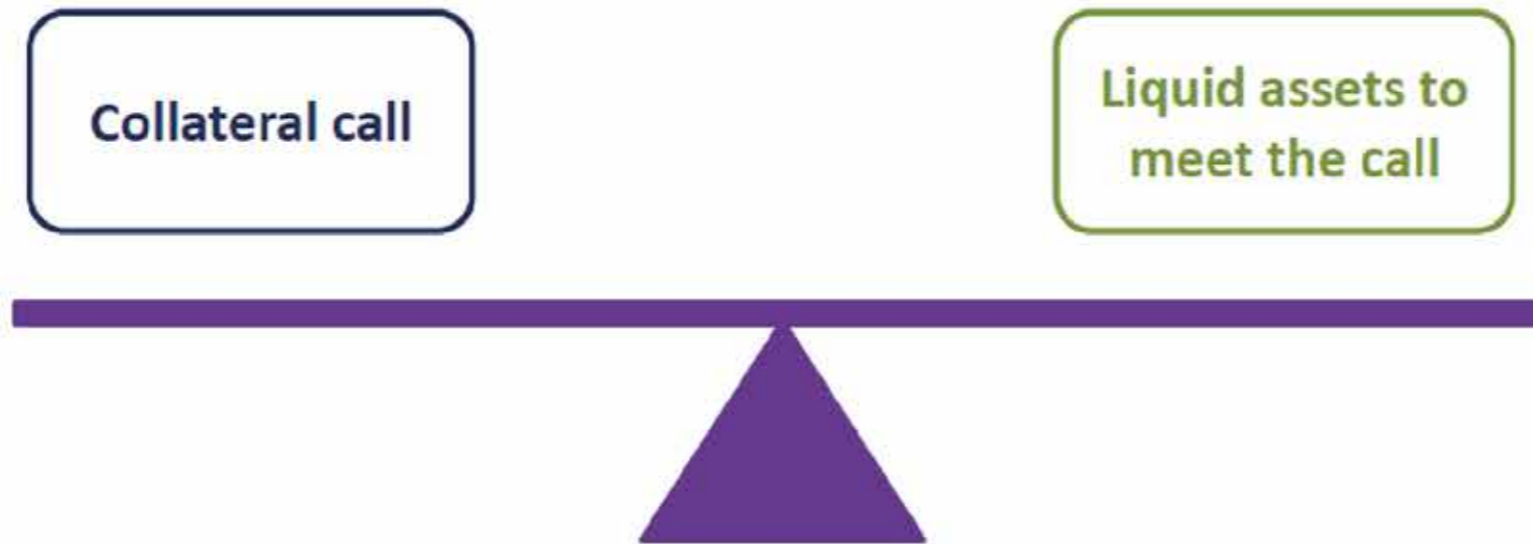
Market-makers have become less active in their market making. Our analysis suggests that, in response to asset sales by high-yield bond funds, the extent to which dealers are willing to see their inventories of corporate bonds increase has shrunk by a factor of about seven²¹ (Slide 14).

The flipside is that market prices respond twice as much to asset sales as they did, in order to draw in other buyers in a short timeframe²². As with derivatives and collateral, we need better diagnostic tools to assess these risks (Slide 15). That’s why we’re investing in simulation models to test what it would take for there to be material market impacts.

Our work here explores the depths of how open-ended funds, hedge funds, dealers, insurance companies, unit-linked funds and pension funds might, through responding separately to their incentives and constraints, together amplify market shocks. These are only simulations and the work is still at the development stage.

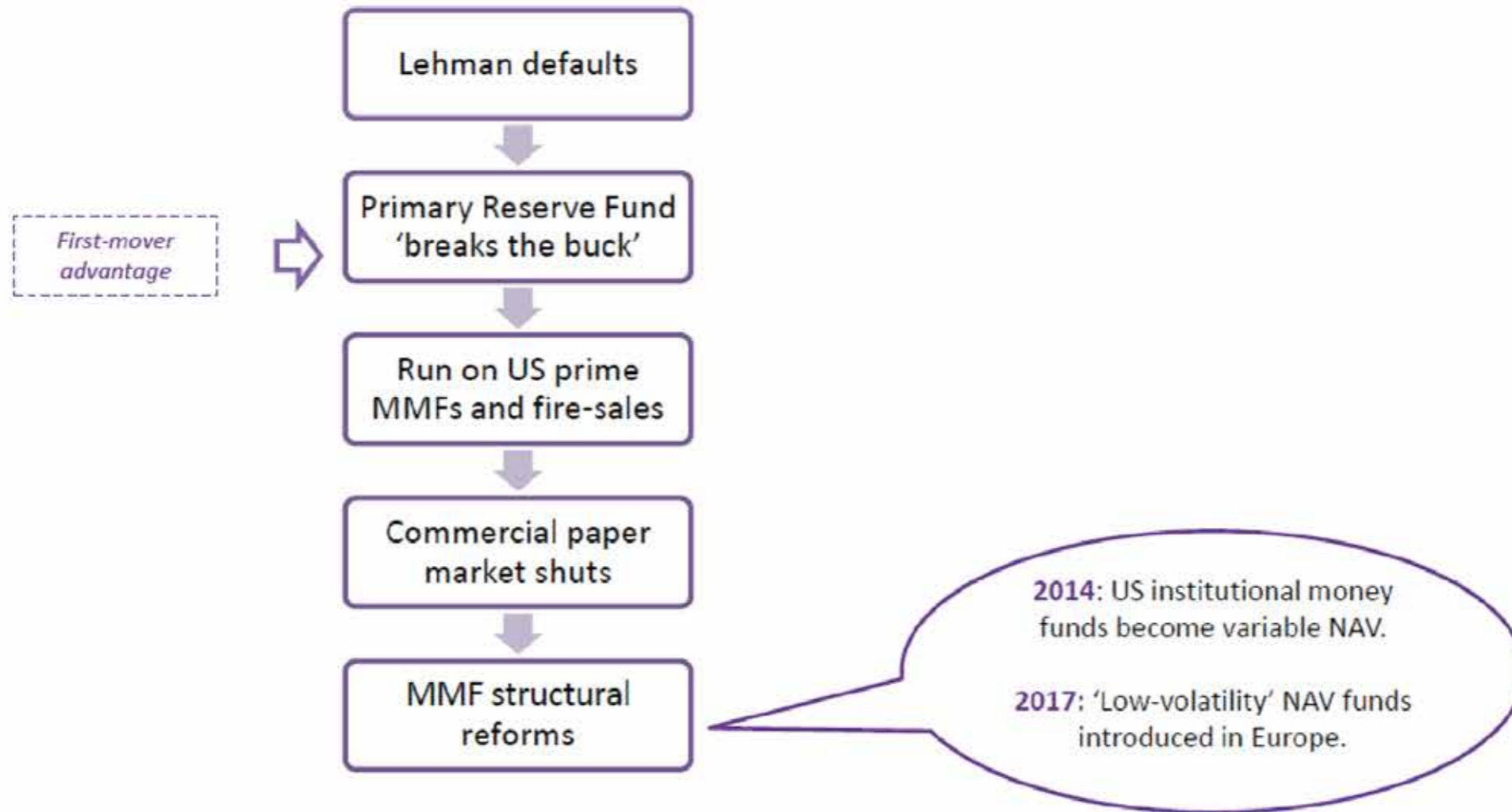
None of the developments I have listed is conclusive of a problem but we have a duty to take the possibility seriously. With markets and funds having evolved so much, the absence of problems in the past is no guarantee for the future. There is enough here to be of concern not just to investors but also the wider economy and macroprudential authorities.

Need for diagnostic tools I: collateral calls



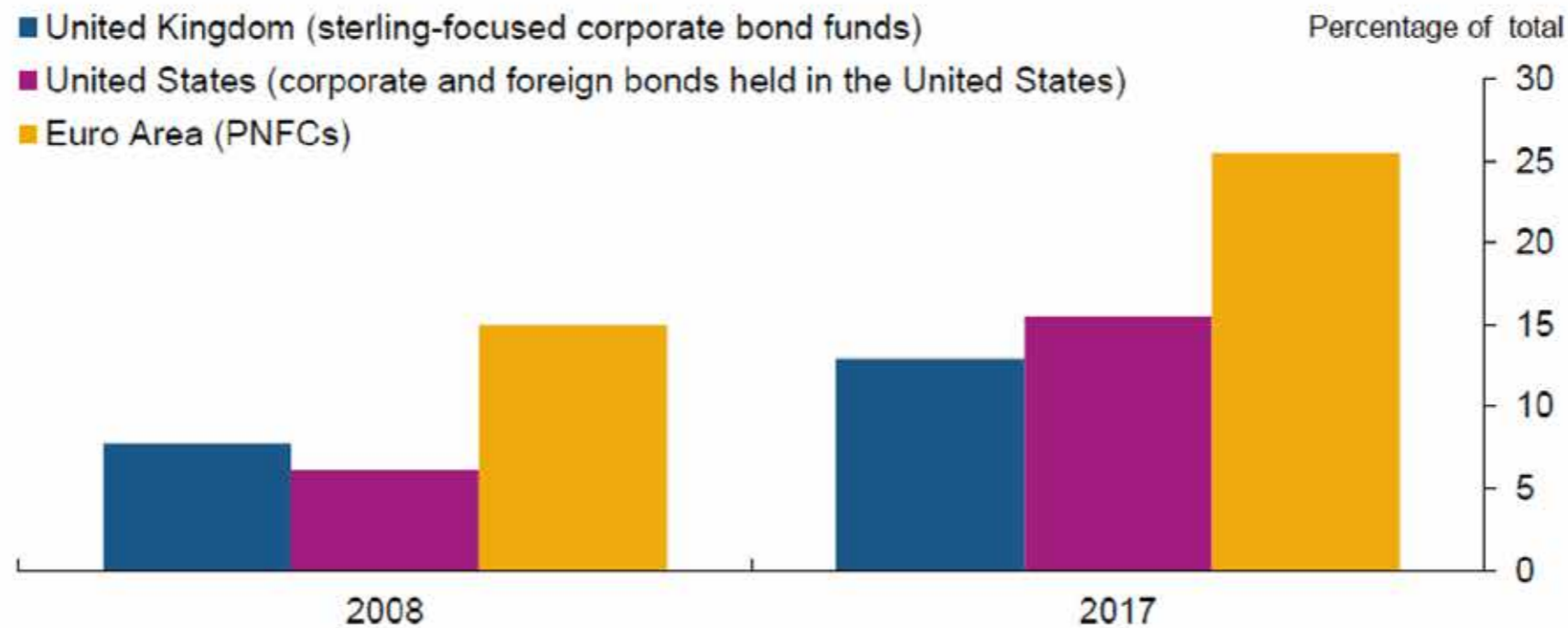
Slide 11

In 2008, a run on money market funds. Now reformed.



Increasing share of corporate bonds held in open-ended funds

Funds' holdings of corporate bonds



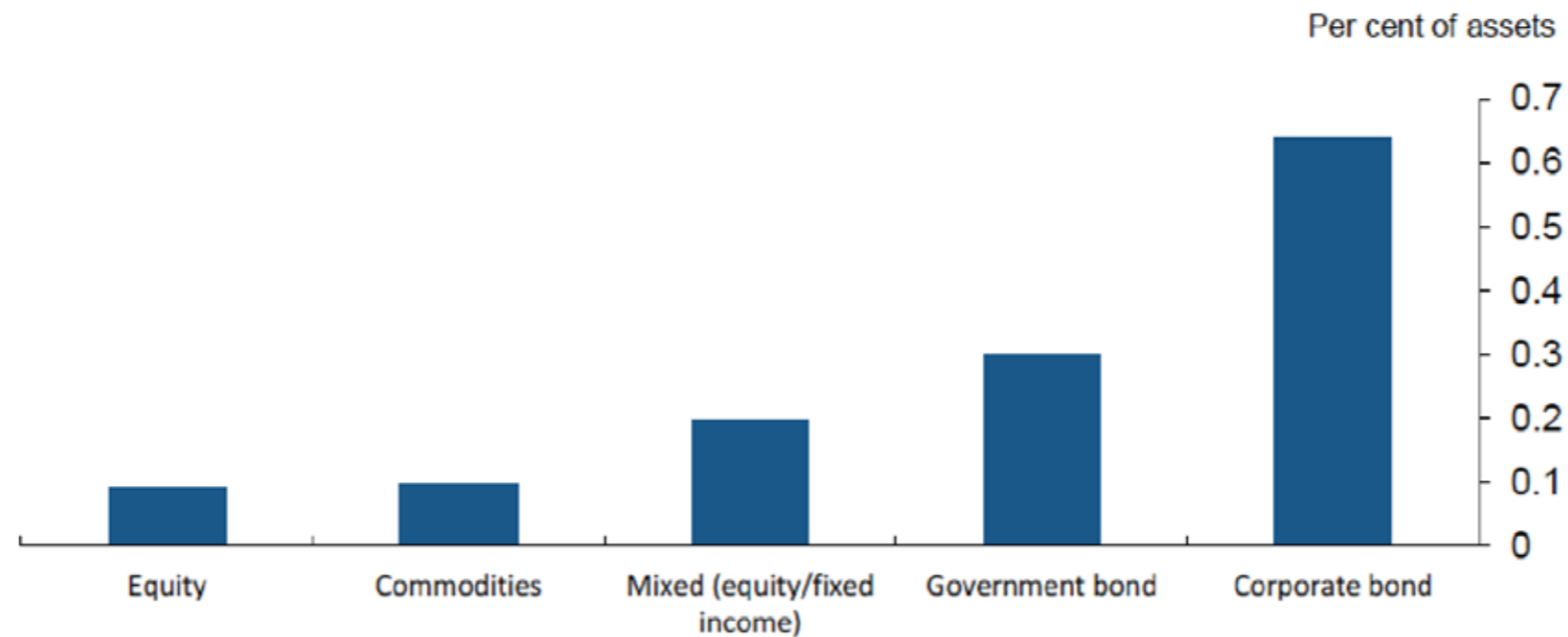
Sources: Bank of England, Thomson One, ECB, Federal Reserve, Morningstar and Bank calculations.

Note: United Kingdom: sterling corporate bond funds (open-ended and ETFs) total net assets as a share of all outstanding sterling corporate bonds. United States: mutual funds' holdings of corporate and foreign bonds as a share of all outstanding corporate and foreign bonds. Euro Area: euro-area open-ended holdings of bonds issued by euro-area non-financial corporations as a share of total. United Kingdom data until July 2017. United States data until Q1 2017. Euro Area data until Q2 2017.

Slide 13

Open-ended funds are much safer. But could there be a more subtle first-redeemer advantage?

Fund redemptions following 1% fall in asset value

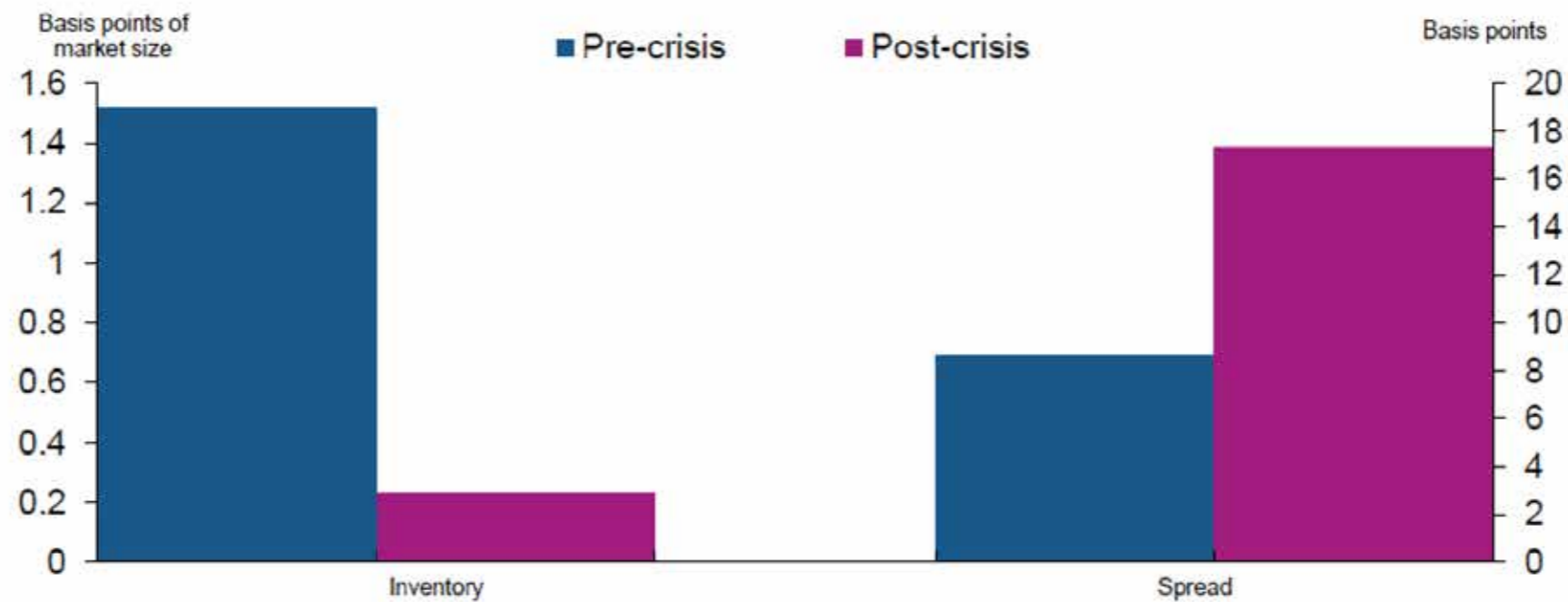


Sources: Morningstar and Bank calculations.

Note: These estimates are for European-domiciled open-ended funds, excluding ETFs, MMFs and funds of funds.

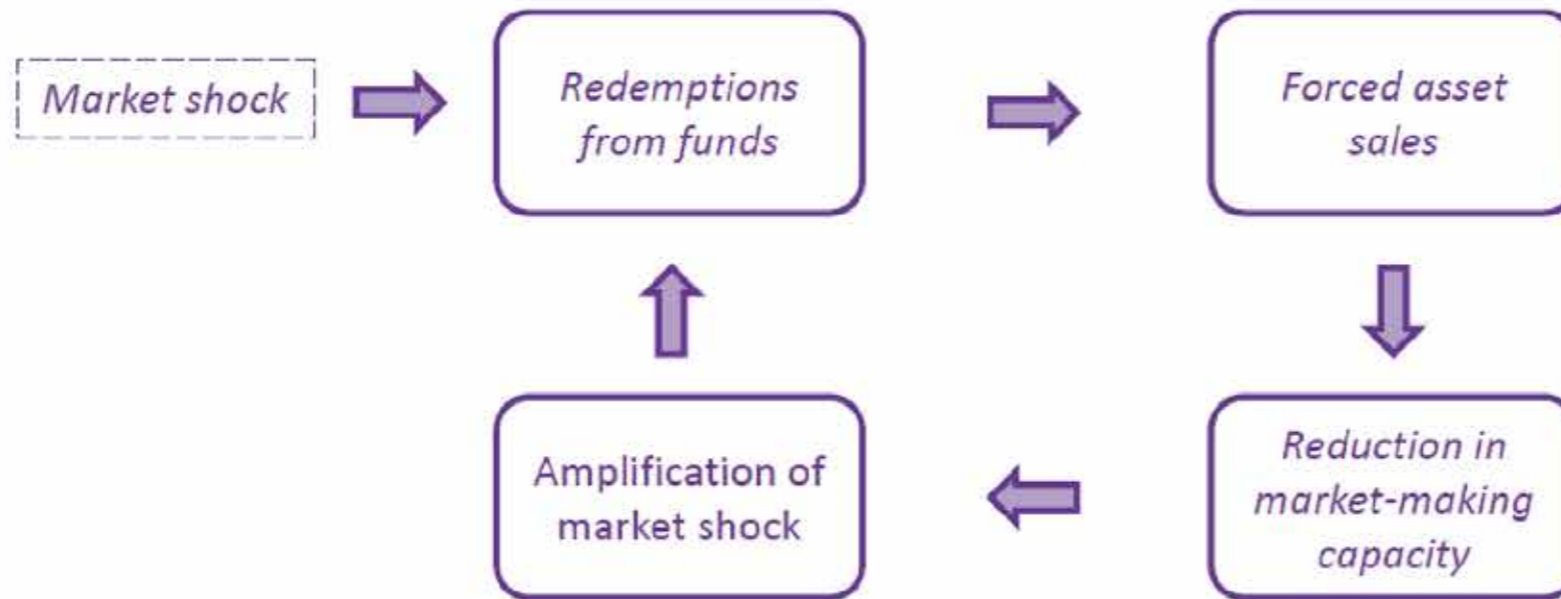
At same time, dealers have become less active in market making

Dealers' response to high-yield bond sales



Sources: BofA Merrill Lynch Global Research, Dealogic, EPFR Global, Federal Reserve Bank of New York, SIFMA and Bank calculations.
Note: Response (at 1 week) of US dollar-denominated high-yield corporate bond spreads and US primary dealers' inventory in these securities to a one standard deviation decline in asset manager demand (of the pre-crisis period). Based on the SVAR model. Pre-crisis refers to 2004-2006, post-crisis refers to 2012 - February 2015.

Need for diagnostic tools II: System simulations



Baranova, Y., et al. (2017), 'Simulating stress across the financial system: the resilience of corporate bond markets and the role of investment funds', Bank of England Financial Stability Paper, no. 42, (July)

I'll allow you now to re-surface and decompress. But rest assured, we'll be diving again to keep track of any new icebergs developing below the surface that could one day compromise the resilience of markets. Just as we'll be working to ensure the moonwalking bears do not disrupt the wider economy. So that market finance can continue to deliver for the economy in bad times, as well as a good. ■

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Endnotes

1. *The circumstances in which financial markets can affect the real economy were covered in my speech: 'Market finance and financial stability: will the stretch cause a strain?' (February 2018).*
2. *That confidence is also apparent in measures of interest rate volatility implied by options and in the pricing of credit default swaps.*
3. *These model assessments are submitted to Credit Benchmark, to whom I am grateful for permission to use the data (www.creditbenchmark.com)*
4. *This measure adjusts for changes over time in the typical credit rating and duration of the basket of bonds. Credit ratings have on average fallen and duration has increased in recent years.*
5. *See, for instance, Haldane, A, et al, (2016), 'QE: the story so far', Bank of England Staff Working Paper, no. 624, October, and references therein.*
6. *Paragraph 5 of 'Record of the Financial Policy Committee Meeting on 12 March 2018', available [here](#).*
7. *See Chart 11 in Deloitte (2018), 'The Deloitte CFO Survey Q1 2018', available [here](#).*
8. *Leveraged loans are loans to companies that typically display some of the following characteristics: high levels of indebtedness, a non-investment grade credit rating or ownership by a private equity sponsor. The latter is defined as*

bonds rated below investment grade.

9. See paragraph 17 of 'Record of the Financial Policy Committee Meeting on 12 March 2018', available [here](#).

10. The test included a sharp adjustment in corporate credit markets and commercial property markets. Sterling investment grade corporate bond yields were assumed to snap up almost 800bps as long-term gilt yields rose by over 500bps and credit spreads blew out.

11. International Monetary Fund (2018), 'Global Financial Stability Report' (April).

12. Cunliffe, C (2018), 'Market-based finance: a macroprudential view', Asset Management Derivatives Forum, Dana Point, California, February, available [here](#).

13. McDonald, R and Paulson, A (2014), 'AIG in Hindsight', Federal Reserve Bank of Chicago Working Paper, no. 2014-07, October.

14. This is an example of how concentrating risk in a network can actually reduce aggregate risk. See Financial Stability Report, November 2017.

15. For centrally cleared derivatives that requirement is in place today. Requirements for margin on uncleared derivatives are currently being introduced and will be completed by 2020.

16. Carney, M (2013), 'The UK at the heart of a renewed globalisation', available [here](#).

17. Even a user of derivatives to hedge another exposure – and thus having limited 'VaR' – could find themselves with significant 'CaR'. It is the potential mismatch in liquidity, between the collateral called for and the assets held that is a source of firesale risk. In addition, as the IMF reports for a sample of funds, the majority of derivative exposures are entered into in order to boost returns rather than hedge existing risks. This would boost both VaR and CaR.

18. In the US, structural reforms in 2014 preserved 'constant NAV' status for institutional funds only where they invest in government bonds. Any fund offering constant NAV much have the ability to implement a redemption liquidity fee and gates during times of stress. In Europe, reforms of 2017 preserved constant NAV for funds invested in sovereign securities.

19. As part of its Financial Sector Assessment Programme for Ireland, the IMF estimated that it could take a high-yield credit fund up to three days to meet redemptions worth 10% of its assets. To ensure redeeming investors would not

benefit at the expense of remaining investors, the fund manager would need to know exactly how much selling three days' worth of assets in one day would move the price and adjust its quoted NAV accordingly, which is highly uncertain.

20. Baranova, Y, et al. (2017), 'Simulating stress across the financial system: the resilience of corporate bond markets and the role of investment funds', Bank of England Financial Stability Paper, no. 42, (July)

21. Baranova, Y, et al, (2015), 'Has corporate bond market liquidity fallen?', Bank Underground, available [here](#).

22. See the December 2015 edition of the Financial Stability Report issued by the Bank of England. Also see 'Has corporate bond market liquidity fallen?'

This article based on a [speech](#) delivered at the London Business School Asset Management Conference 2018, Thursday 26 April. I am grateful to Yuliya Baranova, Johnny Elliot, Dan Gray, Sonal Patel, James Smith and Nick Vause for their assistance with preparing the speech and accompanying slides.

This speech draws heavily on:

Brazier, A (2018), 'Market finance and financial stability: will the stretch cause a strain', Brevan Howard Centre for Financial Analysis, Imperial College Business School, London, February, available [here](#);

Cunliffe, J (2018), 'Market-based finance: a macroprudential view', Asset Management Derivatives Forum, Dana Point, California, February, available [here](#).

Tight monetary policy is not the answer to weak productivity growth

Policymakers must now address the legacies of the Global Crisis through innovation, education policies, and structural reforms, argue Maurice Obstfeld and Romain Duval

The widespread and persistent productivity slowdown witnessed since the Global Crisis had already begun in advanced and low-income countries prior to the crisis. This column argues that the crisis amplified the slowdown by creating 'productivity hysteresis', and that monetary policy played an ambiguous role. Policymakers must now address the legacies of the crisis through innovation, education policies, and structural reforms.

The current cyclical upswing should not obscure the widespread and persistent productivity slowdown we have seen across advanced, emerging, and low-income countries alike since the Global Crisis. Despite all the talk and hopes of a productivity revival driven by ongoing technological breakthroughs, between the 2000–2007 and 2011–2016 periods, total factor productivity (TFP) growth dropped from 1 to 0.3% in advanced economies and from 2.8 to 1.3% in emerging and developing economies¹. These numbers leave out the 2008–10 crisis period, during which productivity naturally plummeted. For advanced and low-income countries, the sharp deceleration in TFP occurred on the back of a slowdown that had already started prior to the crisis.

If sustained, low productivity growth would have profound, adverse implications for progress in global living standards, the sustainability of private and public debts, and the space for macroeconomic policies to respond to future shocks. In conditions of high income inequality, low growth also undermines social cohesion, with adverse political repercussions.

At least some of the post-crisis productivity slowdown seems to be rooted in the crisis itself, but we still fail to grasp fully what precise features of the crisis and its aftermath are most relevant. Was it the financial shock itself? The exceptional financial and monetary policy measures that followed? Both? Other factors? And does the answer to this question imply different policy prescriptions, including for monetary policies?

With these questions in mind, this column addresses three key issues:

1. What are the main drivers of the productivity slowdown in advanced economies?
2. Has monetary policy played a role in the productivity slowdown?
3. What are the implications, if any, for the conduct of monetary and other policies going forward?

The discussion is restricted to advanced economies because the prospects for emerging market and low-income countries are diverse and for some, weakness in commodity export prices plays a dominant role. To preview the conclusions, we see three key messages:

- While the productivity slowdown is largely a secular phenomenon, the financial crisis amplified it by creating ‘productivity hysteresis’ through long-lived adverse effects on credit conditions, aggregate demand, economic uncertainty, and investment. The good news is that these crisis-related headwinds may now be gradually dissipating, including in Europe where they had been most powerful. The bad news is that the underlying structural headwinds remain, making it challenging to return to even the modest productivity growth rates of the pre-crisis period.
- Monetary policies have probably had unintended side effects on the recent productivity growth experience, but the magnitude and sign of these are unclear – in fact, these unintended consequences may well add up to a positive overall effect. This ambiguity reflects the multiple, often conflicting channels through which such policies may impact productivity.

- Even *if* certain features of monetary policies, such as very low interest rates maintained for long periods, turn out to have exerted a drag on productivity growth, this finding would not be enough on its own to show that central banks should alter the courses of their monetary policies. Such negative side effects must be weighed against the other, beneficial effects of an accommodative monetary stance in a prolonged downturn. The arguments involved bear similarities to the terms of the debate over whether financial stability risks from ultra-accommodative monetary policies provide a sufficient case for earlier normalisation. If financial factors are pulling down productivity growth, the best approach is to address those financial factors directly – in the

There is a wide range of actions policymakers in advanced economies should be taking to help revive productivity growth – from addressing the remaining legacies of the crisis through innovation and education policies to structural reforms

case of Europe, through measures to strengthen banking systems and facilitate corporate restructuring – rather than to normalise monetary policy prematurely.

What are the main drivers of the productivity slowdown?

The productivity slowdown is undoubtedly, and mainly, a secular phenomenon that predated the crisis. The bulk of the literature has understandably focused upon this fact. Basically, beyond old and new discussions about productivity growth (mis)measurement, there has been a growing debate about whether innovation, technological diffusion, or both have fallen, and if so, what might underlie their deterioration.

At the same time, the abruptness and magnitude of the productivity slowdown after the crisis cautions against blaming low productivity growth solely on such slow-moving forces, and calls for complementary, crisis-related explanations.

Our recent work at the IMF shows that, as in previous deep recessions, the aftermath of the Global Crisis has displayed productivity hysteresis for at least three interrelated reasons (Adler *et al.* 2017):

- Weak corporate balance sheets, combined with persistently tight credit conditions for a large fraction of firms, have undermined TFP growth, partly by constraining investment in intangible assets by distressed firms (Duval *et al.* 2017, Dell’Ariccia *et al.* 2017).
- Despite extraordinary policy stimulus, aggregate demand remained sluggish for close to a decade, inhibiting investment. This in turn can weaken the pace of technological change by discouraging investment in new equipment, and can trigger an adverse feedback loop under which weak demand and weak supply feed each other.

- Elevated economic and policy uncertainty plus higher risk aversion in the wake of the crisis may have further attenuated TFP growth, partly by tilting investment away from higher-risk, higher-return projects.

Note that all three crisis legacies have been less severe in the US than in Europe, where the clean-up of bank and corporate balance sheets has been slower, slack more persistent, and policy uncertainty more elevated, partly reflecting doubts raised about the future of the eurozone during the sovereign debt crisis. Thus, it is no coincidence that the post-crisis productivity slowdown has been sharper in Europe than in the US, where it pre-dates – and was in fact not aggravated by – the crisis (Fernald *et al.* 2017).

In some advanced countries, particularly in some parts of Europe, the Global Crisis might have also led weak banks to gamble for a recovery by ‘evergreening’ loans to weak firms and delaying the recognition of loan losses and the need to raise capital. Together, these forces may have fostered the emergence of so-called ‘zombie firms’ – firms with persistently weak profitability or even losses – reminiscent of Japan’s experience in the 1990s (Caballero *et al.* 2008). There has indeed been evidence of a rising share of zombie firms, with adverse effects on the allocation of capital and investment and productivity growth of non-zombie firms, between the late 2000s and the mid-2010s (Adalet McGowan *et al.* 2017).

Has accommodative monetary policy played a role?

What has been the role of monetary policies throughout the post-crisis period? The aggressive monetary policy response to the crisis arguably supported productivity by easing credit conditions and softening the blow to investment, mitigating hysteresis. Monetary accommodation using conventional and unconventional tools facilitated access to credit by viable but vulnerable firms, helping them to finance their working capital or to make productivity-enhancing investments in intangibles. And more broadly, monetary ease alleviated an even larger drop in aggregate demand and investment that might have further hurt capital-embodied technological progress.

There may, however, be other, offsetting channels. One open question is whether the sustained accommodative monetary policy stance, where policy rates have been very low for almost a decade, has weakened productivity growth through other mechanisms, not least by increasing the misallocation of capital across firms or industries. In theory, a decline in the interest rate renders more projects profitable and incentivises *all* firms to invest more. But in the presence of financial market imperfections, only the non-credit-constrained firms will be able to respond to lower borrowing costs and increase their capital stocks to the desired levels, while the credit-constrained ones will be able to do so only gradually as they accumulate sufficient internal funds.

This asymmetry can result in too much capital being allocated to the former and too little to the latter, leading to a rising dispersion in the marginal product of capital across firms (Midrigan and Xu 2014). Such rising dispersion was indeed observed in many southern European countries already prior to the crisis, consistent with the sharp decline of interest rates they experienced after the inception of the Economic and Monetary Union, and the greater pervasiveness of credit constraints facing firms in these economies (Gopinath *et al.* 2017).

A related concern, for the post-crisis period, is that easy monetary conditions may have amplified the zombie firm phenomenon by making it easier for weak banks to evergreen loans and for weak firms to borrow their way into staying alive, with potential implications not only for aggregate productivity but also for financial stability.

Moreover, elevated asset prices, notably of housing, may draw resources into sectors like construction where TFP growth is slow. While this channel may have been at work in some eurozone members during the pre-crisis credit boom (Giavazzi and Spaventa 2011), its more general applicability is less clear.

While this area is an important and unsettled one for research, at least two observations cast doubt on the proposition that a monetary policy-driven rise in capital misallocation has been a major drag on productivity growth for advanced economies as a group:

- First, there does not appear to be a widespread rise in capital misallocation across advanced economies². In many northern European countries, for example, simple measures of capital misallocation based on the dispersion in marginal products of capital across firms typically show no noticeable increase since the crisis, and a rather mixed picture prior to the crisis (Gopinath *et al.* 2017, Gamberoni *et al.* 2016).

Likewise, there does not seem to be a broad-based rise in the share of capital sunk in zombie firms. This cross-country heterogeneity in capital misallocation trends is not suggestive of an important common driver like ECB monetary policy. Instead, country-specific causes interacting with the cycle and policies are more likely – for example, insufficient consolidation of bank balance sheets combined with weak bank and corporate insolvency regimes may enable misallocation to linger for longer under easier credit conditions. And even in Southern Europe, it may well be that the share of zombie firms is now receding thanks to the economic recovery – we cannot know for sure for lack of comprehensive firm-level data covering the most recent years. But the recovery, in turn, surely owes much to continued monetary accommodation.

- Second, partly related to the last point, the potential productivity gains from resolving zombie firms and fully reallocating their resources to non-zombie firms may not be that large, at least in comparison to the cumulative productivity loss we have seen since the crisis. For example, a very careful recent OECD study puts the potential one-off TFP level gain at about 0.6%, applying a broad definition of zombie firms for the year 2013 – in the immediate aftermath of the peak of the Eurozone Crisis – and assuming a costless reallocation of resources (Adalet McGowan *et al.* 2017).

This study does not factor in all the relevant channels through which zombie firms might weaken aggregate productivity³. Still, to put numbers in perspective, 0.6% is about one year of the TFP losses that advanced economies have been incurring each year since 2010 relative to the pre-crisis trend. And of course, it remains to be seen what share of this potential gain could be reaped through monetary policy action alone.

What are the implications for monetary and other policies going forward?

This brings us to the issue of whether the possible side effects of ultra-accommodative monetary policy on productivity argue for an earlier normalisation than would be the case otherwise. Based on the current state of our knowledge, we believe the answer is no for three reasons:

- The optimal policy response to any misallocation driven by market and policy failures is to directly address the underlying failures. Regarding zombie lending to zombie firms in parts of Europe, for example, this approach would mean more robust banking sector supervision with enhanced loan loss provisioning; an improved bank resolution regime to enable a speedier and less disruptive consolidation of weak banks; deeper and more developed distressed debt markets; and the reform of insolvency regimes to help facilitate corporate restructuring (Aiyar *et al.* 2015).

Further progress on these fronts beyond what has already been achieved would encourage fresh corporate investment and improve the allocation of capital, funnelling it away from low-productivity firms and into the hands of young and vibrant companies. In Japan, for example, capital injections into banks in the late 1990s were 'too little too late,' and it was not until banks were forced to recognise losses that the zombie firm problem started receding.

- Even if such instruments cannot be fully deployed or remain imperfect, it is unclear whether (a complementary) monetary tightening would pass a cost-benefit test. Such tightening would need to be rather significant to force the restructuring or exit of weak firms. As we have argued, the implied productivity gains would be unclear, and typically small – including for the eurozone as a whole. The costs, instead, are clear and large – they would include sizable output and job losses, delayed prospects of bringing inflation back to target and, therefore, weaker central bank credibility. A simple back-of-the-envelope calculation by

Bank of England Chief Economist Andy Haldane sums it up well. He estimates that had the Bank's policy rate been maintained at 4.25% rather than 0.25%, productivity levels might have been 1 to 2% higher by 2014 - leaving aside possible sources of losses such as from weaker investment in both tangible and intangible capital – but there would have been 1.5 million fewer jobs, representing about 5% of total UK employment (Haldane 2017).

- Finally, even if one were to conclude that monetary policy should take account of productivity side-effects, it is quite unclear how one might operationalise such an approach in quantitative terms. That uncertainty would raise the risk of significant volatility in inflation expectations.

There is a parallel between this discussion and the debate over whether financial stability risks from ultra-accommodative monetary policy warrant 'leaning against the wind.' Here again, based on our current knowledge, the case for leaning against the wind seems weak in most circumstances, for familiar reasons. There are better targeted policy tools to address financial stability risks (both micro and macroprudential policies) and the degree of tightening required would likely be significant, with uncertain gains in terms of a reduced likelihood of a future crisis, but an immediate cost of large output and job losses (IMF 2015).

The current cyclical upswing presents an ideal opportunity for policymakers to consider how best to support future prosperity. There is a wide range of actions policymakers in advanced economies should be taking to help revive productivity growth – from addressing the remaining legacies of the crisis through innovation and education policies to structural reforms. Premature monetary policy normalisation is not among them. ■

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Endnotes

1. Calculations using Penn World Table version 9.0. Other sources yield qualitatively similar patterns.
2. This observation need not imply, of course, that the level of capital misallocation was small to start with. Indeed, a voluminous literature has documented long-standing capital misallocation in many economies and explored its structural drivers, including, for example, market imperfections and policy distortions (for a review, see eg. Restuccia and Rogerson 2017).
3. One possibly significant omitted channel is the hard-to-measure adverse impact of the pervasiveness of zombie firms on the entry of young innovative firms and the associated pressure on incumbent firms to restructure and innovate.

References

- Adalet McGowan, M, D Andrews and V Millot (2017), "The walking dead: Zombie firms and productivity performance in OECD countries", OECD, Economics Department Working Paper no 1372.
- Adler, G, R Duval, D Furceri, S Kilic Celik, K Koloskova, and M Poplawski-Ribeiro (2017), "Gone with the headwinds: Global productivity", IMF, Staff Discussion Note no 17/04.
- Aiyar, S, W Bergthaler, J Garrido, A Ilyina, A Jobst, K Kang, D Kovtun, Y Liu, D Monaghan and M Moretti (2015), "A strategy for resolving Europe's problem loans", IMF, Staff Discussion Note no 15/19.
- Caballero, R, T Hoshi and A Kashyap (2008), "Zombie lending and depressed restructuring in Japan", American Economic Review 98(5): 1943-1977.
- Dell'Ariccia, G, D Kadyrzhanova, C Minoiu and L Ratnovski (2017), "Bank lending in the knowledge economy", IMF, Working Paper no 17/234.

Duval, R, GH Hong and Y Timmer (2017), "Financial frictions and the Great Productivity Slowdown", IMF, Working Paper no 17/129.

Fernald, J, R Hall, J Stock and M Watson (2017), "The slow recovery of output after 2009", NBER, Working Paper no 23543.

Gamberoni, E, P Lopez-Garcia and C Giordano (2016), "Capital and labour (mis)allocation in the Euro Area: Some stylised facts and determinants", ECB, Working Paper no 1981.

Giavazzi, F and L Spaventa (2011), "Why the current account matters in a monetary union: Lessons from the financial crisis in the Euro Area", In D Cobham (ed), *The Euro Area and the Financial Crisis*, Cambridge, UK: Cambridge University Press.

Gopinath, G, S Kalemli-Özcan, L Karabarbounis and C Villegas-Sanchez (2017), "Capital allocation and productivity in South Europe", *Quarterly Journal of Economics* 132(4): 1915-1967.

Haldane, A (2017), "Productivity puzzles", Speech given at the London School of Economics, 20 March.

IMF (2015), "Monetary policy and financial stability", Staff Report, September.

Midrigan, V and D Xu (2014), "Finance and misallocation: Evidence from plant-level data", *American Economic Review* 104(2): 422-458.

Restuccia, D and R Rogerson (2017), "The causes and costs of misallocation", *Journal of Economic Perspectives* 31(3): 151-174.

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Building a resilient Economic and Monetary Union

Luis de Guindos urges authorities to complete reforms,
focusing on reducing and sharing risk across borders
and completing the banking union

The crisis, its aftermath and the road to recovery

This autumn marks ten years since the start of the global financial crisis. It was a seismic event that laid bare a number of weaknesses in the international financial system – and in the oversight of that system. In its wake, it also revealed profound shortcomings in the architecture of Economic and Monetary Union (EMU) which, ultimately, resulted in the global financial crisis morphing into a euro area crisis – and pushing many parts of Europe into a second recession.

Thankfully, the experiences of the past decade have prompted a strengthening of the regulations and the establishment of institutions with the necessary instruments to ensure stability. At global level this took the form of stronger regulation and cross-border cooperation. At European level, it meant a multi-dimensional reform of EMU: financial, fiscal, economic and even political. As a result, and supported by the ECB's monetary policy, the euro area returned to growth in 2013, and has created more than nine million jobs since then.

We have come a long way. But there can be little doubt that we are still feeling the effects of the crisis and are still addressing some of the underlying fault lines. It's an important task, but it seems that it is no longer being pursued with the same sense of urgency. I want to highlight areas where we need to continue to push forward and put EMU on a more sustainable footing. After briefly reviewing the progress already made, I will argue that the current debate on deepening our monetary union requires three main elements to ensure the long-term viability of the European project.

First, we need to remain ambitious in completing the banking union so as to safeguard financial stability. Second, we need to revamp our fiscal rules and create a stabilisation instrument to enhance the resilience of the monetary union as a whole. Third, we need to bolster long-term economic growth by implementing structural reforms and harnessing the potential of Europe's Single Market.

Responding to, and learning from, the crisis

In order to get a clearer idea of the next steps it's worth briefly reviewing those that were taken to overcome the crisis. The first part of the response – which was both global and European – entailed immediate crisis-fighting measures. Facing unprecedented turbulence in the financial sector, governments in the G20 signalled their commitment to working together and coordinating their financial and fiscal policies. And they provided substantial state support to stabilise the banking sector and protect deposits.

... the current debate on deepening our monetary union requires three main elements to ensure the long-term viability of the European project

Central banks also played a key role in responding to the instability in the system, including by adopting numerous non-standard measures. The ECB started by providing the necessary short-term liquidity in the form of fixed-rate full allotments, extending longer-term liquidity facilities, and expanding its collateral framework to maintain the transmission of monetary policy throughout the euro area. It also launched an asset purchase programme to bring the economy onto a path of inflation leading back to price stability.

Crucially, the action of the central banks was based on the understanding that, without financial stability, central banks are devoid of the necessary basis to transmit monetary impulses to the real economy. The second crisis-fighting measure was a forceful regulatory response to enhance banks' resilience. This started with a reform of the existing international rules agreed in Basel which, in particular, led banks to increase their levels of capital and liquidity.

To limit the damage in the event of another crisis and contain the costs for sovereigns, we introduced resolution frameworks including bail-in tools. The Banking Recovery and Resolution Directive (BRRD), in force since 2016, is a crucial regulatory change in Europe that ends the culture of bailouts by the public sector, and introduces the culture of bail-ins. Banks' capacity to absorb losses has been enhanced, with minimum requirement for own funds and eligible liabilities (MREL) being set at EU level, and total loss-absorbing capacity (TLAC) for large banks being set at global level. These new rules aim to ensure that banks can fail and be resolved in an orderly fashion, and to shift the burden of crisis resolution from taxpayers to private creditors.

The crisis also shattered the mistaken belief that an exclusive focus on price stability and the soundness of individual institutions would be sufficient to safeguard financial stability. That's why we expanded the policy toolkit to include instruments designed to address any build-up of imbalances in certain parts of the system, leading to the birth of macroprudential policy.

Concretely, this means we now have instruments which can be deployed at national, sectoral or bank level in a targeted way. For example, authorities can require banks to build up a countercyclical capital buffer in good times so that they can weather bad times. They can also impose additional requirements on banks to address risks arising in sectors such as the real estate market.

The third part of the response to the crisis was unique to Europe – setting up new institutions and frameworks. Key to this was the realisation that the long-term viability of EMU needed a comprehensive approach to address its weaknesses, not a quick fix.

On the financial union side, Europe decided to safeguard financial stability by transferring responsibility for banking supervision to the European level. The European supervisory authorities were set up to make sure that the newly created single rulebook would be uniformly applied across the EU. The establishment of the banking union with a single supervisor in the euro area further ensures that banks in the euro area operate under equal conditions regardless of their location, as the ECB seeks to implement common high standards of supervision, foster a level playing field and promote financial integration.

But common supervision was always just one piece of the puzzle. Indeed, the establishment of the Single Resolution Mechanism as the second pillar of the banking union addressed the lack of mechanisms to deal with the failure of cross-border and of significant banks.

Also as regards fiscal and economic policies, the Union drew the lessons from the crisis and strengthened its frameworks. The Stability and Growth Pact was revised and reinforced by the fiscal compact. And the macroeconomic imbalance procedure was put in place to monitor and address the wide variety of economic imbalances that had fuelled the crisis.

Finally, the European Stability Mechanism was established to support countries that faced difficulties in accessing markets and to bring them back to a sustainable growth path. All in all, the different elements of the response ensured that the crisis was overcome and that the seeds for longer-term reforms were planted.

I wish I could stop here now and say all is fine. Unfortunately, I can't. As memories of the crisis start to fade, so does the sense of urgency which drove EMU's institutional reform. Further reforms are needed to ensure that integration in the banking and capital markets leads to better risk diversification, thus stabilising the financial sector and protecting the economy from any future economic shocks. And, at the same time, we need to work on the fiscal and economic governance to make sure that economic integration doesn't bring with it an increased risk of imbalances.

Completing the banking union with confidence-building measures

Instead of finalising the banking union to reap all its benefits, we have come to what seems to be a fork in the road, with some saying we should focus primarily on risk reduction, while others are emphasising the importance of risk sharing. Both approaches have valid arguments, and I would argue that both paths can be followed at the same time.

The advocates of risk reduction argue that the underlying vulnerabilities in the banking sector which triggered the crisis need to be forcefully tackled. In particular, there should be an assurance that the resources pooled at EU level in the banking union are not used to pay for the fallout of past policy mistakes.

And we have made progress on that front: banks are now more resilient due to their increased levels and quality of capital and liquidity buffers. MREL requirements are gradually being met, as envisaged. Progress in tackling legacy problems, such as the high levels of non-performing loans, is ongoing and should continue.

On the other hand, the advocates of risk sharing rightly argue that mechanisms are needed to build confidence in the resilience of the financial sector as a whole and that such measures are also indispensable to consolidate trust in the euro area.

Trust that, in turn, is vital to effectively reduce risks. Cases-in-point include the establishment of a credible backstop for the Single Resolution Fund (SRF) and of a European deposit insurance scheme (EDIS). Establishing a credible backstop for the SRF will instil confidence in the markets that resolution will happen in an orderly fashion, thus helping resolution authorities to perform their tasks while avoiding financial stability risks.

Similarly, a fully mutualised EDIS would contribute to making sure that bank failures do not trigger financial instability, as depositors will trust that their deposits are safe, regardless of the location of the bank in question. EDIS and the backstop for the SRF are thus not only risk-sharing but also confidence-building mechanisms contributing to risk reduction.

And to foster confidence that funds pooled in EDIS will not lead to systematic transfers between banking sectors, banks' contributions to the deposit insurance fund can be designed to reflect the relative riskiness of banks, following a polluter-pays principle. There are some who believe that public backstops should remain a national responsibility. But for both institutional and economic reasons this cannot be the answer.

Given the reality of the banking union, it would make little sense for national governments to individually backstop the financial sector without having the responsibility or tools for much of its supervision and resolution. Moreover, as long as national authorities are responsible for bearing the costs of crises, they will be inclined to keep resources within their borders, or ring-fence them, which in turn will undermine cross-border financial integration.

But also economically, the crisis demonstrated beyond a doubt how costly and difficult it is for national governments to manage banking crises that are ultimately international in origin and often beyond their control. Pooling of resources at European level to deal with the failure of cross-border and of significant banks is much more efficient.

Both EDIS and the backstop for the SRF would ultimately increase confidence and reduce the likelihood and the cost of a bank failure. Risk reduction and risk sharing should thus not be seen as contradictions. They complement each other and should thus move forward in parallel, reinforcing each other so as to achieve the common aim of a resilient euro area.

All in all, there cannot be a single 'risk reduction' indicator which would prove that we are 'safe' enough to complete the reforms of our monetary union. Similarly, there should be no false expectations that EDIS and the SRF backstop will firmly establish our Economic and Monetary Union in all its dimensions.

Revamping the fiscal rules and creating stabilising instruments to enhance EMU resilience

Private risk sharing through financial markets is essential to absorb shocks. But market-based adjustment cannot properly cope with large shocks, when the private sector as a whole contracts. In such a scenario, fiscal policies have to be activated to maintain stability, without over-burdening monetary policy. This, in turn, also ensures a stable macroeconomic environment for banks.

There can be no question that the top priority in this area is for national policymakers to build up fiscal buffers to ensure policy space for future downturns, just as bank supervisors now expect banks to build up capital buffers in good times. This is particularly important in countries where government debt is high and for which full adherence to the Stability and Growth Pact is critical for safeguarding sound fiscal positions.

But Europe has a role to play in reinforcing national fiscal policies. In contrast to the banking union, stronger integration in the fiscal realm did not result in the establishment of effective fiscal instruments and institutions at European level to ensure stability. That's why, as a second priority, work needs to continue on designing a more complete fiscal architecture.

Despite many reforms, the common fiscal rules that should deliver this outcome have lost traction. Europe, therefore, needs to regain faith in its fiscal rules by having a frank discussion on how to make them more effective and anti-cyclical.

The rules themselves will, however, not always be enough because sound domestic policies are not always enough. Markets do at times overreact and penalise sovereigns over and above what may be needed to restore a sustainable fiscal path. This is why there is also a need for public risk sharing through a stabilisation capacity.

Designing a stabilisation instrument for the euro area is neither straightforward nor easy. But that should not be an excuse for avoiding such a discussion and for taking concrete steps towards establishing it.

Proposals have already been put on the table, for example in the form of a fiscal capacity with a direct focus on stabilisation in the shape of investment protection or an unemployment insurance mechanism. Other suggestions refer to a common budget that can provide public goods through spending on joint investment projects or the broader political aims of the European Union, such as defence.

Regardless of the exact form, it is vital that any euro area fiscal instrument comes with powerful incentives to counteract moral hazard, avoid permanent transfers and ensure sound policymaking at national level.

Bolstering long-term growth through structural reforms and allocative efficiency

The elements I have discussed so far – notably, more stable financial integration and common fiscal instruments – can provide a shield against events that trap countries in downward spirals. Long-term economic growth, however, is ultimately derived from increased allocative efficiency and innovation, which can only be achieved by modernising the euro area's economies.

Looking at the last 15 to 20 years, euro area countries with sound economic structures from the outset have shown much higher long-term real growth and are more resilient. Some euro area countries adopted ambitious reforms during the crisis and they have also seen good results afterwards – and the full effects are still materialising.

Nevertheless, over the past five years, structural reform implementation in the euro area has overall been sluggish at best. Very few reforms identified at the European level have been substantially implemented in the last few years. Reversing this trend and putting our economy on a higher convergence trajectory is thus a priority.

As structural reforms remain essentially in the hands of national governments, those governments should be the first ones to step up their efforts. Nevertheless, European policies, if further developed, can be a significant catalyst and provide a strong engine for both growth and employment, in various ways.

First, there is scope for a better use of the EU's budget. The discussions on the 2021-27 multiannual financial framework offer a vital opportunity to enhance its role in addressing Europe's structural challenges.

Second, the Single Market as an engine for convergence should be used to its fullest potential. For consumers, the Single Market has already boosted competition in markets across the EU yielding large benefits for consumers. But

also on the supply side, the Single Market provides large productivity dividends by encouraging the integration of European value chains into global chains. These chains have resulted in higher wages at all skill levels.

How can these positive effects of the Single Market be further harnessed? For one, by completing it and expanding its reach into new policy areas, notably services. Services make up over 70% of total EU GDP but only 5% relate to cross-border services. Expanding the market will drive economic progress, to the further benefit of consumers, businesses and the economy as a whole.

Conclusion

We have gone a long way to repair the flaws in the financial, regulatory and supervisory framework which led to the crisis. We have taken bold steps to ensure that the euro is able to withstand future shocks.

Reform fatigue always sets in over time. After all, the first calls to reform the international banking rules were made directly after the crisis in 2008. This year, ten years on, we are finalising the last details of these reforms, which won't all be fully implemented until 2028, 20 years on! Similarly, the SRF is only being gradually built up and will not reach the target level until 2024, ten years after the implementation of the SRM Regulation. Reforms take time. But we should not stop now.

Minsky taught us that good times breed complacency, exuberance and optimism among market participants. They can also lead to complacency among public authorities. While we cannot say that we are completely out of the woods, economic growth in the euro area is currently solid and broad-based. Public authorities should not let this opportunity go to waste; they should urgently complete the reforms we initiated when the global financial crisis erupted in 2008.

This includes continuing on the path of reforms to reduce risks in the financial and public sectors. But importantly it also includes risk sharing – alongside risk reduction – across national borders: through integrated financial markets, a fully-fledged European deposit guarantee scheme and an incentive-compatible fiscal stabilisation function. If they are well designed, these elements can further speed up the reduction of risks in all domains.

This project is undoubtedly ambitious, but it is essential to build resilience to future shocks, foster stability and growth and improve the lives of the people of Europe. ■

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Endnotes

1. This choice addressed the “financial trilemma” identified by Dirk Schoenmaker, who wrote that the objectives of (i) financial stability, (ii) financial integration and (iii) national financial policies are incompatible. Any two of the three objectives can be combined, but not all three; one has to give. Dirk Schoenmaker (2011) “The financial trilemma” in *Economic Letters*, 111, pp. 57-9.
2. [Financial integration in Europe report](#), Special Feature A: Financial integration and risk sharing in a monetary union, ECB, 2016.
3. See Carmassi, J, Dobkowitz, S, Evrard, J, Parisi, L, Silva A and Wedow M, “Completing the Banking Union with a European Deposit Insurance Scheme: who is afraid of cross-subsidisation?”, ECB Occasional Paper Series No 208 (2018).
4. It does not help that some member states with high debt levels are engaging in fiscal loosening during the ongoing economic expansion. In doing so, they further undermine the credibility of the rules and erode mutual trust. But even countries that were once the rules’ staunchest champions are not advocating them so strongly now.

5. There is [evidence](#) demonstrating that the EU has stricter competition laws, less market concentration of firms and less money spent on lobbying than in the United States. This yields direct dividends for Europe's consumers. For example, it is estimated that US consumers would gain USD 65 billion a year if US mobile service prices were [in line with German ones](#).
6. European Parliament, "Understanding the Single Market for services", Briefing, September 2016.
7. The "[Principles for Sound Liquidity Risk Management and Supervision](#)" were published in September 2008.
8. The final agreement on the Basel III reforms foresees a phased-in implementation of the standardised output floor over five years between 2022 and 2027. Other elements of the agreement are foreseen to apply from January 2022 (see [press release](#)). Alongside the minimum regulatory requirements set out in the Basel III framework, large banks will be required to have at all times sufficient loss-absorbing and recapitalisation capacity available, as defined in the new standard on the adequacy of total loss-absorbing and recapitalisation capacity in resolution ('the TLAC standard'). The minimum requirements included in the TLAC standard will be phased in from 2019 (and fully applied in 2022), but large institutions headquartered in emerging market economies will be required to meet the full requirements by 1 January 2028 (see [press release](#)).
9. HP Minsky, *The Financial Instability Hypothesis*, Levy Economics Institute of Bard College, Working Paper No 74, May 1992.

This article is based on a [speech](#) delivered at the opening the XXIX Edition of the Masters Programme in European Union law of the University Carlos III of Madrid, 5 October 2018.

Past and future of the ECB monetary policy

Having developed its monetary policy through four key phases, the ECB is a modern and effective central bank, says Vítor Constâncio. He adds that it is equipped to continue to deliver on the priority of price stability for euro area citizens

would like to take this opportunity to adopt a historical perspective and offer some reflections on monetary policy in the euro area over the past two decades. I will start with a review of the ECB journey from 1999 to date, to highlight the evolution of the practice of monetary policy in the euro area over this period. I will then draw some lessons from this experience, both for economic thinking and monetary policy making.

The ECB journey

The Treaty on the European Union defines the contours of monetary policy in the euro area. According to Article 127 of the Treaty, price stability is the primary objective of monetary policy in the euro area. It is only without prejudice to the objective of price stability that monetary policy can support the general economic policies in the Union. This high-level mandate enshrined in the Treaty is the cornerstone of all ECB decisions and has remained unchanged over its two decades of existence.

Within the boundaries of the Treaty, however, the practice of monetary policy in the euro area has undergone a process of transformation over time. While the transformation has often been gradual, four key phases can be clearly identified.

First Phase: monetary policy beginning and adjustment (1999-2003)

The first phase starts with the launch of the single currency and lasts until the revision of the monetary policy strategy in May 2003, when the weight of the monetary pillar and the 'dominant role of money' were demoted and the framework got closer to the flexible inflation targeting regime adopted by many other central banks around the world.

In the preparation for monetary union, a document published in 1997 by the ECB predecessor, the European Monetary Institute, explained why both a monetary aggregates targeting strategy and an inflation targeting regime

were not considered fully appropriate for the euro area¹. The first regime, which was followed by the Bundesbank, in a tradition that understandably exerted a crucial influence on the initial ECB decisions, was refused for the practical reason that money demand functions at the European level would not be stable enough to allow for a reliable calibration of a M3 target. The refusal of pure inflation targeting was justified by the theoretical reason that it did not allow a role for money.

From now on, the ECB will have no excuse not to fulfil its mandate, either in fighting against deflation or in addressing the impairment of the single monetary policy transmission by intervening in the sovereign bond market

One of the first decisions of the Governing Council, already in 1998, was to announce the adoption of a 'stability-oriented monetary policy strategy' to attain the goals set out in the Treaty. The strategy was a sort of hybrid based on the two main strategies previously examined and characterised by the following key elements, as described in the ECB's *Monthly Bulletin* of January 1999: *"The strategy consists of three main elements: (i) a quantitative definition of the primary objective of the single monetary policy, namely price stability; and the 'two pillars' of the strategy used to achieve this objective: (ii) a prominent role for money, as signaled by the announcement of a reference value for the growth of a broad monetary aggregate; and (iii) a broadly based assessment of the outlook for future price developments and the risks to price stability in the euro area as a whole."*

There was clearly a dominant first pillar with a reference value initially set at 4.5% growth rate for M3. The text further explained: *"To signal the prominent role it has assigned to money, the Governing Council has announced a quantitative reference value for monetary growth as one pillar of the overall stability oriented strategy"*. So, some trace of technical monetarism² was implicitly present.

In 2006, explaining the origin of the 'two pillars', Otmar Issing quoted former President Wim Duisenberg's reply to a question by a journalist in 1999: *"it is not a coincidence that I have used the words that money will play a prominent role. So, if you call it the two pillars, one pillar is thicker than the other is or stronger than the other, but how much I couldn't tell you"*³.

The reference value for the monetary aggregate M3 was considered a relevant variable for inflation assessment and was related to the theoretical approach of technical monetarism in that money predicts inflation and differs from credit or other aggregates. The reference value for M3 annual growth was calculated to be 4.5% and was used to produce a monetary overhang: the difference between actual M3 growth and the reference value, with higher numbers representing higher risks for medium term inflation.

The monetary policy framework announcement sparked a lively debate in the academic community, regarding the differences between the ECB approach and the inflation targeting regime⁴. There were criticisms about the ambiguity of having two seemingly different approaches, one close to monetary targeting (the reference value) and another related to a public commitment of a quantified inflation target (less than 2%), an element of utmost importance in an inflation targeting regime.

The sobering experience of the following few years with the framework, determined the need for clarifications and ultimately for a revision of the strategy. Since 2001 the growth of M3 started to accelerate to values well above the 4.5%, registering 10.9% in December 2001 and in December 6.6% in 2002⁵. It thus suggested significant risks for inflation that the behavior of prices did not show, even when considering meaningful lags.

In fact, the money demand function became clearly unstable since 2001 and did not justify the use of a concept like the reference value referring to the medium-term of up to two years which is the operational horizon for monetary policy decisions⁶. The continuous need to try to explain away the growing monetary overhang without corresponding inflation in the horizon, was turning into an embarrassing exercise.

Consequently, in May 2003, the ECB published a review of the monetary policy framework including the following elements. First, the medium-term target for inflation was redefined to a value below but close to 2%; second, the presentation of the monetary policy decisions would start with the economic analysis to identify short- to medium-term risks to price stability; third, the monetary analysis would mainly serve as a means of cross-checking, from a medium- to long-term perspective, the indications coming from the economic analysis; fourth, the review of the reference value on an annual basis was dropped. While still at 4.5%, the reference value has, in fact, not been mentioned or used since then. The monetary pillar became thinner.

Finally, in June 2004 the ECB started publishing its staff macroeconomic projections for the euro area. In my assessment, the decisions taken in 2003 and 2004 were important steps towards a higher degree of transparency and accountability and made the ECB strategy even more aligned with inflation targeting. I therefore believe that the ECB's monetary policy strategy can be seen as consistent with the broad features of flexible inflation targeting as described in Svensson (2008).

It includes: first, an announced numerical inflation target; second, monetary policy decisions that make the inflation forecast published by the central bank, converge to this numerical target, and third, a high degree of transparency and accountability⁷. Naturally, this does not mean that all central banks do not look at what is happening with monetary aggregates, especially credit, as they have information content. In the same way, central banks also follow general financial conditions. In both cases, however, central banks cannot extract quantitatively precise calibration on what will happen to inflation from those monetary and financial variables.

Second Phase: monetary policy until the financial crisis (2003-2007)

The period spanning from the revision of the monetary strategy to the beginning of the crisis in 2007 coincided with the build-up of macroeconomic imbalances in several member countries. With hindsight, the ECB has been criticised for not helping prevent that development. I do not agree with such criticism as it ignores that a single monetary policy cannot cater for heterogeneity across member states.

Rates were increased in December 2005 as there was evidence that strong growth was contributing to a rise in inflation above 2%, with a rate of 2.5% in the third quarter of that year. Curiously, the interest rate decision was criticised at the time by a number of commentators⁸ and even by some policy institutions. However, the IMF's economic outlook of April 2005 considered that monetary policy in the euro area "*should remain firmly on hold*"⁹. A

similar recommendation was issued by the OECD in November 2005¹⁰. With the benefit of hindsight, most observers now agree that the tightening decision in December 2005 was appropriate.

Let me emphasise however, that this conclusion does not imply that monetary policy interest rates are the best tool to respond to financial imbalances with what is called 'leaning against the wind' policy. I do not believe that monetary policy should be normally used to prevent the build-up of financial imbalances. The main reason is that, due to the imperfect synchronisation of financial and business cycles, leaning against the wind would pose an intertemporal trade-off in achieving price stability¹¹.

More precisely, 'leaning against the wind' requires intentionally producing deviations from price stability over the short- to medium-term, as a precautionary move against the risk of a future financial crisis. Its benefit would be to help prevent potentially larger deviations from price stability over the medium- to long-term, once the financial crisis occurs. The risks of this approach are to increase the amplitude of business cycle fluctuations and hinder the credibility of the central bank regarding its inflation objective, while only marginally reducing the probability of financial crises.

My conclusion is that the costs of 'leaning against the wind' are likely to exceed benefits as I illustrated in a recent intervention applying the methodology developed by Lars Svensson to the euro area¹².

Macroprudential policy should be the main policy tool to respond to the build-up of financial imbalances. In this respect, the fact that monetary policy 'gets in all the cracks' of the financial system was seen as an advantage by Jeremy Stein. However, it can easily become a significant inconvenience if it creates an unnecessary recessionary episode or when in a monetary union, a financial instability episode is not generalised across all countries¹³.

Indeed, some influential authors have pointed out that a tightening of monetary policy could, in some cases, even boost the bubbly component of stock prices, or increase house price imbalances through debt deflation effects¹⁴. This requires strong macroprudential policies to complement monetary policy in order to achieve both price and financial stability.

The Third Phase: global financial crisis and Great Recession (2008-2013)

The third phase marks an abrupt change in euro area monetary policy. It can be identified as a result of the financial crisis of 2007, and especially its intensification after the bankruptcy of Lehman Brothers in September 2008. However, in July 2008, overreacting to a reading of 4% in headline inflation related to oil price developments we took the controversial decision to increase the policy rate to 4.25%. Following the dramatic effects of the Lehman bankruptcy, rates were subsequently cut three times to a level of 2.5% in December 2008. A broad policy of liquidity provision to the banking sector replacing auctions by the fixed rate full allotment regime was introduced in October and kept until this day.

The operational approach was to calibrate each measure to address the specific market impairment prevailing at that point. For example, liquidity was provided at much longer maturities than usual to help alleviate tensions exacerbating the maturity mismatch on the banking sector's balance sheet. The list of eligible collateral was also expanded to ease the shortages that emerged during the crisis.

A direct implication of the activity of eased liquidity provision to the market was the increase in the size of the ECB balance sheet. The increase in financial institutions' demand for ECB liquidity led to a progressive, and sizable, increase in bank reserves. This was accentuated by the effects of the SMP programme under which the ECB boldly intervened since 2010 with purchases of government bonds of countries where monetary policy transmission had been severely impaired as a result of excessive market pressures. Between 2007 and mid-2012, the size of the ECB's

balance sheet more than doubled. Clearly, the larger balance sheet was then not the objective of our non-standard measures, but rather the result of the lender of last resort function to the market. Indeed, as the funding situation in the banking sector started improving in mid-2012, the ECB balance sheet slowly began to contract without any adverse effects.

Some commentators were nevertheless concerned by the increasing size of the ECB balance sheet. Based on the high long-run correlation between inflation and money growth, they interpreted the huge growth in the ECB monetary base as a signal of future high inflation risks. These fears obviously disregarded three things: first, no theory of inflation is directly related with the central bank's balance sheet; second, the relationship between the monetary base and the broad monetary aggregates is unstable and, in fact, during that period monetary aggregates did not increase in response to the expansion of central bank liquidity; third, that the crisis implied a shock to money demand that totally disrupted any potential relationship between monetary aggregates and inflation. This assessment has been vindicated by subsequent developments. Almost ten years after the initial increase in size of the ECB balance sheet, the problem in the euro area remains one of too low, rather than too high, inflation.

In the opposite direction, concerns were also voiced about the reduction in the ECB's balance sheet size beginning in 2012 and a possible link to the recession and low inflation period that followed. This view is compounded by the criticism of the two policy rate increases in April and July of 2011, taking it from 1% to 1.5%. This episode and the double dip in growth deserve therefore further comment.

Those rate increases came on the wake of developments in the first half 2011, showing economic growth slightly above 2% and with inflation attaining 2.75 % in the second quarter. We were also overly influenced by growth forecasts which turned out to be excessively optimistic. Blanchard and Leigh, who also point out that many other

forecasting institutions made recurring errors on euro area growth during this period, make an independent validation of this hypothesis in their 2013 paper¹⁵. The authors argue that this is due to an underestimation of fiscal multipliers, which in turn led to an underestimation of the contractionary effects of the fiscal consolidation plans announced in early 2010.

With hindsight, it is now clear that increasing interest rates during this phase was premature. The economy weakened markedly after the summer, on the wake of the acute market pressures on the sovereign debt of Spain and Italy that led to a second round of interventions in the sovereign bond markets under the Securities Market Programme (SMP). The two consecutive rate hikes were quickly reversed in November and December of that same year.

In view of the long lags of monetary policy effects, it is obvious that the quick succession of increases and reductions of policy rates cannot be responsible for the recessionary episode of that period. What really was responsible for the recession of 2012/2013 was the coordinated fiscal consolidation in which all member states engaged. A working paper published by the European Commission estimated that collective fiscal consolidation led to cumulative deviations from the baseline growth in 2011-2013 from 8% in Germany to 18% in Greece¹⁶. Another paper finds a loss deviation from baseline between 14% to 20%, for the euro area GDP during the same period¹⁷.

Monetary policy continued to help the situation when, at the end of 2011, the ECB introduced two three-year longer-term refinancing operations implemented in December 2011 and February 2012 amounting to EUR 1 trillion. This measure and the correction of the two rate hikes contributed to attenuate the severity of the 2012 recession¹⁸. The announcement of the Outright Monetary Transactions (OMT) programme in 2012 further contributed to preventing an even worse deterioration of economic conditions by removing redenomination risk, which had become an important source of macroeconomic uncertainty. The programme facilitated an ease of tension in all

financial markets, which was accompanied by a slow, but progressive return of spreads towards normal levels. Altogether, with the second round of sovereign bond purchases in 2011, the liquidity supplied at end-2011 and the OMT announcement, the ECB put an end to the euro area acute existential crisis.

The Fourth Phase: ultra-low inflation and QE (2014-today)

This brings me to the fourth and current phase of monetary policy in the euro area. In 2013, the euro area recovery had not yet gained traction. In spite of the ultra-low level of interest rates, renewed deflationary risks emerged with a progressive fall of inflation towards levels significantly below 2 percent. In contrast with the previous five years, financial disruptions could no longer be responsible for the economic slowdown. The coincident reduction of output and inflation suggested that the renewed economic weakness was driven by a negative aggregate demand shock. In turn, the negative demand shock could be the delayed result of the fiscal policy tightening since 2010, or possibly the consequence of weakened economic sentiment after two recessions¹⁹.

Maintaining price stability in the face of insufficient aggregate demand and downward inflationary pressures required a more expansionary monetary policy stance. In response to these developments, a new phase in non-standard measures was launched, including increasing the balance sheet with asset purchases. The new non-standard policies were not merely expected to undo any remaining financial market impairments, but to further ease the monetary policy stance at a point where policy rates had reached their lower bound.

In July 2013, in response to the contagion of increased bond yields resulting from the 'taper tantrum' in the US, the ECB had already introduced the non-standard policy of forward guidance, indicating its intention to keep interest rates at prevailing or lower levels 'for an extended period of time'. As inflation continued to decelerate from October 2013, falling under 1%, a comprehensive package of expansionary measures²⁰ was announced in June 2014 including: a cut in policy rates and a negative deposit facility rate; two asset purchase programmes for asset backed

securities (ABS) and covered bonds (CBPP), and a facility to provide longer-term funding to banks for new loans, contingent on bank credit supply behaviour, which we refer to as targeted longer-term refinancing operations (TLTRO). In January 2015, the large-scale asset purchase programme (APP) was extended to include purchases of sovereign bonds.

A growing number of studies about the impact of APP suggest that the programme was effective in lowering spreads on long-maturity assets and thereby boosting inflation and growth²¹. These studies also highlight that the APP announcement contributed to a re-anchoring of inflation expectations by reversing their previously observed decline. From a simpler perspective, we can state today that three years of large-scale asset purchases have eliminated the risk of prolonged deflation. This fact is incontrovertible and should be admitted by both the early APP critics and those who claimed it was unnecessary²².

Nevertheless, we should remain aware that the precise channels of transmission of Quantitative Easing (QE) are still imperfectly understood and they do not relate to technical monetarism. I think that making progress in our theoretical understanding of QE remains an important research priority for central banks, especially in view of the possibility that nominal interest rate will be more persistently low in the future, and thus that the effective lower bound constraint will be hit more frequently.

A particular aspect of QE programmes that needs to be investigated further regards its distributional effects. As an instrument of monetary policy accommodation, the APP led to an increase in economic activity, which was especially beneficial for those individuals who, as a result, found a job after being unemployed. At the same time, the APP increased the value of financial assets and thus led to capital gains for the holders of those assets. Improving our understanding of the relative strength of these distributional effects is also an important priority for central banks.

Ongoing work at the ECB suggests that the decline in unemployment that followed the introduction of the APP had a disproportionately positive impact on low-income households²³. The net overall impact of APP has therefore reduced income inequality. Furthermore, as a result of housing price increases associated with the economic recovery, the same positive outcome took place with respect to wealth distribution.

Implications for the future

The ECB journey that I have recalled here can give rise to two obvious questions. The first one relates to economic analysis: were the mainstream macroeconomic models used before the crisis appropriate to help guide policy decisions, or should these be changed? The second question relates to the monetary policy strategy: should lessons learnt in the journey be reflected in a change of central banks' monetary policy strategies?

Implications for macroeconomics and monetary theory

Let me start with the first question. The shortcoming of mainstream macroeconomics and of the type of Dynamic Stochastic General Equilibrium (DSGE) models that prevailed before the crisis, are by now quite well known²⁴.

Besides extending DSGE models to include macro-financial linkages, the ECB decided to develop a new Multi-Country model starting from the premise that, in the words of Olivier Blanchard, 'policy models' cannot be expected to have the same tight structure as 'theory models'²⁵. A semi-structural approach along the lines of the Federal Reserve's FRB/US model has been adopted²⁶. We can therefore put more emphasis on the model's ability to provide sound quantitative predictions. When introducing financial frictions, we have relied on a reduced form representation that is consistent with different theoretical micro-foundations. This more flexible, semi-structural approach allows us to model a wide range of banking and financial variables, going from bank lending spreads to term premia, without taking a stance on the theoretical fundamental debate about how they are linked to the macroeconomy²⁷.

A crucial theoretical aspect which requires improvement is related to the Phillips curve, the most commonly used empirical model of inflation that faces several estimation problems as it uses several unobservable variables²⁸. It started as a relationship between wage growth and unemployment and later, prices or inflation substituted wages. In 1967-8, Phelps and Friedman introduced expectations as a variable that shifted the previously considered stable relationship. Jointly with this change, Friedman added the concept of a fixed Natural Rate of Unemployment (NARU), determined only by supply factors, to which the economy would tend in the long-term.

The difference between actual unemployment and this long-term unemployment rate became the variable used as proxy for demand pressure in the market of goods and services, seen as the main theoretical cause of inflation. Inflation was an excess demand phenomenon and demand could be controlled by monetary policy — via monetary aggregates for Friedman or with interest rates, as believed today. In practice, estimates of a Non-Accelerating Inflation Rate (NAIRU) are what is obtained instead of the unobservable long-term NARU, which are doubtfully deemed to be the same.

In the late 1970s, two different research approaches emerged, thus characterised by Robert Gordon²⁹: *“The left fork in the road,... is the resurrection of Keynesian economics in the form of a Phillips Curve (PC) model that incorporates long-run neutrality and an explicit role of supply shocks in shifting the Phillips Curve up or down, together with an interpretation of the influence of past inflation as reflecting generalized inertia rather than expected inflation. The right fork in the road of the post-1975 evolution, features an approach developed by Kydland, Prescott and Sargent, and more recently by Galì and Gertler and others. Inflation depends on forward-looking expectations, and expectations respond rationally to actual and expected changes in monetary and fiscal policy. This two-way game has no room for supply shocks or inertia”*.

This second approach produces what is called the New Keynesian Phillips Curve (NKPC) that basically focuses on the output gap and expectations and is a crucial part of the DSGE models, where the interest rate is all-powerful to control demand and therefore inflation.

Gordon and others forged ahead with the first approach, adding variables representing supply shocks (as prices depend on demand and supply factors), inertia represented by long lags of inflation and a time-varying NAIU determined by a simple stochastic process. To this day, using this so-called 'triangle approach', Gordon continues to obtain very good results in predicting inflation out-of-sample³⁰. In 2013, Gordon shows that his model *"can estimate coefficients up to 1996 and then in a 16-year-long dynamic simulation, with no information on the actual values of lagged inflation, predict the 2013 value of inflation to within 0.5 percentage point. The slope of the PC relationship between inflation and the unemployment gap does not decline by half or more as in the recent literature, but instead is stable."*

This last aspect is particularly important as it highlights one of the puzzles found in the second approach of the NKPC, since Roberts³¹ obtained the result of a 50% decline in the slope coefficient for the US in 2006. As is to be expected, the value of that coefficient depends on the entire specification of the regression. When it does not use supply-side variables, assumes inflation lags with coefficients that add to 1, and a constant NAIU, as in the NKPC specified by Roberts, it is natural that the low inflation environment of the period shows up in a declining slope coefficient.

The problem is that the NKPC did not perform empirically well from the start. Many ad-hoc remedies have been tried in order to make it work, even when they did not conform to the pure theoretical paradigm of the model. First, lags of inflation were introduced by Galì and Gertler (1999) to create the so-called hybrid NKPC³². This hybrid model has faced many difficulties in predicting inflation with acceptable accuracy, even when embedded in DSGE models.

As I mentioned in another intervention³³: *“As King and Watson (2012)³⁴ highlight when using the labour income share or unit labour costs the models do not capture that the last 15 years do not show a co-movement of inflation with the significant decline of those ULCs”*. Gürkaynak, Kisacikoglu and Rossi (2013)³⁵ also illustrate the subpar performance of DSGE models to forecast inflation. In their encompassing survey, Mavroeidis, Plagborg-Møller and J Stock (2014)³⁶, also conclude that, *“we are unable to pin down the role of expectations in the inflation process sufficiently accurately for the results to be useful for policy analysis”*.

Many other transformations have been attempted to make variants of the hybrid model perform better. One way is to focus on core inflation on which the missing supply factors may be less important. Another approach is to take expectations from consumer surveys or professional forecasters, which of course are not microfounded³⁷. In some estimates, the price of oil or the full price of imports is introduced as an ad-hoc element within the paradigm. Time-varying coefficients and NAIRUs are also used. So, pragmatically adjusted, hybrid NKPCs can be made to work, especially for core inflation. This specification is quite distant from the initial pretensions of the NKPC and from rationale of DSGE models where everything is microfounded and subject to rational expectations. The two strands of the literature identified by Robert Gordon seem to have undertaken some convergence.

An important source of the Phillips curve's poor performance can be the mis-measurement of the output gap and the NAIRU. An important part of the under-prediction of inflation in recent years may be the result of an underestimation of the slack in the economy. This is illustrated by the fact that we better predictions of inflation can be obtained when the broad concept of unemployment is used (eg. U6, which is at 16% for euro area) instead of the usual measure of unemployment (standing at 8%). Usual measures of slack can vary substantially across methods and chosen variables, although they tend to agree on the timing of peaks and troughs.

The fact that economic activity is multidimensional suggests that there might be advantages in using large dynamic models to estimate it. For instance, ECB staff used a dynamic factor model that performs a trend/cycle decomposition of real activity variables and core inflation³⁸. Using different sets of variables and trend assumptions, they get different measures of the output gap. One way to discriminate among different estimates of the output gap is to check their ability to forecast inflation. It turns out that the variants associated with a continuation of a positive growth trend, implying a wider output gap, are the ones that produce better inflation forecasts.

The best variant from this perspective implies that the output gap was as large as -6% in 2014 and 2015, on average, an estimate which is considerably more negative than most official estimates, hovering between -2 and -3% for those years³⁹. Results for 2017 still continue to show a quite meaningful negative output gap, instead of one already close to zero as reported by several international institutions. This points to the great uncertainty behind the estimation of the output gap, the same being true about the concept of an unemployment gap more directly involving the NAIRU.

In any case, what matters is that it is possible to find specifications that can be used as fairly good inflation forecasting tools. Either NKPC or Traditional Keynesian Phillips Curves (TKPC) can achieve that. For instance, in their estimations of the Non-Accelerating Wage Rate of Unemployment (NAWRU), the European Commission has used the NKPC for 21 countries and the TKPC for 7 countries⁴⁰.

In recent ECB work about understanding the low inflation environment, a variant of the hybrid NKPC for core inflation was used but with the inclusion of import prices, lagged inflation and expectations taken from surveys⁴¹. Using that pragmatic specification, acceptable forecasting results are obtained and we find that the slope has been increasing in recent years. This is a source of confidence that our policy, having contributed to the recovery, will in the end contribute to achieve our inflation goal.

Another question related to the PC, beyond the forecast of inflation, refers to the interpretation and use of the NAIRU that can be extracted from it. It is common to see it as equivalent to the Friedman's NARU, a long-term structural rate of unemployment totally dependent on supply-side factors like demography, technology, institutions that shape market rules, etc. This view then endorses the use of estimated NAIRUs for several policy decisions: for instance, using that particular value as a measure of structural unemployment that enters into the calculation of potential output and the structural budget deficit with all its implication for fiscal policy. Trusting just one number to conduct policy can be dangerous.

In their seminal paper, Staiger, Stock and Watson (1997) estimated standard deviations for the NAIRU and concluded that these were very large⁴². The standard deviations are not usually calculated and/or disclosed in estimates of NAIRU but we can rely that they are normally quite large. This recommends caution in using NAIRU estimates for strict policy decisions.

A second aspect to underline is that it is difficult to accept that estimated NAIRUs are long-term constants determined exclusively by supply-side factors. This would correspond to the natural rate hypothesis (NRH) put forward by Friedman. This view of separating trend from cycle or supply from demand shocks has repeatedly been challenged, for example in the hysteresis hypothesis proposed by Blanchard and Summers⁴³.

Recently, Blanchard even questioned whether the NRH should be rejected which in the end he refrains from doing while instilling a high degree of doubt and caution in its use. The main argument behind hysteresis is that there are various transmission channels that may induce a long-lasting impact of economic fluctuations due to aggregate demand. Unfortunately, it is very difficult to detect this hypothesis on empirical grounds from an aggregate economic viewpoint. However, some micro-evidence appears to support it, such as the decreased employability of

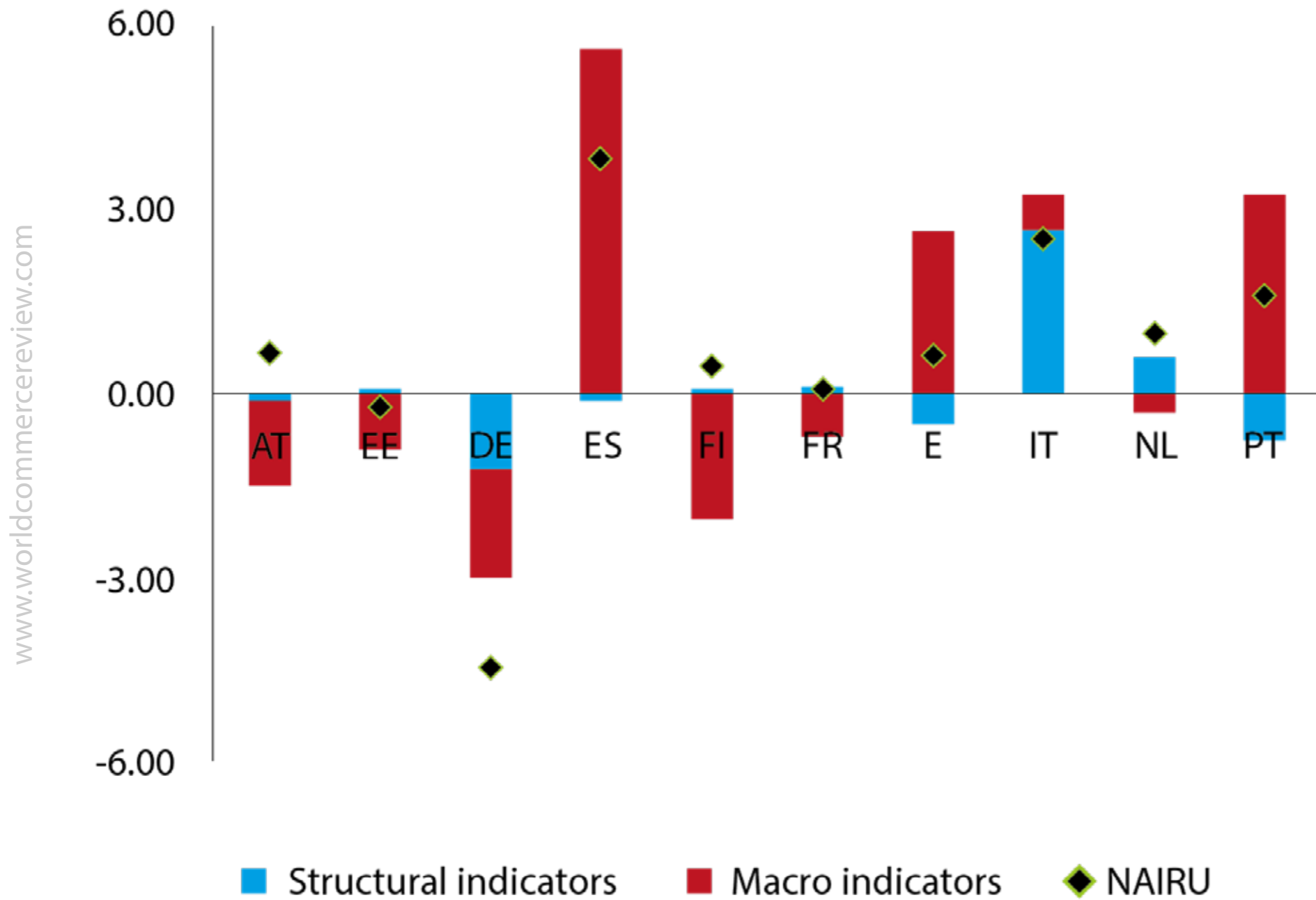
long-term unemployed, as they lose skill and morale, or the decline in R&D activities and investment of firms during recessions.

One change in the NARU long-term assumption is to accept that it changes over time, albeit slowly and indeed much more sluggish than what is normally used in estimates of NAIRU that even show yearly changes. About these time-varying NARUs and NAIRUs, Farmer refuses the whole concept⁴⁴: *“Defenders of the Natural Rate Hypothesis might choose to respond to these empirical findings by arguing that the natural rate of unemployment is time varying. But I am unaware of any theory which provides us, in advance, with an explanation of how the natural rate of unemployment varies over time. In the absence of such a theory the NRH has no predictive content. A theory like this, which cannot be falsified by any set of observations, is closer to religion than science.”* In the same vein, Solow once quipped *“a natural rate that wanders permanently is not natural, is epiphenomenal”*.

The major point behind the previous discussion is that estimated NAIRUs are not good proxies of structural unemployment. Already in 1998, Estrella and Mishkin⁴⁵ showed that the NAIRU use in monetary policy *“... depends critically on redefining NAIRU as a short-term concept and distinguishing it from a long-term concept like the natural rate of unemployment...something that is not typically done in the literature. Furthermore, ...the view that the NAIRU concept implies that the monetary authorities should try to move the economy towards the NAIRU, thus to some treating it as a target, is both incorrect and misguided”*.

Indeed, the casual identification of the NAIRU with the level of long-term structural unemployment has pernicious consequences, either in using to calculate potential output or the structural budget deficit. Being a short-term concept, the NAIRU estimates since 2007, for instance, seem, to a large extent, to be driven by macro-economic developments rather than by shifts in structural labour market characteristics. ECB staff have recently replicated and updated an earlier study of the European Commission (EC) to illustrate this point. The study relates the European

Figure 1. Changes in NAIRU and contributions 2007-2016



Commission's NAIRU estimates to four structural labour market indicators (unemployment benefits, replacement rates, labour tax wedges, union density, and active labour market policies) and three macro-economic indicators (total factor productivity growth, the share of construction in GDP and the real interest rate)⁴⁶. As shown in the chart, the structural indicators explain only a small fraction of the changes in NAIRU, whereas the macro-economic indicators appear to explain the bulk of its variation. Another paper, reaching the same conclusion and using a broader set of variables is Heimberger *et al.*

Overall, this evidence suggests that the shifts in unemployment rates observed since 2007 were mostly triggered by the macro-economic cycle and not by an increase of structural unemployment as allegedly indicated by very high NAIRU levels. This means that the estimated NAIRU from Phillips curves is not a good representation of structural unemployment.

Confirming this, an Economic Paper published by the European Commission uses a concept of Structural Unemployment Rate (SUR) to substitute the NAWRU⁴⁷ in the calculation of the structural budget deficit. A subsequent Discussion Paper integrated the concept of SUR as a sort of anchor in the estimation of NAWRUs, that are therefore less pro-cyclical and less sensitive to data corrections⁴⁸. These analyses produce meaningful changes on fiscal policy stance indicators when compared with the previous straight estimates of NAWRUs.

In view of all the uncertainty, policy-makers should seriously consider the possibility of dropping the NRH as a long-term stable concept that can be estimated from Phillips curves and used in policy decisions. This does not imply abandoning the idea behind the Phillips curve as a pure forecasting device with a positive slope coefficient indicating that strong growth of aggregate demand, given time, will increase inflation. What should be refused is the idea that there is a unique identifiable level of unemployment, corresponding to a level of stable structural unemployment, above which expansionary macro policy exclusively accelerates inflation.

Monetary policy strategy in the future

While our quest for better analytical tools continues, a broader question concerns whether there is a need to also change central banks' monetary policy strategies. Many commentators have started discussing whether these should undergo a more complete overhaul, rather than eventually returning to the pre-crisis status quo⁴⁹.

I think that the position to take in this debate hinges on the assessment of the recent experience with non-standard monetary policy measures. If non-standard measures were considered to be ineffective, then interest rates would really be the only available tool to achieve price stability. In other words, we would conclude that, once interest rates reach their effective lower bound, central banks are, de facto, powerless. The inconvenient truth behind that view is that it would crucially require reducing to literally zero the likelihood of hitting the effective lower bound ever again in the future.

A substantial overhaul of current strategies would in the end be necessary. Options that have been proposed in this context include the abolition of cash, to eliminate the arbitrage opportunity which prevents policy rates from going negative, and a higher inflation target to reduce the likelihood of hitting the lower bound even after large, adverse shocks⁵⁰. In my view, on the issue of the abolishment of cash, *"a prudent policy-maker would advise to be very cautious before proceeding with this radical proposal, even if digitalisation may gain ground and finally prevail – as we start to observe in some countries"*⁵¹.

Regarding proposals to increase inflation targets, I think they are in general problematic, in view of the difficulties of managing the transition without losing credibility. Notwithstanding this, I would have no theoretical objections to a mild correction as proposed by many economists. My reaction is similar to what Janet Yellen replied in June 2017 to a question about the letter to the Federal Reserve signed by 22 prominent American economists⁵² in favour of increasing the inflation target: *"...this is one of our most critical decisions and one we are attentive to evidence and*

outside thinking. It's one that we will be reconsidering at some future time. ... It needs to be a balanced assessment. But I would say that this is one of the most important questions facing monetary policy around the world in the future. And we very much look forward to seeing research by economists that will help inform our future decisions on this."

An interesting alternative proposal has recently been made by Bernanke, the former chairman of the Federal Reserve⁵³. In a nutshell, the idea is to switch to a temporary price level target during episodes in which the interest rates effective lower bound is binding. Under a price level target, the central bank aims to stabilise the price level, rather than inflation, and it therefore ensures that any low-inflation episode is compensated by a period of relatively high inflation⁵⁴. Outside the zero lower bound, the central bank would continue to target a standard inflation objective.

The main advantage of this proposal is that it clearly communicates the horizon over which a period of inflation below trend would have to be compensated. Relative to other proposals, the fact that for most of the time, the central bank would continue to target the inflation rate also facilitates communication with the public. Nevertheless, I am not sure whether the practical difficulties of implementing the policy would prevent markets and the public from fully understanding it, which may make the proposal an unrealistic option to be adopted by a central bank in the future.

I have a positive assessment of the experience with non-standard measures, from large scale open market operations of asset purchases to negative rates, and I am glad that they now permanently belong to the ECB's toolkit of instruments to address particular stressful situations. Even outside those special conditions, it is somewhat doubtful that monetary policy can remain effective just by going back to the traditional approach of very small central bank balance sheets and the targeting of overnight money market rates, for a number of reasons.

First, the importance of banks in funding non-financial firms has declined everywhere, including in the euro area. There has been a dramatic change, as non-bank financing sources have become much more important since the onset of the financial crisis. Total assets of investment funds in percentage of total bank assets increased from 16% in 2007 to 44% last year. The percentage of bank loans in the total stock of firms' external financing in 2017 was just above 12% (or 15%, if intra-company loans and trade credit are excluded from total external financing). For the same year, if only the stock of debt instruments is considered (excluding equity sources), bank loans represented only 28% of total debt financing (or 45%, if net of intra-sectoral financing). Before the crisis, back in 2007, bank loans represented 37% of total debt financing (or 60%, if net of intra-sectoral financing)⁵⁵.

Second, other structural changes in the financial system are also important in this context: the increased role of secured money market transactions; the importance of a broad set of market rates beyond the overnight rate, in view of imperfections in arbitrage; the growing relevance of market-based finance; and finally, the scarcity of safe assets that affects the functioning of markets and the management of collateral.

These developments are behind proposals to keep central bank's balance sheet with significant size to allow the use of a programme like the Fed's reverse repo programme (RRP) where its stock of government securities is available for repo operations against cash⁵⁶. The programme would be used to involve more counterparties and affect several interest rates, thereby contributing to a better transmission of monetary policy, in view of the limits to arbitrage hampering the pass-through from short- to long-term interest rates. Recent internal work at the ECB also detects similar pass-through imperfections in European markets. Furthermore, by keeping a significant balance sheet, albeit much smaller than the present levels creates short-term safe assets. This would foster financial stability: the unsuccessful attempts by the financial system to engineer 'safer' private assets, as we saw before the crisis would be unnecessary.

Both arguments deserve careful consideration for the design of future monetary policy after the present normalisation phase. Maintaining a much smaller but still significant balance sheet may be necessary to allow targeting a broader set of interest rates. Another related dimension refers to central bank counterparties. Central banks have traditionally granted access to monetary policy operations exclusively to credit institutions. Nevertheless, non-banks are beginning to play a greater role in the European financial landscape, and are likely to take an even greater role as the capital markets union deepens and broadens financial markets in Europe.

Such a consideration is not neutral for market rates in the euro area. Secured money market rates, when backed by high quality collateral, have traded several times below the ECB deposit facility rate, which normally sets a floor for short-term money market rates. In part, this discount is explained by non-banks' activities that – not having access to central bank facilities – are accepting interest rates below the deposit facility rate in their repo activity. The discount is, of course, also attributed to the APP which has reduced the availability of high quality collateral at the same time as market demand for that collateral has increased. Nonetheless, understanding these drivers is crucial for the central bank when making decisions about future counterparty eligibility and the choice of money market rates to target to ensure an effective monetary policy transmission.

These are, however, questions for the long-term future of monetary policy. At present, we have started a very cautious withdrawal of monetary accommodation. The caution is justified by the subdued inflation dynamics since the second half of 2017 and the recent levels of headline inflation: 1.4 % in March, following 1.1% in February, with underlying inflation at just 1%. The ongoing robust recovery that the euro zone is experiencing is a source of optimism for the immediate future. The euro area is much more resilient to possible external financial shocks⁵⁷.

Yet, a great deal still remains to be achieved. The euro area is a highly integrated economic and financial area which needs to be managed through common decisions. However, it lacks powerful instruments in domains other than

monetary policy, ranging from private risk sharing in a true capital markets union with a European safe asset, to a strong centralised fiscal stabilisation function to deal with asymmetric and symmetric shocks.

The creation of such instruments would also ensure that the fiscal policy mistakes made in 2011-12 would not be repeated so that we do not suffer from avoidable double dip recessions. Over the business cycle, we also need co-ordinated fiscal policies to ensure that the overall fiscal policy stance is sufficiently countercyclical, thereby contributing to economic stabilisation. Until now, the burden of countercyclical stabilisation has been mainly left to monetary policy.

This situation is not sustainable, particularly in the context of a recessionary episode that should come at some point. Monetary policy will certainly require the help of strong fiscal policy that will then need to be in place. Governments need to act now and take advantage of the ongoing recovery to make the necessary institutional adjustments.

Conclusion

In my remarks, I have reviewed the different phases of monetary policy since the introduction of the euro and have described how the financial crisis has affected the conduct of monetary policy. Like in other jurisdictions, the deployment of large scale asset purchase programmes is the most relevant change observed since the financial crisis. These new unconventional instruments, along with forward guidance, negative rates and reverse repos belong now to the monetary policy toolkit to be used whenever necessary.

From now on, the ECB will have no excuse not to fulfil its mandate, either in fighting against deflation or in addressing the impairment of the single monetary policy transmission by intervening in the sovereign bond market. The ECB made the journey from a central bank still under the partial influence of the simple monetary

aggregates approach, to join the community of central banks of other major jurisdictions using flexible inflation targeting regimes and asset purchases as non-standard measures. It is therefore prepared to continue to deliver on the priority of price stability for euro area citizens, while contributing to favourable growth conditions and financial stability in a world in which market-based finance is ever more complex and dominant. In sum, the ECB is now a modern, effective and prepared central bank to serve the goals of monetary union. ■

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Endnotes

1. See EMI (1997) *"The single monetary policy in stage three: elements of the monetary policy strategy"*.
2. I use the expression "technical monetarism" to designate the operational approach relying on a target for a monetary aggregate precisely calibrated to achieve the desired level of inflation. The word Monetarism has been used in a more general doctrinal way, referring to a set of beliefs about a particular vision of the way market economies work.
3. See Issing, O. (2006), *"The ECB's Monetary Policy Strategy: Why did we choose a two Pillar Approach?"*, contribution to the 4th ECB Central Banking Conference, Frankfurt, November.
4. See ECB (2011), *"The monetary policy of the ECB"*, third edition, May. For a detailed review of the theoretical features of inflation targeting, see Svensson, LEO, (2010), *"Inflation Targeting,"* in: Benjamin M Friedman and Michael Woodford (ed.), *Handbook of Monetary Economics, Edition 1, Volume 3, Chapter 22, pp 1237-1302.*
5. December year-on-year percentages.
6. Already in 2000, Gerlach and Svensson had concluded that "the prominent "first pillar" in its (ECB) monetary strategy, contains little information about future inflation". See, Gerlach, S and LEO Svensson (2000), *"Money and Inflation in the Euro Area: A Case for Monetary Indicators?"*, NBER Working Paper No. 8025, published later in the *Journal of Monetary*

Economics 50 (2003) 1649-1672. See also, Alves, N and CR Marques (2004), "Money in the ECB's monetary policy strategy: a reassessment", Banco de Portugal, mimeo, December 2004, later developed into a Working Paper No. 20, 2007 "Is the euro area M3 abandoning us?"

7. Svensson, LEO (2008), "Inflation targeting", in *The New Palgrave Dictionary of Economics*, Second Edition, 2008.

8. See for instance De Grauwe, P (2005), "[Monetarists cry wolf on eurozone inflation](#)", Opinion, Financial Times.

9. IMF World Economic Outlook, April 2005.

10. OECD Economic Outlook, Vol. 2005, Issue 2.

11. See Rünstler, G and M Vlekke (2018), "Business, Housing and Credit Cycles", *Journal of Applied Econometrics*, 33(2): 212-226; Schüler, Y, P Hiebert and I Jaccard (2017), "Contrasting financial and business cycles: Stylized facts and candidate explanations", mimeo Bundesbank and ECB.

12. Svensson, LEO (2017c), "[Leaning Against the Wind: Costs and Benefits, Effects on Debt, Leaning in DSGE Models, and a Framework for Comparison of Results](#)," *International Journal of Central Banking* 13:385-408. Svensson, LEO (2017), "Cost-Benefit Analysis of Leaning against the Wind", *Journal of Monetary Economics*, 90:193–213. For a calculation of costs and benefits applied to the euro area see Constâncio, V (2018), "Financial stability risks and macroprudential policy in the euro area", speech at the ECB and Its Watchers XIX Conference, Frankfurt am Main, 14 March 2018.

13. Stein, J (2013), "Overheating in Credit Markets: Origins, Measurement, and Policy Responses", speech at the "Restoring Household Financial Stability after the Great Recession: Why Household Balance Sheets Matter" research symposium sponsored by the Federal Reserve Bank of St Louis.

14. See Galí, J and L Gambetti (2015), "The Effects of Monetary Policy on Stock Market Bubbles: Some Evidence", *American Economic Journal: Macroeconomics* 2015, 7(1): 233–257; Svensson, LEO (2017), "Cost-Benefit Analysis of Leaning against the Wind", *Journal of Monetary Economics*, 90: 193–213.

15. Blanchard, O and D Leigh (2013), "Growth Forecast Errors and Fiscal Multipliers", *American Economic Review*, 103(3): 117-20.

16. See Veld, J (2013), "Fiscal consolidations and spillovers in the Euro area periphery and core", EU Commission European

Economy Paper, Economic Papers 506, October 2013, Table 5, pages 10 and 11.

17. Rannenberg, A, C Schoder and J Strasky, (2015), "The macroeconomic effects of the European Monetary Union's fiscal consolidation from 2011 to 2013: a quantitative assessment", IMK Working Paper 156.
18. See for instance Jasova M, C Mendicino and D Supera (2018), "Rollover Risk and Bank Lending Behavior: Evidence from Unconventional Central Bank Liquidity", mimeo; Quint, D and O Tristani (2017), "Liquidity provision as a monetary policy tool: The ECB's non-standard measures after the financial crisis", *Journal of International Money and Finance*, 80:15-34.
19. See Lorenzoni, G (2009), "A Theory of Demand Shocks", *American Economic Review*, 99: 2050–84 as an example of models in which a drop in consumer sentiment can lead to demand shocks.
20. See Constâncio, V. (2014), "[A new phase of the ECB's monetary policy](#)", intervention at the ECB workshop on non-standard monetary policy measures, Frankfurt 6 October 2014.
21. See eg. Altavilla, C, G Carboni and R Motto (2015), "Asset purchase programmes and financial markets: lessons from the euro area", ECB Working Paper No 1864; Breckenfelder J, F De Fiore, P Andrade, P Karadi and O Tristani (2016), "The ECB's asset purchase programme: an early assessment", ECB Working Paper Series 1956.
22. See for instance the [article by Jürgen Stark](#), former member of the ECB board.
23. See Constâncio, V (2017), "Inequality and macroeconomic policies", speech at the Annual Congress of the European Economic Association, Lisbon 22 August 2017. Based on work by Lenza, M and J Slacalek (2017), "The effects of unconventional monetary policy on inequality in the euro area", mimeo, European Central Bank.
24. See the whole issue of the *The Oxford Review of Economic Policy* Volume 34, Issue 1-2, Spring-Summer 2018.
25. See Blanchard, O (2017), "The Need for Different Classes of Macroeconomic Models", Peterson Institute for International Economics Real Time Economic Issues Watch, 12 January 2017.
26. Brayton, F and PA Tinsley (1996), "A guide to FRB/US: a macroeconomic model of the United States", *Finance and Economics Discussion Series 96-42*, Board of Governors of the Federal Reserve System.
27. See Constâncio, V (2017), "Developing models for policy analysis in central banks", speech at the Annual Research Conference, Frankfurt am Main 25-26 September 2017.

28. For an insightful reflection from a policy-maker, see Tarullo, D (2017), "Monetary policy without a theory of inflation" Hutchins Center at Brookings Institution Working Paper No.33.
29. See the insightful description by Gordon, R (2009), "The history of the Phillips Curve: consensus and bifurcation", *Economica* 78(309):10-50.
30. See Gordon, R (2013), "The Phillips curve is alive and well: inflation and the NAIRU during the slow recovery", NBER Working Paper 19390.
31. See Roberts, JM (2006), "Monetary Policy and inflation dynamics", *International Journal of Central Banking* :193-230.
32. Galì, J and M Gertler (1999), "Inflation dynamics: a structural econometric analysis", *Journal of Monetary Economics*. 44:195-222; see also Galì, J, M Gertler and D López-Salido (2005), "Robustness of the estimates of the hybrid new Keynesian Phillips Curve", *Journal of Monetary Economics*, 52:1107-18.
33. See Constâncio, V (2015), "Understanding Inflation Dynamics and Monetary Policy," panel remarks at the Annual Economic Policy Symposium, Federal Reserve Bank of Kansas City.
34. King, R and MW Watson (2012), "Inflation and unit labour costs", *Journal of Money, Credit and Banking*, 44(s2):11-149.
35. Gürkaynak, RS, B Kisacikoglu, and B Rossi (2013), "Do DSGE Models Forecast More Accurately Out-of-Sample than VAR Models?", CEPR Discussion Paper, July 2013.
36. Mavroeidis, S, M Plagborg-Møller and J Stock (2014), "Empirical Evidence on Inflation Expectations in the New Keynesian Phillips Curve", *Journal of Economic Literature* 52(1):124-188, March 2014.
37. Coibion, O and Y Gorodnichenko, (2015), "Is the Phillips Curve Alive and Well after All? Inflation Expectations and the Missing Disinflation", *American Economic Journal: Macroeconomics*, 7(1):197-232.
38. See Jarociński, M and M Lenza (2016), "An inflation-predicting measure of the output gap in the euro area," ECB Working Paper 1966, forthcoming article in the *Journal of Money, Credit and Banking*.
39. See Jarociński, M and M Lenza (2016), "An inflation-predicting measure of the output gap in the euro area," ECB Working Paper 1966, forthcoming article in the *Journal of Money, Credit and Banking*.
40. See European Commission (2014), "The production function methodology for calculating potential growth rates &

output gaps”, *Economic Papers* 535, page 7.

41. See Ciccarelli, M and C Osbat (ed) (2017), “Low inflation in the euro area: Causes and consequences”, *ECB Occasional Paper No. 181*.

42. Staiger, D, JH Stock, and MW Watson (1997), “The NAIRU, unemployment and monetary policy” *Journal of Economic Perspectives* 11:33-49.

43. Blanchard, O and L Summers (1986), “Hysteresis and the European Unemployment Problem”, *NBER Macroeconomics Annual, Vol. 1.* and Blanchard, O, E Cerutti and L Summers (2015), “Inflation and activity ? two explorations and their monetary policy implications”, *ECB Forum on Central Banking on Inflation and Unemployment in Europe, Sintra 2015*.

44. Blanchard, O (2017), “Should we reject the natural rate hypothesis?”, *Peterson Institute for International Economics Working Paper 17/14*; Farmer, R (2013), “The Natural Rate Hypothesis: An idea past its sell-by date”, *NBER Working Paper No. 19267* and *Bank of England Quarterly Bulletin, September Q3, pp 244-256, 2013*; see also an earlier paper Beyer, A and R Farmer (2002), “Natural rate doubts” *ECB Working Paper 121*.

45. Estrella, A and F Mishkin (1998), “Rethinking the role of NAIRU in Monetary policy: the implications of model formulation and uncertainty”, *Federal Reserve Bank of New York*.

46. This regression approach follows the analysis in Orlandi, F (2012), “Structural Employment and its Determinants in EU Countries”, *European Commission Economic Papers* 455. Using a broader set of variables, another paper that illustrates that European Commission estimates of the NAIRU are not a good proxy of structural unemployment is Heimberger, P, J Kapeller, and B Schütz (2016), “What’s ‘structural’ about unemployment in Europe: on the determinants of the European Commission’s NAIRU estimates”, *ICAE, University of Linz, Working Paper No 47*.

47. See European Commission (2015), “Structural unemployment vs. NAWRU: implications for the assessment of the cyclical position and the fiscal stance”, *Economic Papers* 552.

48. See European Commission (2017), “NAWRU estimation using structural labour market indicators”, *Discussion Paper 069*.

49. For a more in-depth discussion see Constâncio, V (2017), “[The future of monetary policy frameworks](#)”, lecture at the

Instituto Superior de Economia e Gestão, Lisbon. See also Duffie, D and A Krishnamurthy (2016), "Pass-through efficiency in the FED's new monetary policy setting", presented at the Annual Economic Policy Symposium, Federal Reserve Bank of Kansas City; Greenwood R, S Hanson and J Stein (2016), "The Federal Reserve's Balance Sheet as a Financial-Stability Tool", 2016 Economic Policy Symposium Proceedings. Jackson Hole: Federal Reserve Bank of Kansas City.

50. See for instance Blanchard, O, G Dell'Ariccia and P Mauro (2010), "Rethinking Macroeconomic Policy", *Journal of Money, Credit and Banking*, 42: 199–215 and Krugman, P (2014), "Inflation targets reconsidered", *ECB Forum on Central Banking*, May 2014.

51. Constâncio, V (2016), "Challenges for future monetary policy frameworks: A European perspective", speech at the 19th Annual International Banking Conference "Achieving Financial Stability: Challenges to Prudential Regulation", Federal Reserve Bank of Chicago, 4 November 2016.

52. Available at <http://populardemocracy.org/news-and-publications/prominent-economists-question-fed-inflation-target>.

53. Bernanke, B (2017), "Monetary Policy in a New Era", conference on Rethinking Macroeconomic Policy, Peterson Institute for International Economics, 12-13 October 2017.

54. Svensson, LEO (1999), "Price-Level Targeting versus Inflation Targeting: A Free Lunch?", *Journal of Money, Credit and Banking*, 31(3):277-295. Gaspar, V, F Smets and D Vestin (2007), "Is the time ripe for price level path stability?", *ECB Working Paper 818*; Schmidt, S (2011), "The cost channel, indeterminacy, and price-level versus inflation stabilization", *The B.E. Journal of Macroeconomics*, 11(1).

55. See presentation of the ECB Annual Report 2017 to the Committee on Economic and Monetary Affairs of the European Parliament, [Introductory Remarks](#) by Vítor Constâncio, Vice-President of the ECB, Brussels, 9 April 2018.

56. Duffie, D and A Krishnamurthy (2016), "Pass-through efficiency in the FED's new monetary policy setting" and Greenwood, R, S Hanson and J Stein (2016), "The Federal Reserve's balance sheet as a financial stability tool", both presented at the Annual Economic Policy Symposium, Federal Reserve Bank of Kansas City.

57. See Constâncio, V (2017), "Growth, adjustment and resilience in the euro area", at the Forum Villa d'Este, Cernobbio, 2

September 2017.

References

- Altavilla, C, G Carboni and R Motto (2015), "Asset purchase programmes and financial markets: lessons from the euro area", ECB Working Paper 1864.
- Alves, N and CR Marques (2004), "Money in the ECB's monetary policy strategy: a reassessment", Banco de Portugal, mimeo, December 2004, later published as Banco de Portugal Working Paper No. 20/2007 "Is the euro area M3 abandoning us?".
- Bernanke, B (2017), "Monetary Policy in a New Era", conference on Rethinking Macroeconomic Policy, Peterson Institute for International Economics, 12-13 October 2017.
- Beyer, A and R Farmer (2002), "Natural rate doubts", ECB Working Paper 121.
- Blanchard, O and L Summers (1986), "Hysteresis and the European Unemployment Problem", NBER Macroeconomics Annual, Vol. 1.
- Blanchard, O, G Dell'Ariccia and P. Mauro (2010), "Rethinking Macroeconomic Policy", Journal of Money, Credit and Banking, 42:199–215 and
- Blanchard, O and D Leigh (2013), "Growth Forecast Errors and Fiscal Multipliers", American Economic Review, 103(3): 117-20.
- Blanchard, O, E Cerutti and L Summers (2015), "Inflation and activity ? two explorations and their monetary policy implications", ECB Forum on Central Banking on Inflation and Unemployment in Europe, Sintra 2015.
- Blanchard, O (2017), "The Need for Different Classes of Macroeconomic Models", Peterson Institute for International Economics Real Time Economic Issues Watch, 12 January 2017.
- Blanchard, O (2017), "Should we reject the natural rate hypothesis?", Peterson Institute for International Economics Working Paper 17/14.

Brayton, F and PA Tinsley (1996), "A guide to FRB/US: a macroeconomic model of the United States", Finance and Economics Discussion Series 96-42, Board of Governors of the Federal Reserve System.

Breckenfelder J, F De Fiore, P Andrade, P Karadi and O Tristani (2016), "The ECB's asset purchase programme: an early assessment", ECB Working Paper Series 1956.

Ciccarelli, M and C Osbat (ed) (2017), "Low inflation in the euro area: Causes and consequences", ECB Occasional Paper 181.

Coibion, O and Y Gorodnichenko, (2015), "Is the Phillips Curve Alive and Well after All? Inflation Expectations and the Missing Disinflation", American Economic Journal: Macroeconomics, 7(1):197-232.

Constâncio, V (2014), "[A new phase of the ECB's monetary policy](#)", speech at the ECB workshop on non-standard monetary policy measures, Frankfurt 6 October 2014.

Constâncio, V (2015), "Understanding Inflation Dynamics and Monetary Policy," panel remarks at the Annual Economic Policy Symposium, Federal Reserve Bank of Kansas City.

Constâncio, V (2016), "Challenges for future monetary policy frameworks: A European perspective", speech at the 19th Annual International Banking Conference "Achieving Financial Stability: Challenges to Prudential Regulation", Federal Reserve Bank of Chicago, 4 November 2016.

Constâncio, V (2017), "[The future of monetary policy frameworks](#)", lecture at the Instituto Superior de Economia e Gestão, Lisbon.

Constâncio, V (2017), "Inequality and macroeconomic policies", speech at the Annual Congress of the European Economic Association, Lisbon 22 August 2017.

Constâncio, V (2017), "Growth, adjustment and resilience in the euro area", at the Forum Villa d'Este, Cernobbio, 2 September 2017.

Constâncio, V (2017), "Developing models for policy analysis in central banks", speech at the Annual Research Conference, Frankfurt am Main 25-26 September 2017.

Constâncio, V (2018), "Financial stability risks and macroprudential policy in the euro area", speech at the ECB and Its

Watchers XIX Conference, Frankfurt am Main, 14 March 2018.

Constâncio, V (2018) [Presentation of ECB Annual Report 2017 to the Committee on Economic and Monetary Affairs of the European Parliament](#), Brussels, 9 April 2018.

De Grauwe, P (2005), ["Monetarists cry wolf on eurozone inflation"](#), Opinion, Financial Times.

Duffie D and A Krishnamurthy (2016), "Pass-through efficiency in the FED's new monetary policy setting", presented at the Annual Economic Policy Symposium, Federal Reserve Bank of Kansas City;

ECB (2011), "The monetary policy of the ECB", third edition, May.

EMI (1997) ["The single monetary policy in stage three: elements of the monetary policy strategy"](#).

Estrella, A and F Mishkin (1998), "Rethinking the role of NAIRU in Monetary policy: the implications of model formulation and uncertainty", Federal Reserve Bank of New York.

European Commission (2014), "The production function methodology for calculating potential growth rates & output gaps", Economic Papers 535, page 7.

European Commission (2015), "Structural unemployment vs. NAWRU: implications for the assessment of the cyclical position and the fiscal stance", Economic Papers 552.

European Commission (2017), "NAWRU estimation using structural labour Market indicators" Discussion Paper 069.

Farmer, R. (2013), "The Natural Rate Hypothesis: An idea past its sell-by date", NBER Working Paper No. 19267 and Bank of England Quarterly Bulletin, September Q3, pp 244-256, 2013;

Gali, J and M Gertler (1999), "Inflation dynamics: a structural econometric analysis", Journal of Monetary Economics. 44:195-222;

Gali, J, M Gertler and D. López-Salido (2005), "Robustness of the estimates of the hybrid new Keynesian Phillips Curve", Journal of Monetary Economics, 52:1107-18.

Gaspar, V, F Smets and D Vestin (2007), "Is the time ripe for price level path stability?", ECB Working Paper 818;

Gali, J and L Gambetti (2015), "The Effects of Monetary Policy on Stock Market Bubbles: Some Evidence", American Economic Journal: Macroeconomics 2015, 7(1): 233–257.

- Gerlach, S and LEO Svensson (2000), "Money and Inflation in the Euro Area: A Case for Monetary Indicators?", NBER Working Paper No. 8025, published later in the *Journal of Monetary Economics* 50 (2003) 1649-1672.
- Gordon, R (2009), "The history of the Phillips Curve: consensus and bifurcation", *Economica* 78(309):10-50.
- Gordon, R (2013), "The Phillips curve is alive and well: inflation and the NAIRU during the slow recovery", NBER Working Paper 19390.
- Greenwood R, S Hanson, and J. Stein (2016), "The Federal Reserve's Balance Sheet as a Financial-Stability Tool", 2016 Economic Policy Symposium Proceedings, Jackson Hole: Federal Reserve Bank of Kansas City.
- Gürkaynak, RS, B Kisacikoglu, and B Rossi (2013), "Do DSGE Models Forecast More Accurately Out-of-Sample than VAR Models?", CEPR Discussion Paper, July 2013.
- Heimberger, P, J Kapeller, and B Schütz (2016), "'What's 'structural' about unemployment in Europe: on the determinants of the European Commission's NAIRU estimates", ICAE, University of Linz, Working Paper No 47.
- IMF World Economic Outlook, April 2005.
- Issing, O (2006), "The ECB's Monetary Policy Strategy: Why did we choose a two Pillar Approach?", contribution to the 4th ECB Central Banking Conference, Frankfurt, November.
- Jarociński M and M Lenza (2016), "An inflation-predicting measure of the output gap in the euro area", ECB Working Paper 1966, forthcoming article in the *Journal of Money, Credit and Banking*.
- Jasova M, C Mendicino and D Supera (2018), "Rollover Risk and Bank Lending Behavior: Evidence from Unconventional Central Bank Liquidity", mimeo.
- King, R and MW Watson (2012), "Inflation and unit labour costs", *Journal of Money, Credit and Banking*, 44(s2):11-149.
- Krugman, P (2014), "Inflation targets reconsidered", ECB Forum on Central Banking, May 2014.
- Lenza, M and J Slacalek (2017), "The effects of unconventional monetary policy on inequality in the euro area", mimeo, European Central Bank.
- Lorenzoni, G (2009), "A Theory of Demand Shocks", *American Economic Review*, 99: 2050–84 as an example of models in which a drop in consumer sentiment can lead to demand shocks.

Mavroeidis, S, M Plagborg-Møller and J Stock (2014), "Empirical Evidence on Inflation Expectations in the New Keynesian Phillips Curve", *Journal of Economic Literature* 52(1):124-188, March 2014.

OECD Economic Outlook, Vol 2005, issue 2.

Orlandi, F (2012), "Structural Employment and its Determinants in EU Countries", *European Commission Economic Papers* 455.

Quint, D and O Tristani (2017), "Liquidity provision as a monetary policy tool: The ECB's non-standard measures after the financial crisis", *Journal of International Money and Finance*, 80:15-34.

Rannenberg, A, C Schoder and J Strasky, (2015), "The macroeconomic effects of the European Monetary Union's fiscal consolidation from 2011 to 2013: a quantitative assessment", *IMK Working Paper* 156.

Roberts, JM (2006), "Monetary Policy and inflation dynamics", *International Journal of Central Banking* 2:193-230.

Rünstler, G and M Vlekke (2018), "Business, Housing and Credit Cycles", *Journal of Applied Econometrics*, 33(2):212-226.

Schmidt, S (2011), "The cost channel, indeterminacy, and price-level versus inflation stabilization", *The B.E. Journal of Macroeconomics*, 11(1).

Schüler, Y, P Hiebert and I. Jaccard (2017), "Contrasting financial and business cycles: Stylized facts and candidate explanations", mimeo Bundesbank and ECB.

Staiger, D, JH Stock, and MW Watson (1997), "The NAIRU, unemployment and monetary policy" *Journal of Economic Perspectives* 11:33-49.

Stark, J, "[The Irresponsible ECB](#)".

Stein, J (2013), "Overheating in Credit Markets: Origins, Measurement, and Policy Responses", speech at the "Restoring Household Financial Stability after the Great Recession: Why Household Balance Sheets Matter" research symposium sponsored by the Federal Reserve Bank of St. Louis.

Svensson, LEO (1999), "Price-Level Targeting versus Inflation Targeting: A Free Lunch?", *Journal of Money, Credit and Banking*, 31(3):277-295.

Svensson, LEO (2008), "Inflation targeting", in *The New Palgrave Dictionary of Economics*, Second Edition, 2008.

Svensson, LEO, (2010), "Inflation Targeting," in: Benjamin M. Friedman and Michael Woodford (ed.), *Handbook of Monetary Economics, Edition 1, Volume 3, Chapter 22*, pp 1237-1302.

Svensson, LEO (2017c), "[Leaning Against the Wind: Costs and Benefits, Effects on Debt, Leaning in DSGE Models, and a Framework for Comparison of Results](#)," *International Journal of Central Banking* 13:385-408.

Svensson, LEO (2017), "Cost-Benefit Analysis of Leaning against the Wind", *Journal of Monetary Economics*, 90:193–213.

Tarullo, D (2017), "Monetary policy without a theory of inflation", *Hutchins Center at Brookings Institution Working Paper No.33*.

The Oxford Review of Economic Policy Volume 34, Issue 1-2, Spring-Summer 2018.

Veld, J (2013), "Fiscal consolidations and spillovers in the Euro area periphery and core", *EU Commission European Economy Paper, Economic Papers 506*, October 2013, Table 5, pages 10 and 11.

This article is based on a [speech](#) delivered at the Conference on "Central Banks in Historical Perspective: What Changed After the Financial Crisis?", organised by the Central Bank of Malta, Valletta, 4 May 2018

How the ECB planted the seeds of the euro area crisis

Athanasios Orphanides considers Europe's monetary policy and fiscal discipline, and writes that the ECB can make a positive contribution towards stabilizing the fragility of the euro area

Since the beginning of the euro area crisis, euro area governments have experienced greater fiscal stress than governments of advanced economies outside the euro area with comparable or weaker fiscal fundamentals. This column, taken from a recent VoxEU eBook, asks what the source of this fragility has been, how it relates to the role of the ECB in exerting fiscal discipline in the euro area, and how can it be corrected.

Since the beginning of the euro area crisis, euro area governments have experienced greater fiscal stress than governments of advanced economies outside the euro area with comparable or weaker fiscal fundamentals (De Grauwe 2011, Orphanides 2017b and references therein). What has been the source of this fragility? How does it relate to the role of the ECB in exerting fiscal discipline in the euro area? How can it be corrected?

The cause of the instability in euro area government bond markets can be traced to a discretionary decision taken by the ECB Governing Council before the crisis, in the aftermath of the failure of the Stability and Growth Pact (SGP) – the mechanism of the Maastricht framework meant to ensure fiscal discipline by euro area governments. The decision effectively delegated the determination of collateral eligibility of euro area government debt to private credit-rating agencies and subsequently led to the compromising of the safe asset status of government debt. This chapter sheds light on the circumstances of this unfortunate decision and discusses how its consequences can be ameliorated with appropriate use of the ECB's discretionary authority, in accordance with its mandate¹.

The demise of the Stability and Growth Pact

A prerequisite for the success of the economic and monetary union is a framework that can ensure sound fiscal policies by the governments of member states. The SGP was adopted in 1997, before the introduction of the common currency, as the pillar meant to provide incentives to the member states to maintain fiscal soundness. It required governments to contain fiscal deficits to be at most 3% of GDP and to work towards keeping government debt below 60% of GDP over time. The SGP failed in 2003, when the French and German governments first violated

its provisions and subsequently successfully demonstrated that they could block its enforcement, rendering it meaningless. By March 2005, the demise of the SGP was sealed when EU governments formally adopted reforms that weakened the pact (Eijffinger 2005, Buitter 2006).

Without a credible mechanism to ensure sound fiscal policies by the member states, the long-term success of the monetary union was under threat. Following the failure of the SGP, financial markets became more important as a means of discouraging member state governments from running excessive deficits. If fear of default on government debt could be cultivated in financial markets whenever governments with high debt ran excessive deficits, holders

The ECB's decision to use its collateral framework as a disciplining device following the demise of the SGP in 2005 was unfortunate

of government debt would demand an additional credit premium. Although this would unnecessarily raise the cost of debt finance for governments, it could also discourage fiscal profligacy. In this manner, market discipline could potentially replace the role of the SGP as a mechanism for securing fiscal soundness in the monetary union.

Market discipline and the ECB collateral framework

The operational framework of ECB monetary policy blunted the potential role of market discipline. Similar to the treatment of government debt issued by their governments in any other central bank, when the euro was adopted the ECB accepted the government debt of all euro area member states as eligible collateral for credit operations.

Financial institutions holding the debt of any euro area government could obtain liquidity from the ECB to finance their holdings by posting the debt as collateral. This ruled out the possibility of liquidity pressures on any euro area government and, since the SGP assured long-term debt sustainability, there was virtually no market discrimination among the government debt of euro area member states. The government debt of all euro area member states was considered a safe asset. This was appropriate also in light of the favourable treatment of government debt that had been hardcoded into the regulation of banks and pension funds.

In the context of the demise of the SGP in March 2005, the ECB faced criticism for not using the discretionary power relating to its collateral framework in a manner that would leverage market discipline. At the press conference following the 7 April 2005 meeting of the ECB Governing Council, President Trichet was asked to comment on the view that the ECB framework hindered the market instead of helping the market *“reward sound public finances and punish unsound finances”*.

In his response, Trichet reiterated that it was imperative to restore the SGP’s credibility and stressed that *“every institution has to be up to its responsibility, and this is truer than ever”*. With respect the ECB’s collateral framework, he

noted that: “... it is not the intention of the Governing Council of the ECB to change our framework now”. (ECB 2005.) Speeches by ECB Executive Board Member Otmar Issing on 20 May 2005 and ECB Vice President Lucas Papademos on 3 June 2005 followed up on this issue. Papademos (2005) observed: “... it has been suggested that the ECB’s collateral policy could encourage market reactions to fiscal policies, for example, by imposing haircuts for bonds issued by governments that fail to comply with the SGP”. While acknowledging that such proposals might appear appealing, both Issing and Papademos expressed their disagreement, and Issing (2005) explicitly called these suggestions ‘misguided’.

Using the collateral framework of the ECB as a disciplining device could be seen as being inappropriate on several grounds. As Papademos summarised: “The purpose of the ECB’s collateral policy is to ensure sufficient availability of collateral to allow a smooth implementation of monetary policy and to protect the Eurosystem in its financial operations. Using the framework for alternative purposes would be contrary to the ECB’s mandate.”

Article 18 of the Statute governing the ECB authorises the institution to conduct credit operations “with lending being based on adequate collateral”. The determination of what constitutes ‘adequate’ collateral is left to the discretion of the ECB Governing Council. When the euro was created, the eligibility of government debt was beyond questioning; it was inconceivable that the ECB would use its discretion to declare that the government debt of a member state was not ‘adequate’ collateral, absent extreme circumstances that rendered that state’s debt unsustainable.

The ECB also decided to accept private assets as eligible collateral, provided that these assets met ‘high credit standards’. Since the list of eligible collateral included tens of thousands of private assets, the ECB took into account available ratings by private credit-rating agencies in its assessment of these assets. By declaring some private assets,

but not others, to be eligible collateral, the ECB powerfully demonstrated its discretion in determining the meaning of 'adequate' collateral in its credit operations.

Credit ratings, the cliff effect, and the euro area crisis

As 2005 progressed, the consequences of weakening the SGP on fiscal finances became increasingly evident. About half the member states ran afoul of the rules. The criticism directed at the ECB for not using its collateral framework as a disciplining device continued. In early November 2005, the ECB communicated a drastic change to its collateral framework. Collateral eligibility for all assets, including government debt, would be subject to a minimum credit-rating threshold. The policy change was immediately recognised as the ECB's response to the weakening of the SGP, an attempt to cultivate market discipline by punishing governments that were perceived as more likely to follow loose fiscal policies (eg. Atkins and Schieritz 2005, Barrett 2005, Curtin 2005). With this decision, the ECB effectively communicated that it had decided to use the discretionary authority relating to its collateral framework as a disciplining device against member states governments.

The decision to tie collateral eligibility to credit-rating thresholds created the potential for a destabilising cliff effect, thereby precipitating a crisis. During a panic, fears of downgrades and potential default would become self-fulfilling if investors projected that the ECB would refuse to accept government debt as collateral even for member states with sound fiscal fundamentals. The loss of eligibility could lead to an unnecessary credit event. In light of the potential multiplicity of expectational equilibria in sovereign markets, the credit-rating threshold would guide markets to adverse outcomes for 'weaker' member states.

In the monetary union, investors would scramble to replace lower-rated debt – seen as more likely to fall off the edge of the eligibility cliff – with higher-rated debt, which would remain eligible. The demand for euro-

denominated government debt would shift away from states perceived to be 'weaker' to states perceived to be 'stronger', inducing an indirect transfer in the form of a risk premium for 'weaker' states and a safe haven subsidy for 'stronger' ones. In a panic, declaring government debt as ineligible collateral merely on the basis of private credit ratings rather than on the basis of fundamentals, would virtually inevitably lead to crisis.

The force of the potential instability created by the ECB in 2005 became evident during the Global Crisis but was only fully realised following the October 2010 agreement reached in Deauville by the French and German governments. The Deauville agreement implied that if a euro area member state faced liquidity difficulties, capital losses would be forced on investors holding the debt of that state, even if the debt was sustainable.

Given the ECB policy to deny collateral eligibility even for governments with sustainable fundamentals when credit-rating agencies downgraded a sovereign below the minimum threshold, the Deauville agreement successfully injected unnecessary default risk in most euro area sovereign markets, thus compromising the safe asset status of government debt. While the French and German governments later pulled back from the automatic imposition of default, the demonstration of how the ECB collateral framework could be used to precipitate default has sustained an elevated credit default risk in financial markets for 'weaker' euro area member states relative to other advanced economies with similar or worse fiscal fundamentals.

Can the damage be reversed?

The ECB's decision to use its collateral framework as a disciplining device following the demise of the SGP in 2005 was unfortunate. In retrospect, the misgivings that had been expressed in May and June of 2005 by Issing and Papademos proved justified. Their analysis already suggested a fundamental legitimacy problem with the subsequent ECB actions.

As Issing had pointed out: “[I]t is clear that the design of the Stability and Growth Pact and its implementation are governmental responsibilities, to be controlled by parliaments... [I]t is not and cannot be the ECB’s role to enforce fiscal discipline and to correct shortcomings in the implementation of the Stability and Growth Pact. Attempting to do so would politicise the ECB’s operations and ultimately threaten its independence, on which the credibility and effectiveness of monetary policy crucially rely.” Using the ECB’s collateral framework as a disciplining device is contrary to the ECB’s mandate.

In accordance with the Treaty, enforcement ought to be left to the European Commission and the member states of the European Union and the euro area. The ECB should suspend its earlier discretionary decisions that have effectively converted its collateral framework to a disciplining device. The ECB should discontinue delegating the determination of collateral eligibility of government debt to private rating agencies.

The ECB has the responsibility to independently determine whether government debt of euro area member states is ‘adequate’ collateral on the basis of fundamentals- based debt sustainability analysis. The ECB can make a positive contribution towards stabilizing the fragility of the euro area by focusing on its mandate. ■

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Endnotes

1. The exposition draws heavily on material that is presented in Orphanides (2017a, c).

References

- Atkins, R and M Schieritz (2005), "ECB targets its problem nations", *Financial Times*, 9 November.
- Barrett, E (2005), "Ratings Watch: Agencies Turn Policemen Under ECB Plan", *Dow Jones Newswires*, 9 November.
- Buiter, W (2006), "The 'Sense and Nonsense of Maastricht' revisited: What have we learnt about stabilization in EMU?", *Journal of Common Market Studies* 44(4): 687- 710.
- Curtin, M (2005), "The Skeptic: ECB cracks Its Whip", *Dow Jones Newswires*, 10 November.
- De Grauwe, P (2011), "[Managing a fragile Eurozone](#)", *VoxEU.org*, 10 May.
- Eijffinger, S (2005), "On a Reformed Stability and Growth Pact", *Intereconomics* 40(3): 141-147.
- ECB (2005), "[Introductory statement with Q&A](#)", press conference, 7 April.
- Issing, O (2005), "[One size fits all! A single monetary policy for the euro area](#)", speech, 20 May.
- Orphanides, A (2017a), "[The Fiscal-Monetary Policy Mix in the Euro Area: Challenges at the Zero Lower Bound](#)", MIT Sloan Research Paper No. 5197-17.
- Orphanides, A (2017b), "[Japanese frugality versus Italian profligacy?](#)", *VoxEU.org*, 6 June.
- Orphanides, A (2017c), "[ECB monetary policy and euro area governance: Collateral eligibility criteria for sovereign debt](#)", MIT Sloan Research Paper No. 5258-17.
- Papademos, L (2005), "[The political economy of the reformed Stability and Growth Pact: implications for fiscal and monetary policy](#)", speech, 3 June.

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The euro area economy is shedding the crisis legacies

Increasingly fit again. There is scope for solid GDP growth above potential for some time, Marco Buti, Björn Döhring and José Leandro find

The outlook for the euro area economy depends to a large extent on whether the impact of the crisis will turn out to be permanent or transitory. This column attempts to chart out the path ahead, starting from what different narratives of the 'atypical recovery' imply about the further trajectory of GDP and inflation. In view of remaining slack, and barring an exogenous shock or policy mistakes, there is scope for solid GDP growth above potential for some time. The factors that should eventually drive an increase in core inflation are gaining force, but only gradually. The current supportive policy mix is thus appropriate for the euro area as a whole, but reforms that raise productivity and increase the economy's resilience to shocks should be accelerated.

The European Commission has just published its winter 2018 [interim forecast](#) (European Commission 2018). This column puts the near-term economic outlook for the euro area in its broader context and attempts to derive guidance for economic policy.

GDP growth continued to be strong in the second half of 2017, leading to positive forecast revisions by institutional and private-sector forecasters alike. Yet, the outlook for underlying inflation remains subdued once one abstracts from the temporary influence of energy prices.

The positive short-term outlook for the euro area at the start of 2018 gives rise to three sets of questions:

- Did the crisis cause scars or scratches? Which factors of the 'atypical' recovery will remain relevant?
- How fit will the economy become? How fast and how far can GDP grow before supply-side constraints become binding?
- When will core inflation pick up for good?

The answer to these questions is key to guide the appropriate policy stance going forward.

The recovery that started in the second quarter of 2013 has been exceptionally slow. This is consistent with the view that recoveries from deep economic and financial crisis are generally held back by protracted balance sheet adjustment and deleveraging in the private and the public sector (Reinhart and Rogoff 2014). Throughout the slow recovery, the discussion of its 'atypical' features has remained intense.

Efforts to conceptualise these more broadly include the idea of secular stagnation (Summers 2015, Gordon 2015) and the discussion of hysteresis versus transitory (yet protracted) crisis legacies – 'scars or scratches' in the words of Coeuré (2017) (see also Blanchard 2018). Explanations that focus on high savings and a shortfall of demand lead to a prediction of low GDP growth amid persistently very low inflation. Approaches that focus on the crisis impact on

... now is the time for strengthening resilience to worsening general economic conditions as well as asymmetric shocks

potential growth do not necessarily imply persistently low inflation, unless additional assumptions are added (eg. the central bank is unable to accommodate the lower equilibrium real interest rate).

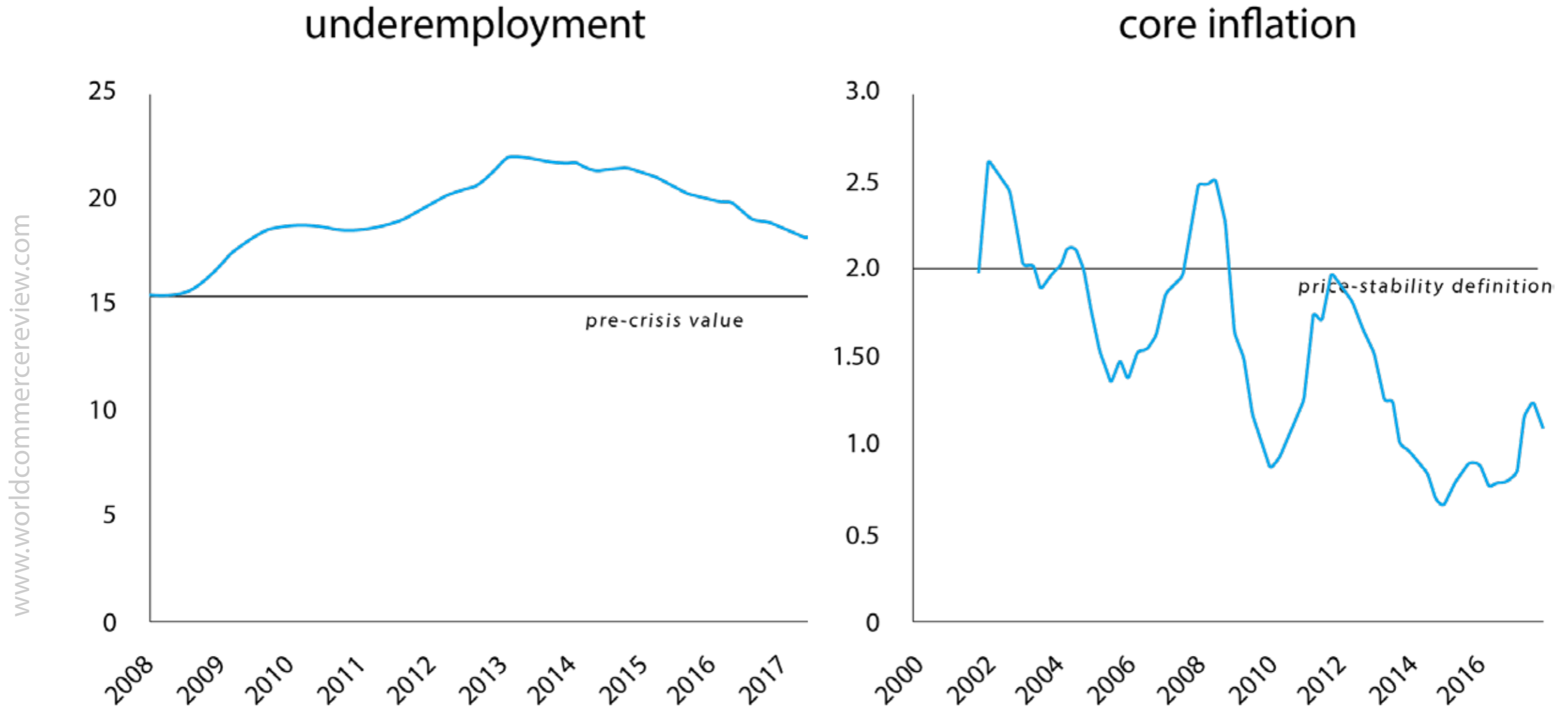
Where does the euro area economy stand in early 2018 relative to these various post-crisis narratives? The subsequent sections discuss the crisis legacies in terms of unemployment, investment, inflation and the external balance, as well as the growth potential. On this basis, our take is that if the crisis has clearly led to a permanent fall in the level of potential output, its impact on the potential growth rate is still unclear. Although there are signs that, in line with Coeuré's conclusion, the crisis *"may have caused scratches, but not necessarily scars"*, a risk of hysteresis – ie. scars – remains.

At the same time, labour market slack that is larger than suggested by the headline unemployment rate (more below) shows that there is scope for solid growth to continue for some time before wages and price pressures accelerate and become self-sustained. And the recovery in investment, as well as a possible cyclical increase of productivity growth, could not only have a positive effect on actual growth but could also modestly increase long-run potential growth.

Mostly recovered...

The most debilitating crisis legacies are gradually fading (Figure 1). Total investment as a share of GDP now stands at 21%, still somewhat below the level in the early 2000s. But equipment investment has recovered and is now at 6½% of GDP, slightly higher than in the early 2000s. 'Other investment', which includes intangibles, has increased as a share of GDP over the past decade without being much affected by the crisis. It's the share of construction in GDP that remains more subdued – at 10% of GDP against an average of 12½% in 2000-2005, reflecting reduced public infrastructure investment and the drawn-out adjustment in the residential construction sector following the housing boom and bust.

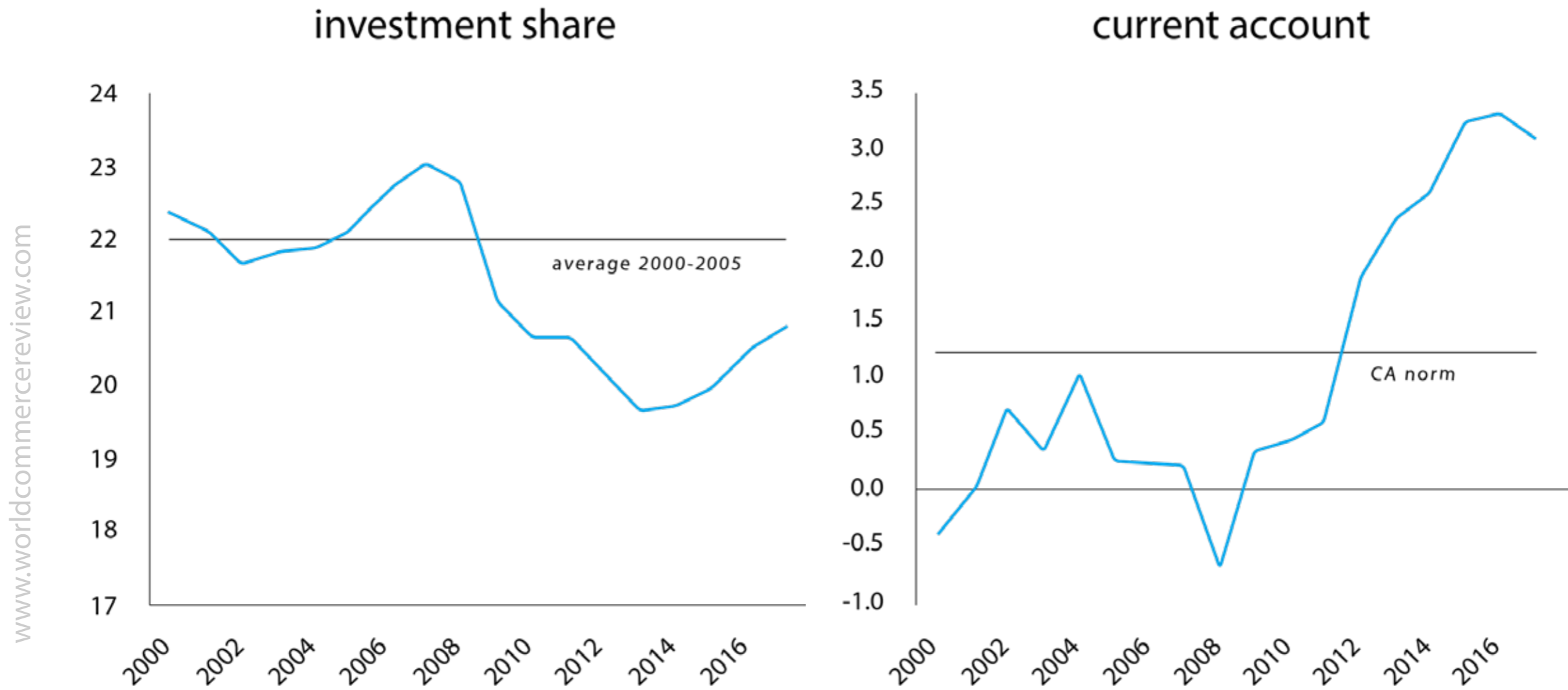
Figure 1. Crisis legacies



Source: Eurostat, AMECO, own calculations.

Notes: The methodology used for calculating the current account norm is akin to that followed by the IMF's External Balance Assessment (Philips et al. 2013). The main differences consist of a larger sample, a slightly different empirical specification, and some differences in the definition of norms.

Figure 1. Crisis legacies continued



Source: Eurostat, AMECO, own calculations.

Notes: The methodology used for calculating the current account norm is akin to that followed by the IMF's External Balance Assessment (Philips et al. 2013). The main differences consist of a larger sample, a slightly different empirical specification, and some differences in the definition of norms.

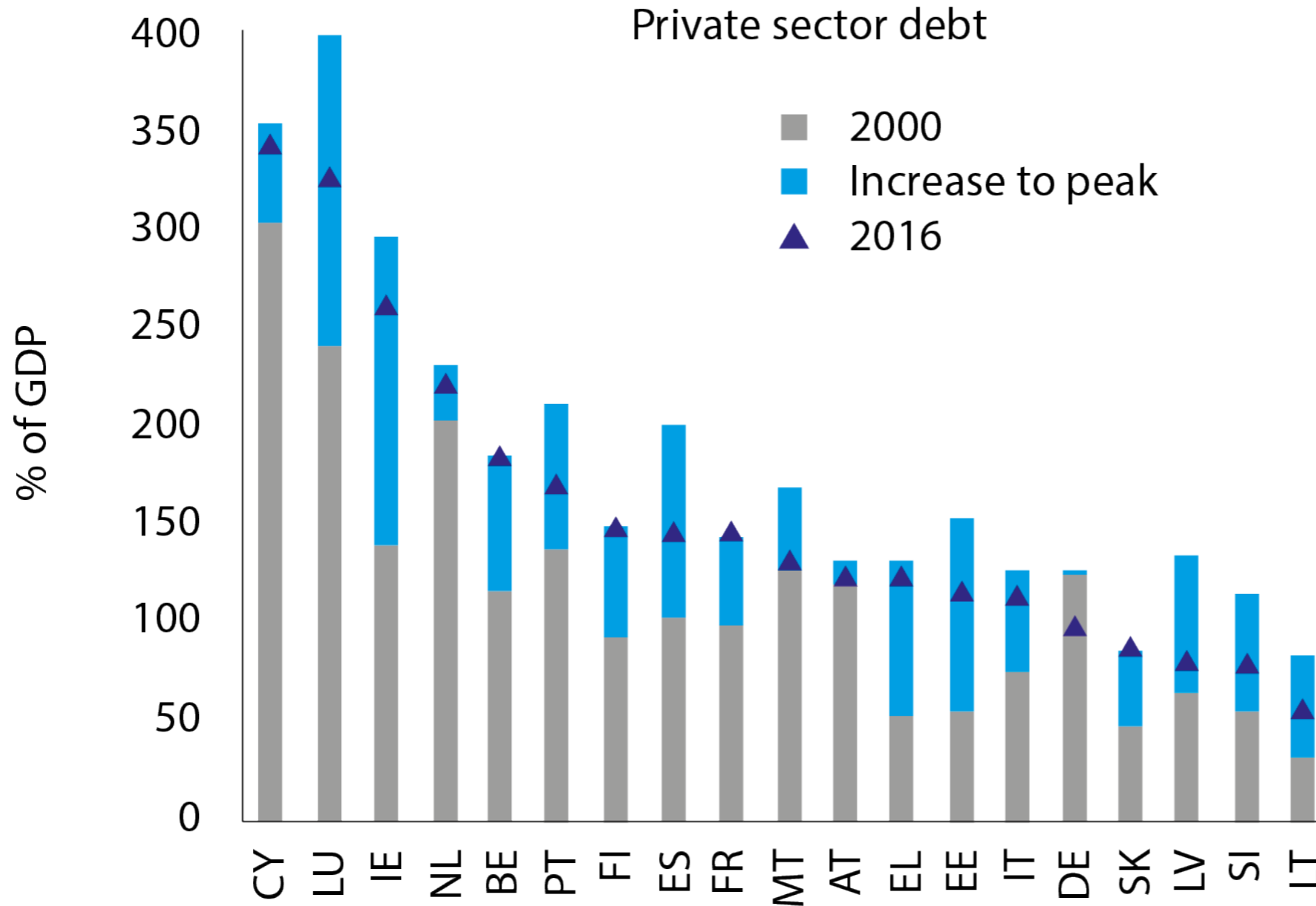
Debt levels in the public and private sectors (Figure 2) are still elevated, but they are now acting less as a drag on the cyclical expansion. Until recently, deleveraging had progressed laboriously, weighing on demand. The faster GDP growth offers the opportunity of 'passive' deleveraging through the denominator (Priftis and Theofilakou 2018).

Employment growth has been quite robust in recent years, even as GDP growth was rather modest (ECB 2016). The rapid pace of job creation – the euro area now counts 7 million more jobs than in 2013 (and 1.7 million more than in 2008) – has been a major factor raising aggregate disposable incomes and underpinning the steady expansion of private consumption. It has also led to a rapid reduction in headline unemployment. The unemployment rate in the euro area now stands at 8.7%, still above its pre-crisis level but not worse than in 2004.

Firms increasingly report difficulties in finding skilled workers. The share of firms in the euro area industry survey that report labour as a constraint to production has increased from below 5% in 2013 to 16% in early 2018. However, there is still slack in the labour market. In the near term, there is scope for expanding hours and participation. In fact, the number of part-time workers who would prefer to work longer hours remains elevated, and so does the number of those workers marginally attached to the labour force. In the second quarter of 2017, underemployment (persons seeking work but not immediately available, not seeking but available and underemployed part-time workers) represented 10.2% of the labour force against 7.8% in early 2008.

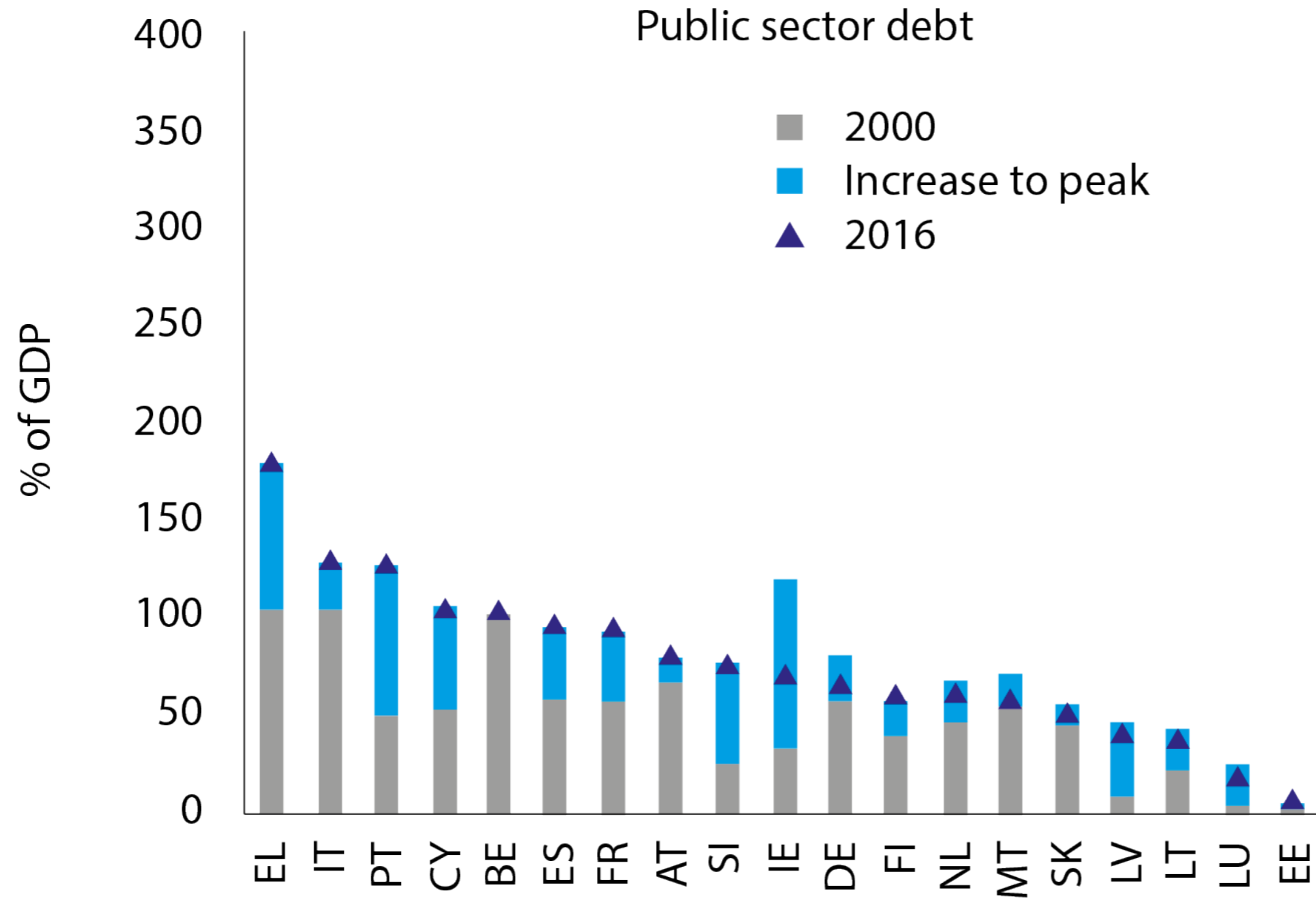
The fading of some of the crisis legacies has cleared the path for the acceleration of economic activity seen since late 2016. The euro area economy has further benefitted from the strong and synchronised upswing of global GDP and the rebound of world trade. In terms of the GDP growth cycle, the euro area economy has now completed the recovery and entered the expansion phase.

Figure 2. Debt



Source: AMECO, own calculations.

Figure 2. Debt



Source: AMECO, own calculations.

In sum, the crisis legacies on the demand side look persistent but not permanent in the sense of strict hysteresis. There is still slack in the labour market and subdued investment, but their extent is falling. By contrast, no meaningful progress can be reported on the excess of savings over investment which is at the heart of the euro area's current account surplus. Wage growth and inflation are still low.

Importantly, the normalisation of inflation remains policy-dependent. On the positive side, barring exogenous shocks or policy mistakes, this expansion at a solid but temperate speed might continue for quite some time given the positive sentiment, remaining slack, and the policy support that is still being provided. The next section discusses this further by focusing on how this 'expansion with a qualifier', as one might call it, interacts with the supply side.

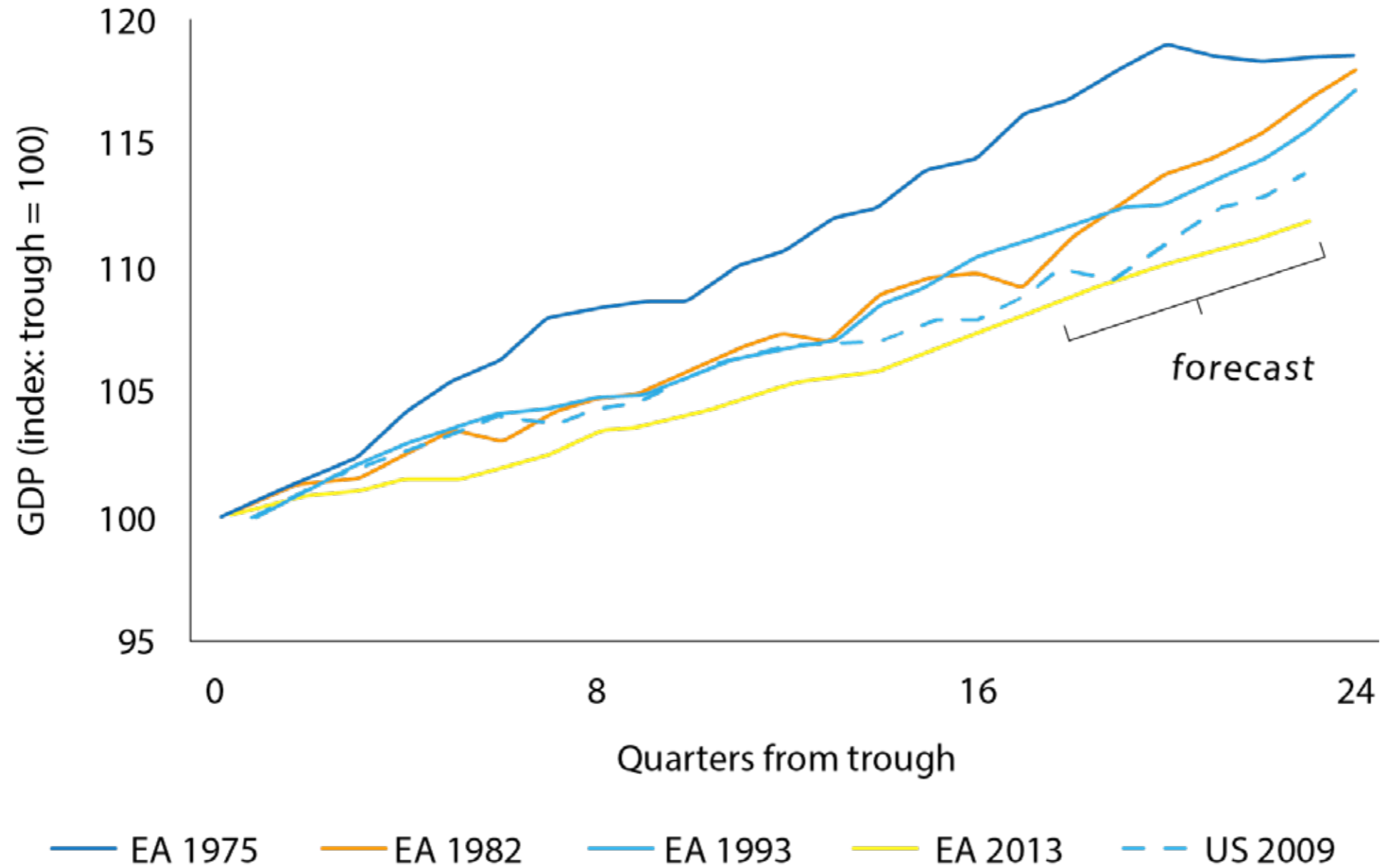
... and exercising to run again

Can the euro area economy continue growing at recent rates now that most estimates suggest the output gap is small or already closed? Or is an inflection and convergence towards potential growth inevitable as supply constraints become binding?

An answer to this question would require not only locating the supply constraints, which is subject to well-known uncertainties surrounding the assessment of slack in real time, it also requires taking into account the possible endogeneity of supply. This necessitates further research; for the purpose of this column, a few qualitative remarks underpinned by visual evidence will have to suffice.

A look at past business cycles in the euro area confirms that GDP growth since 2013Q2 has been particularly slow (Figure 3). The fastest expansion in the past four decades was the one starting in 1975, but it was over after only five years. The shortest one was the aborted recovery starting in 2009 (not displayed).

Figure 3. Comparison of business cycles



Source: ECB (area-wide model database), BEA, Eurostat

Finally, the quite similar cycles starting in 1982 and 1993 were faster, but not spectacularly so. By 1987 and 1998, respectively (ie. five years after the trough), GDP had grown by a cumulated 3 percentage points more than it is projected to have grown by 2018 in the current expansion. More importantly, these were also expansions that lasted very long: 43 quarters to the cyclical peak from 1982 and 61 quarters for the expansion starting in 1993. Another interesting reference is the comparison of the recovery that started in 2013 in the euro area and the one that started in the US in 2009 (dashed line).

Overall, the comparisons suggest that there is likely to be a trade-off between a temperate and sustained expansion versus a faster and shorter one.

Next, trend and cyclical drivers of potential growth need to be distinguished. Potential growth in the euro area took a severe hit during the crisis (Table 1). It fell from 2% in the decade before the crisis to just ½% in 2013.

Among the clearly crisis-related factors are the investment shortfall that reduced the capital contribution to potential output, and the increase of the NAWRU that depressed the labour contribution as unemployed workers struggled to move from declining sectors to sectors with better employment prospects. However, structural factors are also at play. The NAWRU has decreased from its crisis peaks, reflecting an improvement in the functioning of the labour market brought about by reforms in the most affected member states.

On the other hand, the labour contribution is subject to a trend decline due to population ageing. Finally, total factor productivity (TFP) growth was on a trend decline already before the crisis. The drivers of this trend are subject of heated debate. TFP, however, also reacted strongly to the crisis, largely in association with capacity utilisation. As production capacities fell idle, TFP growth in the euro area dropped to around 0.4% at the height of the crisis.

Table 1. Actual and potential GDP growth, euro area

	GDP growth	Potential GDP growth	Contributions to potential GDP		
			Labour	Capital	TFP
1998-2007	2.3	2.0	0.5	0.8	0.8
2008-2016	0.4	0.8	0.0	0.4	0.4
2017-2027	1.4	1.3	0.2	0.4	0.6

Source: DG ECFIN (update of McMorrow et al. 2015)

By now, capacity utilisation is well above its long-term average again, and TFP growth is estimated to have recovered to 0.6% in 2017. A positive structural impact of the crisis on productivity growth could be related to Schumpeterian creative destruction that is found to have increased allocative efficiency as the least productive firms have dropped out of the market during the crisis (Gamberoni *et al.* 2016).

Since the start of the recovery, the impact of the crisis on potential growth has been reversed to a great extent, bringing its estimated rate to 1½% in 2018. As employment and investment continue to recover, there could be some leeway for the labour and capital contributions to increase further. In contrast to the US, labour force participation in the euro area did not drop during the crisis. But slack in terms of hours worked, the hidden labour force, and long-term unemployment is still substantial and at risk of becoming structurally entrenched.

The investment recovery so far has had a very small impact on the capital contribution (not visible in Table 1 due to rounding). A further recovery of the investment share could increase the capital contribution somewhat more. While the share of equipment investment has already recovered, both replacement investment and investment to expand production capacity may have a positive impact on productivity as newer technologies are incorporated into the capital stock. Turning to the cyclical pattern of TFP growth, the already high rate of capacity utilisation suggests that it has probably not much further to increase.

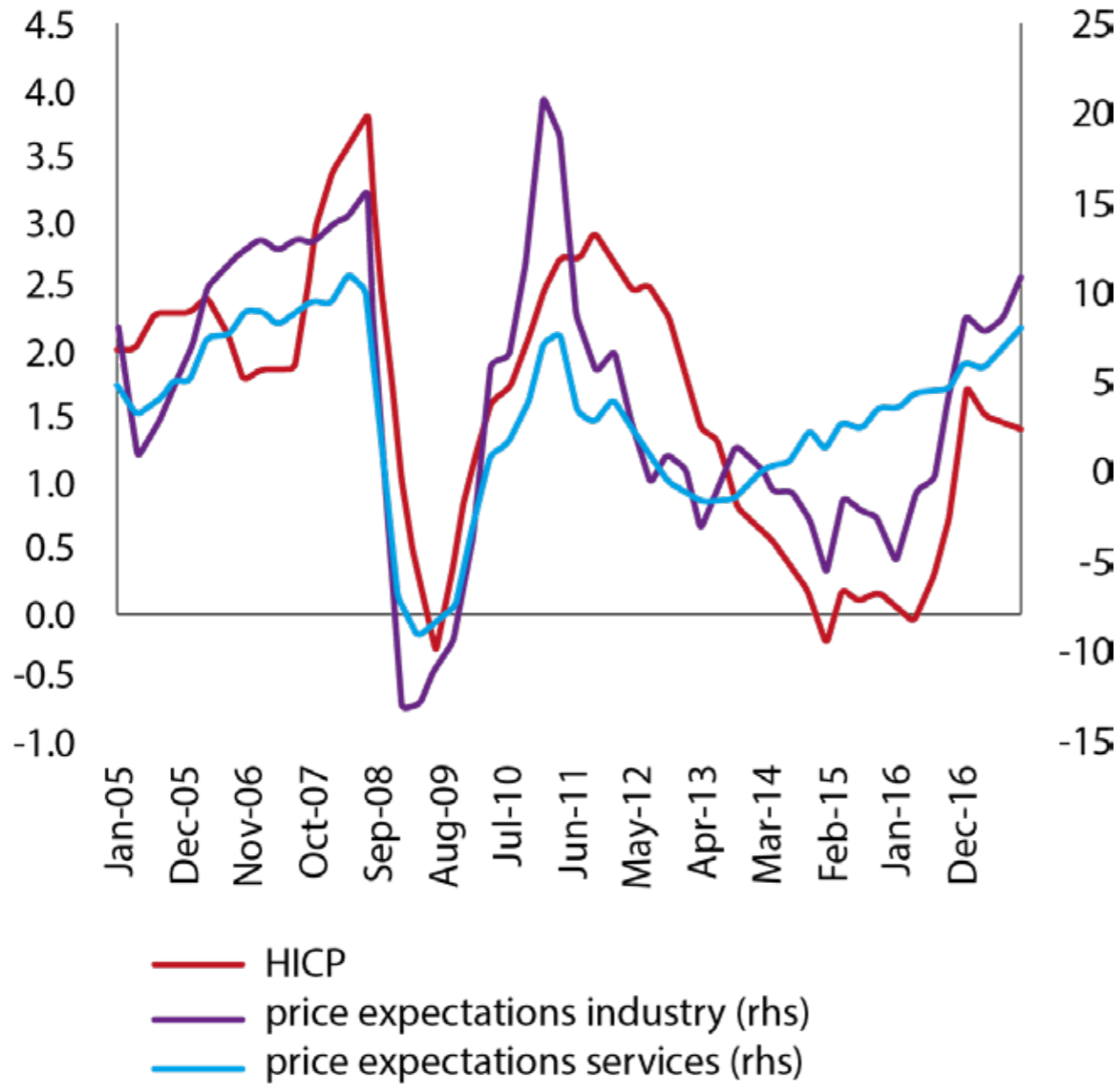
Taken together, these elements suggest that the risk of a vicious cycle where pessimism about future demand would reduce investment and thereby potential growth has been overcome. There is even the possibility of a virtuous cycle where realised growth modestly increases potential.

In conclusion, some past recoveries that were not very brisk lasted quite long. Actual GDP growth continued to outpace potential for some years after the closure of the output gap. At the current juncture, considering also the remaining slack, relatively temperate growth as it is projected in the Commission's winter forecast can be sustained for some time before supply constraints become binding.

The recovery of potential growth from the impact of the crisis appears to have run most of the path implied by the cyclical upswing already. Investment and job creation could still expand the productive capacity a bit, but population ageing and the subdued TFP trend make pre-crisis rates of potential growth unattainable – at least in the absence of fundamental structural reforms and/or a technological leap.

The risks to this positive outlook are broadly balanced. Near-term indicators suggest that the growth momentum could again surprise on the upside. This would also imply that supply constraints become binding earlier than under the forecast baseline. On the downside, recent tensions in global financial markets are a reminder that

Figure 4. Inflation expectations, business surveys



Source: Eurostat, ECFIN

compressed risk premia and high asset valuations could correct sharply. Within the euro area, housing markets in some member states have started to look tight.

Inflation to pick up eventually

Despite robust employment growth and low unemployment rates in some member states, wage growth has remained remarkably low in the euro area. Core inflation (HICP excluding energy and unprocessed food) increased somewhat from around 0.8% during most of 2016 to 1.2% in January 2018, but has not yet displayed a clear upward trend.

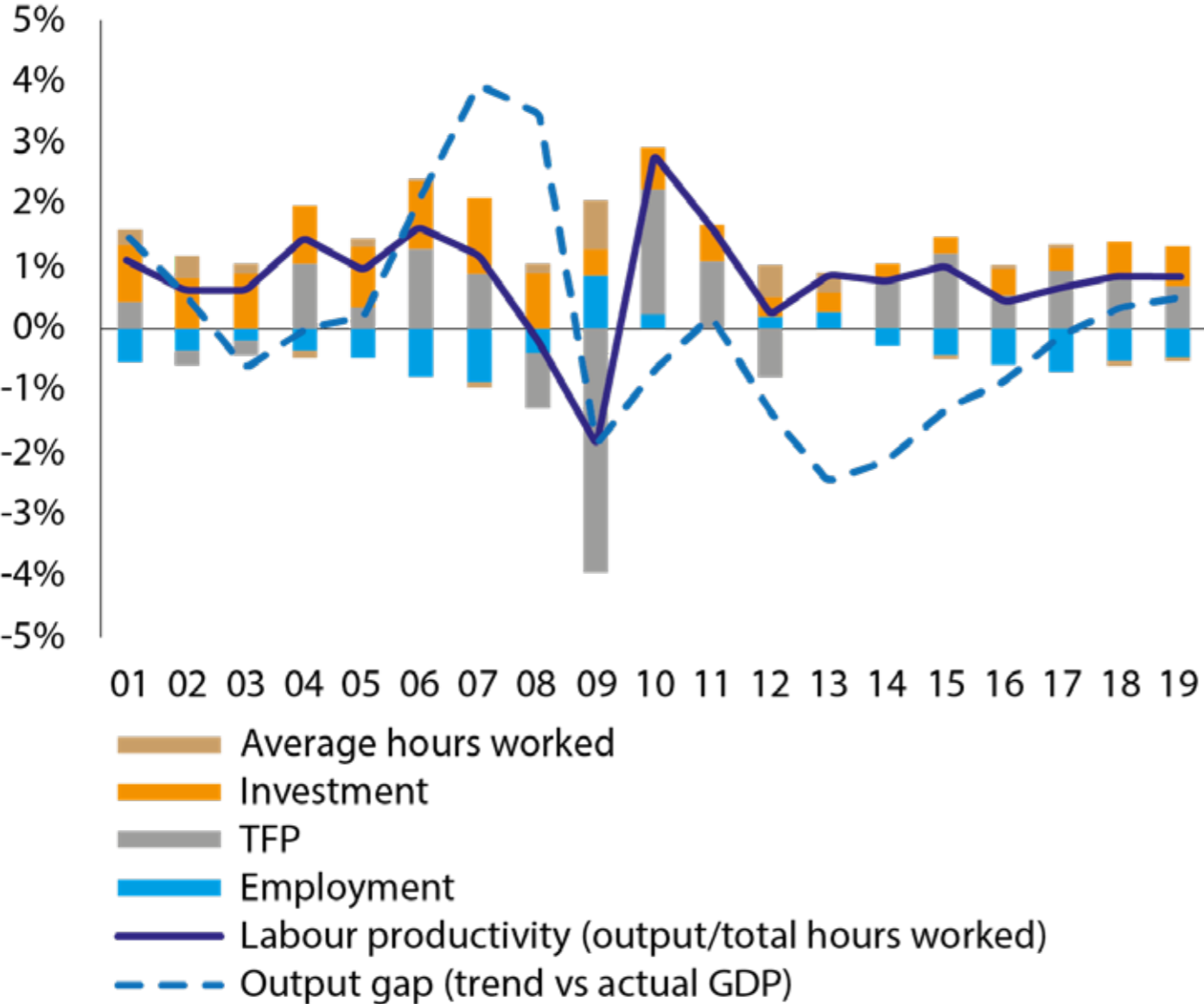
The output gap, indications of slack in the labour market and slow productivity growth are intimately related to the third question, ie. the wage and inflation puzzle. A box in the autumn 2017 European Economic Forecast (European Commission 2017) highlighted that labour productivity growth and inflation expectations need to be added to measures of slack in order to understand the sluggishness of wage inflation.

Inflation expectations are now clearly on the rise (Figure 4). Whereas price expectations in industry show an impact of energy price volatility, it is remarkable that price expectations in the services sector, where costs largely reflect wages, have been on a quite steady upward trend since 2013.

Labour productivity growth averaged 1.3% in the pre-crisis years and 0.8% since. As suggested by Figure 5, it is to some extent related to the position in the cycle (output gap). In the post-crisis years, the contribution of capital deepening to labour productivity growth has been rather small, and the strong employment performance since 2013 has mechanically reduced it further. This suggests that with an acceleration of investment and a slight reduction in the pace of job creation, labour productivity growth is set to increase moderately in the forecast years.

Figure 5. Drivers of labour productivity growth in the euro area

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Source: AMECO, own calculations

These are promising signs for a moderate pick-up in underlying inflation. The output gap, productivity, and inflation expectations all point to an increase in wage growth and, ultimately, core inflation.

Policy implications: keep the workout routine

Given its tempered speed, the cyclical upswing may have several years to run before fading out. Nonetheless, now is the time to remove obstacles in the way and boost potential. This is not about either continuing supportive fiscal and monetary policies or accelerating structural reforms – it's about both. The ECB has made it amply clear that monetary accommodation will be provided until inflation is on a self-sustained path towards the ECB's definition of price stability. This should also help prevent unemployment from becoming structural (ie. avoiding hysteresis), and by facilitating the financing of productive investment it might also have a positive, even if small, impact on potential growth.

A broadly neutral fiscal stance remains appropriate for the euro area, but needs to be appropriately differentiated across member states. High-debt countries need to build buffers to put debt on a declining path even under less benign macroeconomic conditions, while those with fiscal space should continue to increase investment. Both revenues and expenditure should be oriented in such a way to favour equitable and sustainable growth.

But getting fitter requires continued exercise. An accommodative macroeconomic policy stance does not in any way diminish the need for structural policies aiming specifically at increasing the rate of GDP growth that is sustainable in the medium term by raising productivity. No expansion lasts forever, and it is necessary to start preparing for the next cyclical downturn while conditions are favourable. The approach of implementing reforms mainly as 'ultima ratio' that was prominent during the crisis needs to be overcome.

Also in view of the risks around the benign outlook, now is the time for strengthening resilience to worsening general economic conditions as well as asymmetric shocks. Country-specific risks of overheating and misallocation have to be addressed by the member states concerned, for example through macroprudential and tax policies. All this needs to be complemented by strengthening the euro area's capacity to handle future shocks. ■

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Endnotes

1. *ESTAT* (<http://ec.europa.eu/eurostat/cache/bcc/bcc.html>). In the Autumn 2016 European Economic Forecast, we had looked at GDP volume and the persistence of crisis legacies and concluded that it was too early to declare the recovery phase completed.
2. On the idea that actual growth affects potential growth and its implications, see for example Coeuré (2017), Rudebusch and Williams (2016), Blanchard (2018).
3. For the US, the NBER marks a recession in 2001, but CEPR has not identified any in that year for the euro area. Otherwise, that expansion would have lasted for 29 quarters.
4. For an overview, see Haldane (2017).
5. See also IMF (2017).

References

- Blanchard, O (2018), "Should We Reject the Natural Rate Hypothesis?", *Journal of Economic Perspectives* 32(1): 97-120.
- Buti, M, J Leandro and K Berti (2017), "[An unusual recovery: Charting the way forward for European policymakers](#)", VoxEU.org, 12 May.
- Coeuré, B (2017), "Scars or scratches? Hysteresis in the euro area", *Speech at the International Center for Monetary and Banking Studies, Geneva*, 19 May.
- ECB (2016), "The employment-GDP relationship since the crisis", *Economic Bulletin* 6/2016.
- European Commission (2017), "European Economic Autumn 2017 Forecast", *DG Economic and Financial Affairs Institutional Paper 063*.
- European Commission (2018), "European Economic Winter 2018 Interim Forecast", *DG Economic and Financial Affairs Institutional Paper 073*.
- Gamberoni, E, C Giordano and P Lopez-Garcia (2016), "Capital and labour (mis)allocation in the euro area: some stylized facts and determinants", *Banca d'Italia Questioni di Economia e Finanza (Occasional papers)* 349.
- Gordon, R (2015), "Secular Stagnation: A Supply-Side View", *American Economic Review, Papers and Proceedings* 105(5): 54-59.
- Haldane, A (2017), "Productivity puzzles", *speech given at the London School of Economics*, 20 March.
- IMF (2017), *World Economic Outlook October 2017, Chapter 2*.
- Phillips, S, L Catão, L Ricci, R Bems, M Das, J Di Giovanni, D F Unsal, M Castillo, J Lee, J Rodriguez and M Vargas (2013), "The External Balance Assessment (EBA) Methodology", *IMF Working Paper 13/272*.
- Priftis, R and A Theofilakou (2018), "Growth Effects of Corporate Balance Sheet Adjustments in the EU: An Econometric and Model-based Assessment", *DG Economic and Financial Affairs Discussion Paper, forthcoming*.
- Reinhart C and K Rogoff (2014), "Recovery from Financial Crises: Evidence from 100 Episodes", *American Economic Review* 104(5): 50-55.
- Rudebusch, G and J Williams (2016), "A wedge in the dual mandate: Monetary policy and long-term unemployment",

Journal of Macroeconomics 47(A): 5-18.

Summers, L (2014), "Reflections on the New Secular Stagnation Hypothesis", in C Teulings and R Baldwin (eds), "[Secular Stagnation: Facts, Causes and Cures](#)", A VoxEU.org eBook, pp. 27-40.

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Market finance and financial stability: will the stretch cause a strain?

Alex Brazier considers the degree to which corporate credit markets have become stretched, and how well conditioned the wider economy is for that stretching

We've now passed the tenth anniversary of the onset of the global financial crisis; a crisis created by a fragile financial system out of a correction in the US housing market. What could have been an economic downturn was turned into a disaster.

In this country alone, more than one million people lost their jobs. And the legacy of those effects lives on today in lower levels of national income. Looking back over the decade, the economic cost of the crisis has been equivalent to £20,000 per person in the UK¹.

Such crises should be remembered, and their anniversaries marked, because forgetting them risks repeating them.

In this country, Parliament hard wired the memory of the crisis into the institutional fabric. It tasked the Bank of England with meeting a 'macroprudential' objective.

Cutting through the language of the statute, it is to guard against the financial system disrupting growth of the wider economy; to guard against it turning corrections and downturns into crises and disasters.

The immediate task was to repair the banking system so that it would not be crippled by future economic shocks - forcing it to cut back sharply on credit supply. We now have standards in place that ensure banks can keep lending through economic shocks more severe than the financial crisis.

Next was to guard against the financial system enabling other parts of the economy to become too highly indebted. It's well established that high levels of mortgage debt magnify economic downturns as high-debt households cut back sharply to keep paying the mortgage². That's why we've set limits on high loan to income mortgage lending.

Because we are tasked with achieving a general outcome, not with implementing a specific rule book or even a set of principles, we have a duty to adapt regulation as risks change and the financial system evolves. We must fight the next war as well as the last one.

The Brevan Howard Centre's own mission statement is clear on this: *"Future research may show that the current focus on capital and liquidity regulation is inadequate. Among the topics that require further research are panics, asset price bubbles, contagion, deficiencies in the financial architecture, and foreign exchange mismatches."*

*Because markets will from time to time be stretched
it's important that the economic body remains fit
enough to stretch without causing strains*

So today I want to consider one of these next frontiers for macroprudential policy: market-based finance of companies. The nature of corporate finance has shifted decisively in the past decade. Since the crisis, nearly all net finance raised by private companies in the United Kingdom has been through the issuance of equity and bonds.

Market-based finance has been the spare tyre to what was, after the crisis, a punctured banking system, unable to lend. The scale of businesses borrowing through issuing bonds is now on a par with their borrowing from UK banks.

The shift in the balance of corporate finance should be a positive for stability. A more diverse system can be a safer system. The challenge for macroprudential policy is to ensure this source of finance develops sustainably and safely, so that its users can have confidence in the service they get from it, and the wider economy need not fear it.

That challenge is not a distant one. Corporate credit markets are stretched. Finance is cheap because bond investors seem to be less concerned about the safety of their investments. I want to consider the degree to which these markets have become stretched, and how well conditioned the wider economy is for that stretching. Will it cause a strain?

When do stretched asset prices (not) strain the wider economy?

Before we turn to the world today, I'd like to frame the issue. I start from the point that asset prices are not - horror of horrors - always a reflection of the rest of the economy³.

They can be stretched above levels supported by 'fundamentals' as investors squeeze the compensation they get for the risks they take. When they later adjust, some investors have a bad day and others a good one, but the ups and downs of asset markets don't have to be a problem for the wider economy.

For stretched asset prices to strain the economy, I think one or more of the following channels needs to be active. All share the common theme of the wider economic body not being fit enough to cope.

i) The level of debt in the corporate sector comes to rely on stretched asset prices

That might be because corporations have taken advantage of stretched asset prices (and meagre returns for investors) to raise their debt levels. They might be reliant on that position continuing in order to sustain their low debt servicing burdens or to have sufficient collateral to secure their debts.

An adjustment of market prices can expose a debt overhang as debts need to be refinanced at higher interest rates. The result can be dangerous to the wider economy: defaults and deleveraging, holding back corporate spending.

The corporate sector can become reliant on stretch in other asset markets too. Three quarters of small and medium-sized companies in Britain use their own commercial property as collateral to secure bank loans. If they secure loans at stretched commercial property values, they can be exposed to any adjustment. That's why falling commercial property prices lead to lower investment across the economy⁴.

That channel can be pernicious if companies investing in commercial property at the top of the cycle are forced to reduce debt as prices fall and they break their loan covenants. They can be forced into sales of property, driving prices down even further and making life even more difficult for those companies in the wider economy that have secured their debts on their property.

ii) The banking system is exposed to an adjustment of asset prices

An adjustment of market prices can weaken banks, forcing them to cut back their lending to the wider economy. That might be because they hold assets directly in their trading books. For example, the £12 billion of credit trading losses of RBS in 2008 amounted to 40% of the total net accounting losses of RBS between 2007 and 2010⁵.

Or they might be exposed to a corporate sector that, if asset prices adjusted, would have a debt overhang. Our stress tests show that losses on corporate loans can account for more than a third of banks' losses in an economic shock, even though they account for only a fifth of banks' loans.

iii) Markets lack resilience and so amplify adjustments

There are myriad reasons why this can happen and I'll discuss some live examples later. When markets amplify price adjustments, the other channels become more powerful. And there is also an important direct effect on the economy: the cost of new finance to the wider economy is driven up and its availability driven down.

In extreme cases, markets can become dysfunctional and effectively shut out access to finance. UK high yield bond issuance markets were closed for four consecutive quarters during the global financial crisis of 2008-9.

Some implications for where to focus attention

These conditions under which stretched asset prices can pose risks to the wider economy help to explain why adjustments in equity markets tend to have far fewer economic consequences than those in bond and property markets.

It's very difficult to create a corporate debt overhang with equity! The company has no obligation to repay. Banks don't tend to hold equity on their balance sheets. It is not generally used as collateral. And its markets are deep, liquid and typically resilient.

It's why the dotcom bubble had much smaller economic consequences than the financial crisis even though, on some estimates, the underlying market correction (equity prices in the former, property prices in the latter) was similar⁶.

So despite the headline-grabbing run-up in equity prices and subsequent signs of adjustment in the past week or so, I intend to focus here on the markets associated with corporate credit: bond markets and collateral - commercial property - markets. And consistent with my framing above, I'll look at four questions:

First, have corporate bond and commercial property prices become stretched? My answer today is as our November *Financial Stability Report* documented: yes.

Second, has corporate debt come to rely on those stretched valuations? Not so in the UK today, but developments in the rest of the world show that can't be taken for granted.

Third, is the banking system exposed to an adjustment in asset prices? Our stress tests show it has the capital strength to keep lending through severe UK and global market adjustments.

And finally, are these markets resilient or are they prone to amplifying adjustments? Here we'll need to change gear and delve into some detail of the financial architecture to spot things that might be what your mission statement calls 'deficiencies'. In the process, I hope to give you some research interests.

Because my short answer is that some new developments have raised questions that we should, and are, exploring by simulating markets under stress. Let's look at each of these in a bit more detail.

Are credit and commercial property markets stretched?

First, a word about burden of proof. The macroprudential objective – guard against the financial system disrupting the wider economy – means we are not in the business of forecasting; we are in the business of asking 'what could go wrong?' rather than 'what is most likely to happen?'

It's in that spirit that we approach asset price risks, where one person's stretched price might be another's rational assessment of fundamentals. The question we ask is 'could they reasonably be judged to be stretched?' In *global corporate bond markets*, the answer is yes. As we highlighted back in November, corporate credit appears priced for perfection.

Investors expect short-term risk-free interest rates to stay pretty low. And they are demanding little compensation for that being wrong or for the possibility of corporate default. Conviction that interest rates will remain low has meant the 'term premium' investors' demand for holding longer-dated fixed income bonds has rarely been lower.

Conviction that growth will be steady and corporations healthy has meant the credit risk premium investors demand for holding corporate bonds has compressed.

All in, spreads between corporate bond yields and the estimated path of expected short-term interest rates are below pre-crisis levels. So it's not just that, as in recent weeks, corporate bond yields are at risk from the – hardly radical – possibility that sustained global growth might mean higher global interest rates.

They are also at risk of a reappraisal of how uncertain the outlook is for interest rates and corporate health. The compression of bond yields has been especially pronounced at the riskier ('high yield') end of the market. The difference between yields on high-yield and investment-grade bonds has shrunk to levels seen prior to the global financial crisis.

However you look at it, it's cheap for companies to borrow in bond markets. Bond prices are stretched as investors seem to have become less concerned about their safety. The picture in the *UK bond market* has an added nuance.

Equity prices for UK-focussed companies have underperformed international equity markets as investors have factored in perceived lower, and downside risks to, future growth⁷.

And yet, sterling corporate bond markets are stretched like other bond markets⁸. To get a better read on how stretched, we need to account for the lengthening over time in the average duration of sterling corporate bonds and the fall in the average credit rating (which other things equal should raise risk premia).

When we do that, we see that the joint compensation investors are demanding for interest rate and credit risk is...
...zero.

There is an inconsistency.

If investors are confident in risk-free rates remaining low because they see downside risks to the economy, it seems odd that that they should at the same time be demanding less, rather than more, compensation for credit risk.

There's more than a flavour of interest rate cake having and credit risk cake eating. The picture in parts of the *UK commercial property market* is similar. At the UK-wide level, commercial property prices rest on persistently low interest rates but at the same time, they're factoring in typical rental growth prospects and degree of uncertainty around them.

It seems unlikely that rates can be so persistently low without either weaker growth prospects or more uncertainty. In London's West End office markets, the picture is particularly stark. Even if the magic combination of persistently

low rates and historically typical rental prospects comes true, valuation methodologies similar to those being developed by the industry point to prices 10% below today's level.

Precisely why these markets have become stretched is impossible to know for sure, but I'd caution against placing too much weight on monetary policy as the primary or underlying explanation. A range of underlying forces have driven down natural rates of interest, including demographics, perceived downside risks, expected productivity growth⁹.

Monetary policy may have been a prominent actor, but it was reading a script set by these economic forces. That script has meant that the size of the global stock of bonds yielding more than 4% has fallen to only about \$2 trillion; in 2007 it was \$16 trillion. In that environment it may be just too tempting to succumb to the illusion that a higher yielding asset isn't a higher risk asset. After all, recent performance has been good. Corporate insolvencies have been close to pre-crisis lows and, of course, interest rates have been low and stable for very many years.

This 'reach for yield' explains why fixed income investors have been prepared to take on more risk to get returns just a little closer to what they had been used to. It helps to explain why compensation for risk on higher-yield bonds has fallen relative to that on investment grade bonds, which in turn has fallen relative to the return on safe assets. Regardless of what caused the stretch, we need to address the question of whether the economy is fit enough to deal with it.

Is the corporate sector reliant on these stretched valuations?

There is better news in this regard. Despite recent headline examples of indebted companies, Britain is among a small group of major economies not to have seen overall corporate debt increase as a share of GDP over the past decade.

Within that, amongst companies investing in commercial property, debt levels are well below pre-crisis levels and have remained static for four years. Rising property prices have been financed with more equity, not debt.

Stretched asset prices have not been matched with less prudent financing. But developments in the world economy show that we cannot take for granted that it will stay that way.

The *IMF Global Financial Stability Report* showed how, across the G20, appetite of investors for risk has loosened financing conditions and propelled nonfinancial corporate debt levels to new highs.

Even excluding China (where corporate debt developments deserve much more attention than I can give them here), between 2006 and 2016 emerging market economies in the G20 saw corporate debt increase from 42% to 57% of GDP, and advanced economies saw it go from 80% to 86% of GDP. In the United States, levels of (non-financial) corporate sector debt have been testing previous highs.

Moreover, averages can mask important underlying shifts. Leveraged lending in the US reached new highs last year¹⁰. Net debt to EBITDA ratios have been trending upwards in recent years and underwriting standards have been loosening. Three quarters of issuance is now 'covenant-lite'¹¹.

All this goes to show that it's more than a hypothetical that levels of corporate debt can come to rely on stretched credit markets and investors' lack of concern for their own safety. And despite the good starting point, there are some quiet signals of the need to be alert in the UK. The level of debt relative to corporate profits has started slowly rising again.

The evolution of corporate debt levels will bear close scrutiny in this market environment.

Is the banking system exposed to an adjustment of asset prices?

The answer here is given by our stress test last year: Britain's major banks are resilient to an economic and market stress more severe than the global financial crisis. The 2017 stress test subjected the banks to simultaneous UK and global recessions, a deep market shock and stressed estimates of conduct redress fines.

The test included a sharp adjustment in corporate credit markets and commercial property markets. Sterling investment grade corporate bond yields were assumed to snap up almost 800bps as long-term gilt yields rose by over 500bps and credit spreads blew out. Commercial property prices were assumed to fall by 40%. More than 5% of UK and global business loans would have been impaired over the first two years of the test period.

With banks having substantially reduced their exposures in the past decade, largely by reducing their lending to commercial property companies, the resulting losses amounted 'only' to £50 billion. And following the shrinking of banks' trading books in the past decade, their losses on trading assets totalled 'only' £30 billion. The losses resulting from this, and other parts of the stress scenario, would have wiped out the entire banking system in 2007.

However, major UK banks have tripled their capital strength. Even after a stress like this, they have more than twice the capital they had going in to the crisis. They can now absorb losses like this and continue to supply credit to the real economy.

Are bond markets resilient or might they amplify adjustments?

This is the final channel through which stretched markets could affect the wider economy. It would magnify any effect on corporate and bank balance sheets. And it could affect the cost of finance directly, as market interest rates are driven up and credit availability tightened.

We have a duty to spot new market developments that could drive this and to simulate, rather than wait for the empirical proof, because by that point it can be too late.

And as your mission statement acknowledges, we must move beyond the causes of market fragility in the last crisis. The resilience of markets is not guaranteed by the safety of the banking system and other core intermediaries. To do that, we're going to have to delve into some of the detail.

I'll highlight two areas where markets have evolved in ways that raise questions about their resilience, even if all the intermediaries are safe. They might mean investors aren't able to take the liquidity of markets for granted if they adjust.

In both cases, there is no proven problem for markets or the economy. Inquiries are, as the police like to say, ongoing. Through our market intelligence gathering, I'm pleased to say that market participants are helping with those inquiries. And I look forward to the contributions of this Centre too.

i) (Mis) use of volatility measures

Against a backdrop of relatively stable markets, some investors may have developed an appetite for betting that a range of markets, including bond markets, will remain stable. That means selling options – effectively insurance against moves in market prices.

A put option, for example, is insurance against falling prices. An investor who buys this insurance is guaranteed a sale price for the asset insured, regardless of what happens to the market. If prices are currently higher but then fall below the guaranteed price, an investor that wants to sell will incur some loss – think of this as the insurance excess – but the insurer will pay for the rest.

If markets stay stable, as the insurer is betting they will, no payout is made and the insurance collects a premium. While markets are stable, it's a nice little earner for the insurer. With some investors reaching for yield, there are reports that it has become an increasingly popular way to generate some income.

Consistent with that, insurance premiums have fallen. Implied volatility is a measure of that. It captures the level of market volatility in future at which the options being sold would be expected to break even. Lower implied volatility equates to lower insurance premiums for a given excess. Across markets, implied volatility has recently been squeezed to near all-time lows. So far, so esoteric.

However, two possible knock-on effects make this worth exploring further. First, to some degree betting on low volatility could become self-fulfilling.

Dealers who buy the options that are being sold by investors have an exposure to market moves. That exposure gets bigger as market prices move close to option strike prices. When an option is close to being 'in the money' small moves in market prices have a big effect on its value. This 'dynamic hedging' means dealers trying to hedge their positions need to buy more of the underlying asset as prices fall, and sell more as they rise. They can add a stabilising influence to markets. As a result, the decision to sell cheap insurance can appear vindicated: betting on low volatility begets low volatility.

Second, measures of actual and implied volatility are often used as an indicator of risk to inform investment decisions. When they're low, the world appears less risky, so less compensation appears to be needed for risk¹². The trouble is that these are not measures of risk. They are a reflection of the risk appetite of those selling insurance. Taking on more risk because implied volatility is low is the equivalent of ignoring the road conditions and driving faster because your insurance got cheaper as a herd of new entrants flooded the car insurance market.

When accidents start to increase, the whole thing can go into reverse.

Those who had been selling insurance can incur losses. What might have looked like a profitable insurance business won't do so any more. The terms on insurance can shift abruptly. The result: driving speeds slow down to a snail's pace. In markets, this means price adjustments, whatever triggered them, might be followed by sharp withdrawal of cheap insurance...

....which removes the need for dealers to act as a stabilising influence...

...leading to greater market volatility....

...and sharp reduction in risk appetite. Market moves are amplified.

These dynamics are difficult to size. They may or may not be of consequence.

Exploration is needed about behaviour in some of the furthest corners of the system in order to take a firmer view on the form and extent of this fragility. As the Office of Financial Research in the United States noted, *"Available data on investor portfolios are not sufficient to assess this...adequately"*¹³.

That's one reason why the Bank of England's Financial Policy Committee has commissioned an in-depth review of how the use of derivatives in the non-bank financial system may be shaping the dynamics of markets¹⁴.

We need to keep pace. And investors should too. Accidents can be avoided if driving speeds are based on the road conditions ahead rather than the price of insurance.

ii) Liquidity mismatch in corporate bond markets

The second development raising questions about market resilience is actually a combination of two changes in recent years.

First, market-makers ('dealers') have become less active in their market making. This matters because they play an important role in warehousing bonds between the time a seller wants to sell and the point at which a willing buyer can be found.

Our research suggests that, in response to asset sales by bond funds, dealers are less willing to see their inventories of corporate bonds increase. The flipside is that market prices respond more to asset sales than they did, to draw in buyers in a short timeframe¹⁵. Post-crisis limits on bank leverage may be a driver of this. If so, then a generally lower level of market-making activity may be the price paid for greater resilience of systemic institutions and their critical activities¹⁶.

The issue is not whether or not to row back on those regulatory standards, it's to make sure the system adapts fully to corporate bond markets being generally less liquid and able to absorb asset sales. In that context, the second development is the growth in the share of corporate bonds held in open-ended mutual funds, particularly those offering the possibility of redemption at just one day's notice.

The share of corporate bonds held in open-ended funds in the UK and the euro area has increased by 70%, and in the United States by 150%¹⁷.

The question here is whether structures with the shortest redemption notice periods could create a 'first-redeemer advantage' that encourages greater asset sales during market adjustments.

Why might that be a possibility? Typically investors are offered the 'net asset value' (NAV) of the fund when they redeem. This is calculated on market prices for the assets held in the fund. But the market prices of some assets are based - implicitly - on their typical sale period rather than on the period the fund might need to sell them over.

If a fund is selling assets in timeframes shorter than typically need to obtain the market price, then redemptions result in a transfer of value to redeeming from remaining investors. When investors think others might redeem, they might face an incentive to run to the exit¹⁸.

This isn't an issue in markets like equities where sale periods are typically shorter than the daily redemption term of the mutual fund. But for funds investing in corporate bonds and particularly less liquid assets like commercial property, it could be, in principle at least.

Unless it can be corrected through appropriate pricing arrangements in the fund, this structure might create an advantage to getting out first. Existing 'swing pricing' arrangements go some way to doing this but may not be sufficient to correct it fully.

The evidence suggests that investors in funds which offer short notice redemptions and that invest in less liquid assets tend to redeem more in response to a downturn in the funds' performance than those in more liquid funds. And the redemption behaviour of investors in bond funds seems to have become more sensitive as these markets have become less liquid^{19, 20}.

Drawing these developments together, it's possible that just as corporate bond markets have become less liquid, they may have become susceptible to greater selling pressure after a shock. We may have more of a mismatch of liquidity. That could amplify any price adjustment.

None of this is conclusive and serious problems have not been caused by this in the past. But we have a duty to take the possibility seriously – to ask ‘could it happen?’ With markets having evolved so much in the past decade, the absence of problems in the past is no guarantee for the future.

That’s why we’ve been developing simulations of the impact of this liquidity mismatch. The asset management industry has been a constructive partner in this work. I hope we and this Centre can collaborate as we take this work forward.

There is much more to do, but our initial work suggests a case for exploring further, including by incorporating a range of other investors into the simulations and assessing the impact not just on bond markets but on the wider economy. You can expect to hear more from us as these efforts develop.

Conclusion

All of this is a far cry from the build-up to the financial crisis when nobody was asking “*what could go wrong?*”

We now have a mandate – a duty in fact – to ask that, so we can guard against the financial system disrupting the wider economy. Our work is broadening out as the financial system evolves; from banks and mortgage lending to market-based corporate finance.

Growth of market-based finance offers a big opportunity. There can be strength in greater diversity. And in the UK, we have the foundations and infrastructure to make markets here a global good. To reap the economic rewards, it will need to develop safely and sustainably.

With credit markets and commercial property markets stretched, a broadening of our work is timely.

Britain's corporate sector seems not to have become exposed to these stretched valuations. But that can't be taken for granted, as developments elsewhere show.

And as markets develop, some questions need to be addressed about their resilience. The work of this Centre, in pursuit of its mission, can contribute to understanding of that. And I look forward to collaborating in future.

Because markets will from time to time be stretched. It's important that the economic body remains fit enough to stretch without causing strains. ■

Alex Brazier is Executive Director for Financial Stability Strategy and Risk at the Bank of England

Endnotes

- 1. Financial crises often lead to a long-run reduction in GDP, with a persistent decline in output relative to pre-crisis trends. Staff estimates based on the impact of historical financial crises in a sample of advanced economies, reported in Brooke et. al. (2015), suggest that the average cost of a financial crisis has been 73% of GDP, which translates to a cost of roughly £20,000 per capita if a financial crisis had taken place in 2016.*
- 2. For example, Bunn and Rostom (2015) find that, during the financial crisis, highly indebted UK households, with loans four times larger than their income, reduced their consumption relative to income around three times more than UK households with loans between one or two times their income.*
- 3. See Claessens and Kose (2017) for a review.*
- 4. Research by Bahaj, Foulis and Pinter (2016) suggests that a 10% fall in UK commercial real estate prices is associated with a 1% decline in firm investment.*

5. See the report by the board of the [Financial Services Authority](#) (2011), 'The failure of the Royal Bank of Scotland', for additional information.
6. During his speech on April 2012, '[Some reflections on the crisis and the policy response](#)', Ben Bernanke proposed that the aggregate decline of house prices had eliminated nearly \$7 trillion in paper wealth compared to the more than \$8 trillion eliminated from the fall of stock prices from the dot-com crash.
7. UK government bond yields have also fallen relative to other sovereigns. As my colleagues Ben Broadbent and Gertjan Vlieghe have explained, downside risks to growth can be expected to increase the attractiveness of risk-free assets (gilts) relative to riskier assets (equities). See Vlieghe, G (2017), '[Real interest rates and risk](#)'; Also Broadbent, B (2014), '[Monetary policy, asset prices and distribution](#)'
8. This might reflect that the sterling investment-grade corporate bond index includes a significant amount of issuers that are not UK-based and therefore not necessarily UK-focused. But internal analysis suggests that in recent years the spreads on sterling corporate bonds issued by UK-focused companies have tended to track the broader sterling investment-grade corporate bond market.
9. This was comprehensively covered in a recent speech by Jan Vlieghe. See Vlieghe, G (2017), '[Real interest rates and risk](#)'
10. These are typically syndicated loans to large companies which have either high levels of indebtedness, a non-investment grade credit rating, or are owned by a private equity sponsor. For more information, see pages 30-31 of the November [Financial Stability Report](#).
11. As a percentage of institutional leveraged loan issuance.
12. Investors who base decisions on value-at-risk ('VaR') and assess those risks using market measures can be guided into thinking their portfolio is safer. In some cases, this general behaviour is an explicit investment strategy: some investment funds explicitly try to keep the implied volatility of their portfolio at a fixed level.
13. See the market monitor of the Office of Financial Research for the second quarter of 2017: '[The volatility paradox: tranquil markets may harbour hidden risks](#)'.
14. See page 54 of the November 2017 [Financial Stability Report](#).

15. See the December 2015 [Financial Stability Report](#) and [‘Has corporate bond market liquidity fallen?’](#)

16 See page 27 of the July 2016 [Financial Stability Report](#).

17. Calculations based on sterling corporate bonds for the United Kingdom, private non-financial companies in the euro area and corporate and foreign bonds held in the United States. UK and euro area data from 2008 to 2017 H1. US data from 2008 to 2017Q1.

18. Chen, Q, Goldstein, I, Jiang, W, 2010. *Payoff complementarities and financial fragility: Evidence from mutual fund outflows*. *Journal of Financial Economics* 97, 239-262. In addition, Feroli, Kashyap, Shoenholtz and Shin (2014) describe an alternative mechanism creating the same effect based on how investors evaluate performance of funds relative to other funds. Concerns about standing out of the sample and seeing a decrease in assets under managements can drive herding behaviour among funds.

19. Goldstein, Jiang and Ng (2017) show that corporate bond funds experience greater outflows when they have more illiquid assets. One example of this is the behaviour of investors in Pimco’s Total Return Funds in the aftermath of the departure of Bill Gross in 2014. In contrast to the other funds, the most liquid funds, such as Total Return Fund IV, did not see sharp redemptions.

20. See pages 29-31 of the October 2017 [Global Financial Stability Report](#).

I am grateful to Stephen Burgess, Shibo Feng, Harry Goodacre, Nowrin Hossain, Mike Joyce, Christiane Kneer, Javier Otegui, Liam Crowley-Reidy, Marek Rojicek and Ryland Thomas for their assistance in preparing these remarks. Based on a [speech](#) given by at the Brevan Howard Centre for Financial Analysis, Imperial College Business School, London, Thursday 1 February 2018

2018 'a macroprudential' objective

... to guard against the financial system disrupting growth of the wider economy

Banking system

Standards in place to ensure banks can keep lending through economic shocks



Indebtedness

Limits set on high LTI mortgage lending

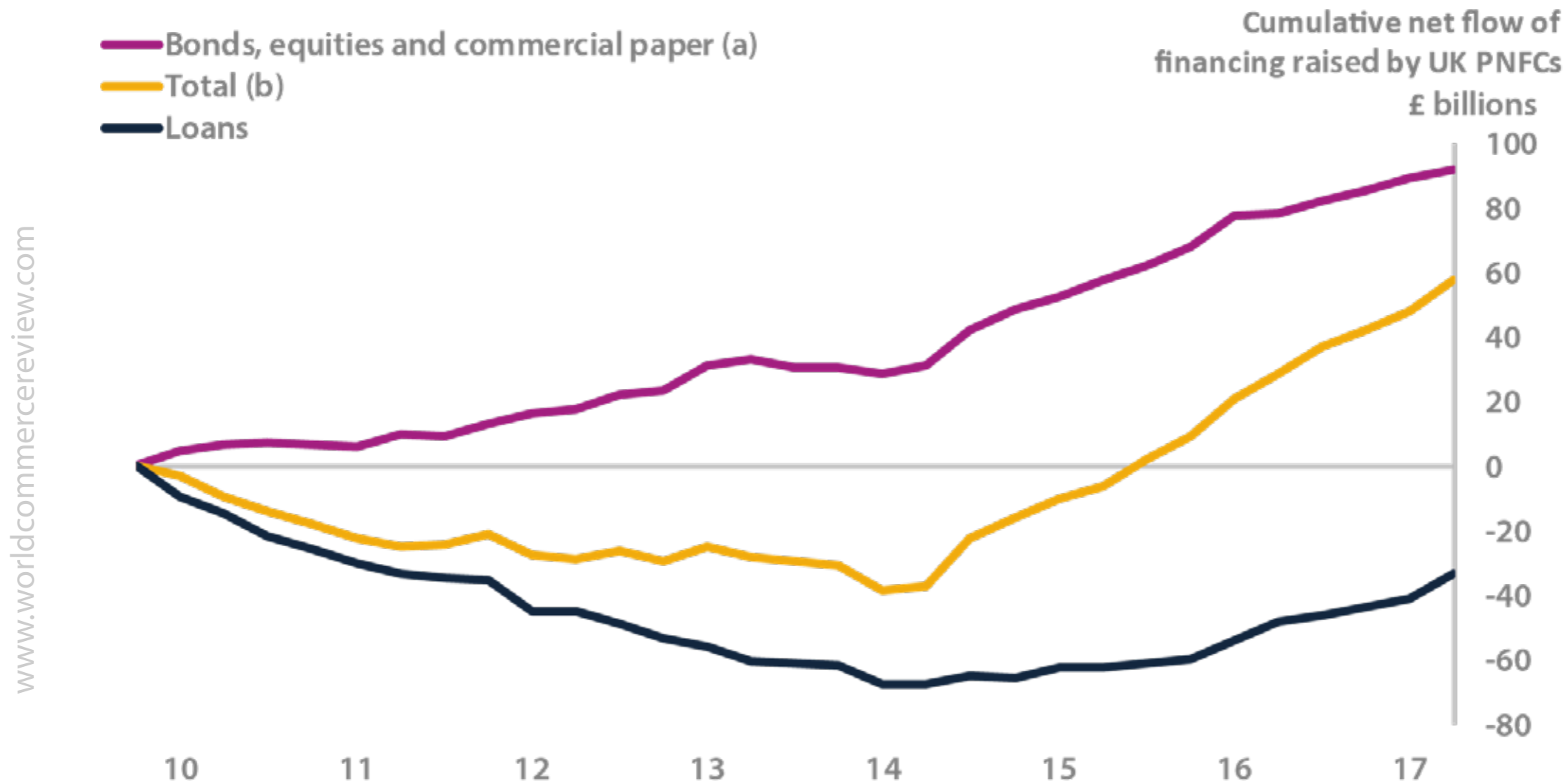


Market finance

The next frontier



Companies increasingly rely on market-based finance



Sources: Bank of England Bank calculations

(a) Data cover funds raised in both sterling and foreign currency, converted to sterling. Seasonally adjusted. Bonds and commercial paper are not seasonally adjusted.

(b) Owing to the seasonal adjustment methodology, the total series may not equal the sum of components.

Stretched asset prices can strain the real economy

Stretched market and collateral prices adjust



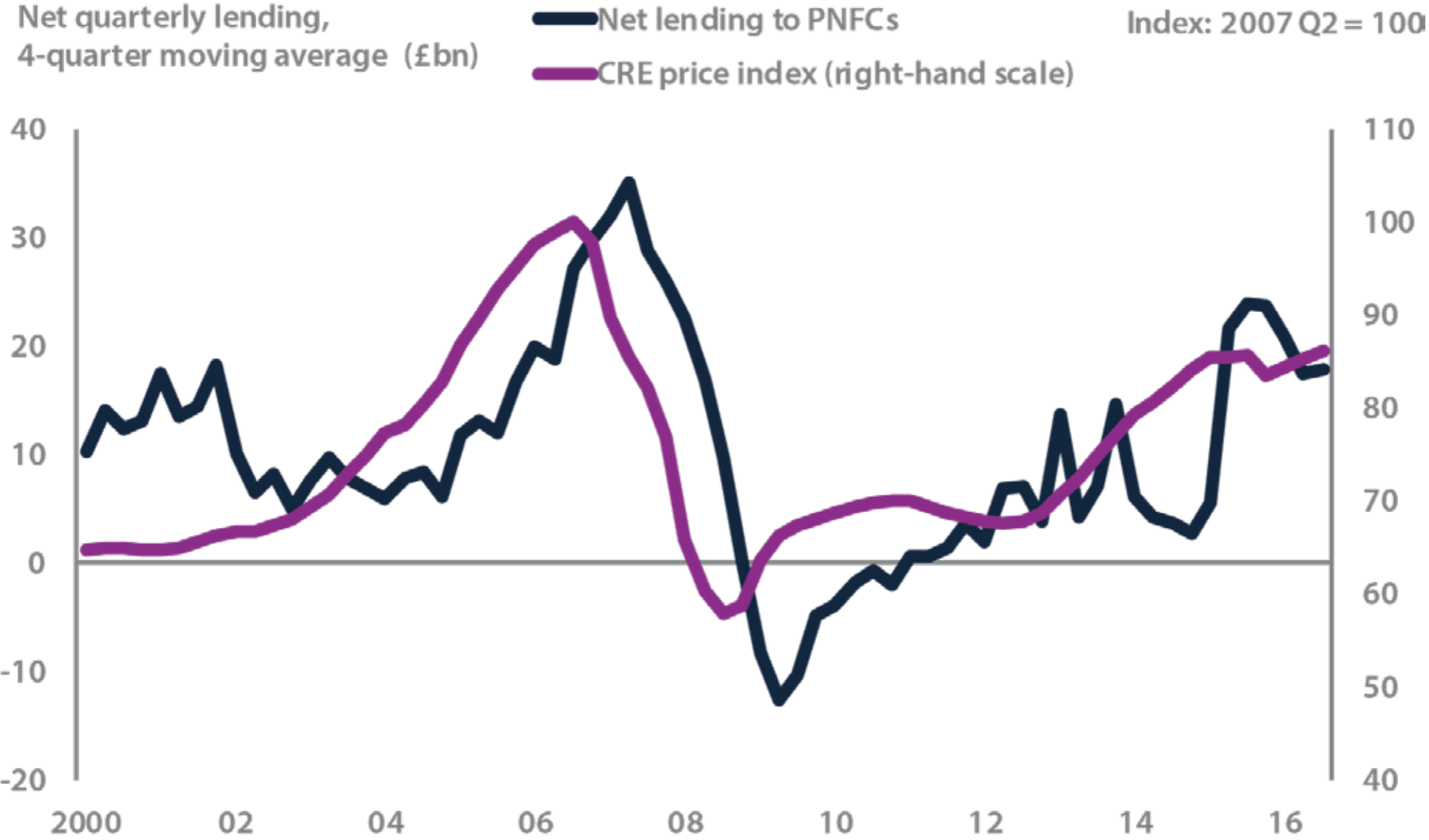
**Corporate
debt
overhang**

Deleveraging ↓

Wider economic impact

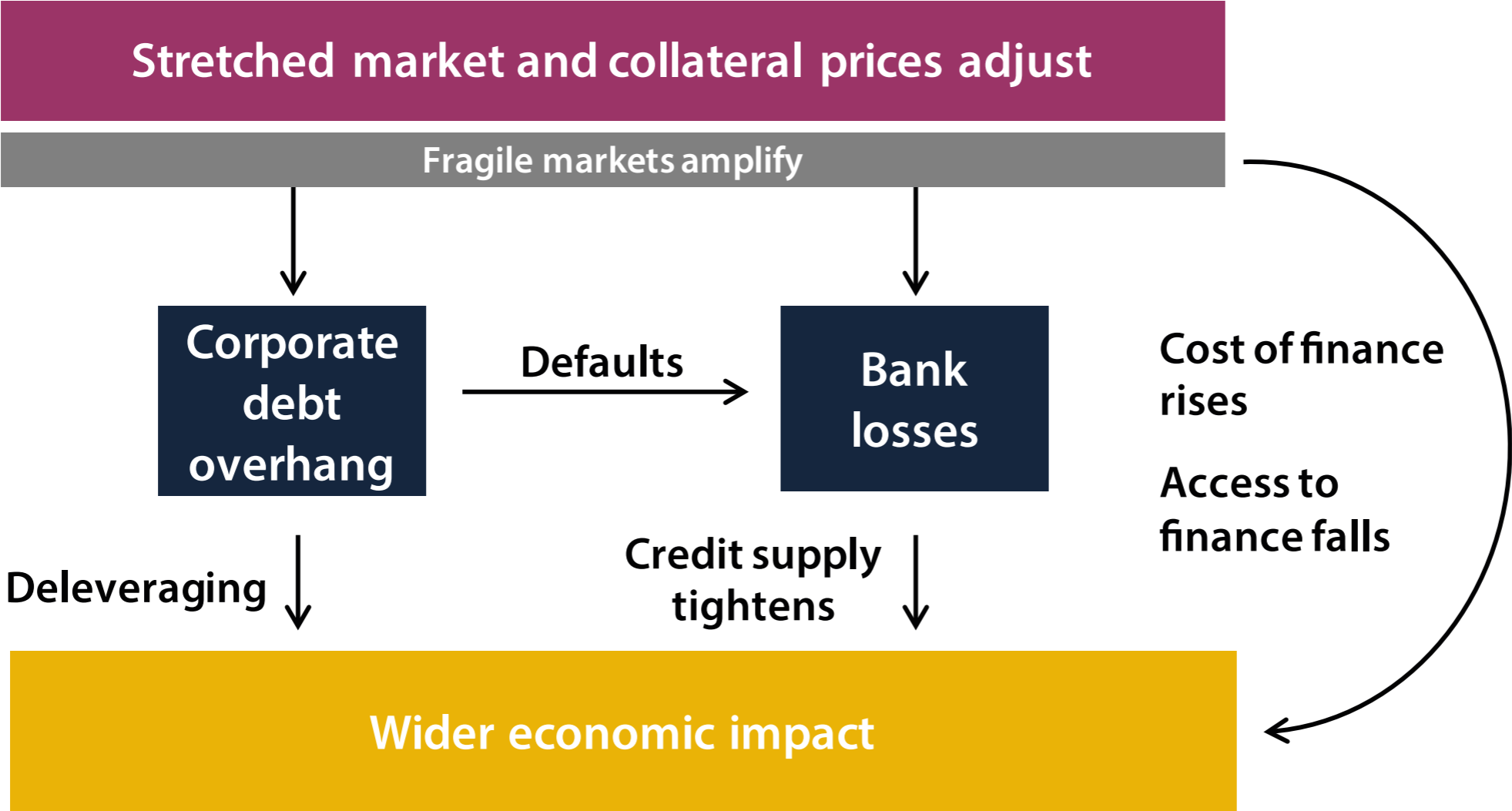
Falling commercial property prices lead to lower lending

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Sources: MSCI Inc, ONS and Bank calculations

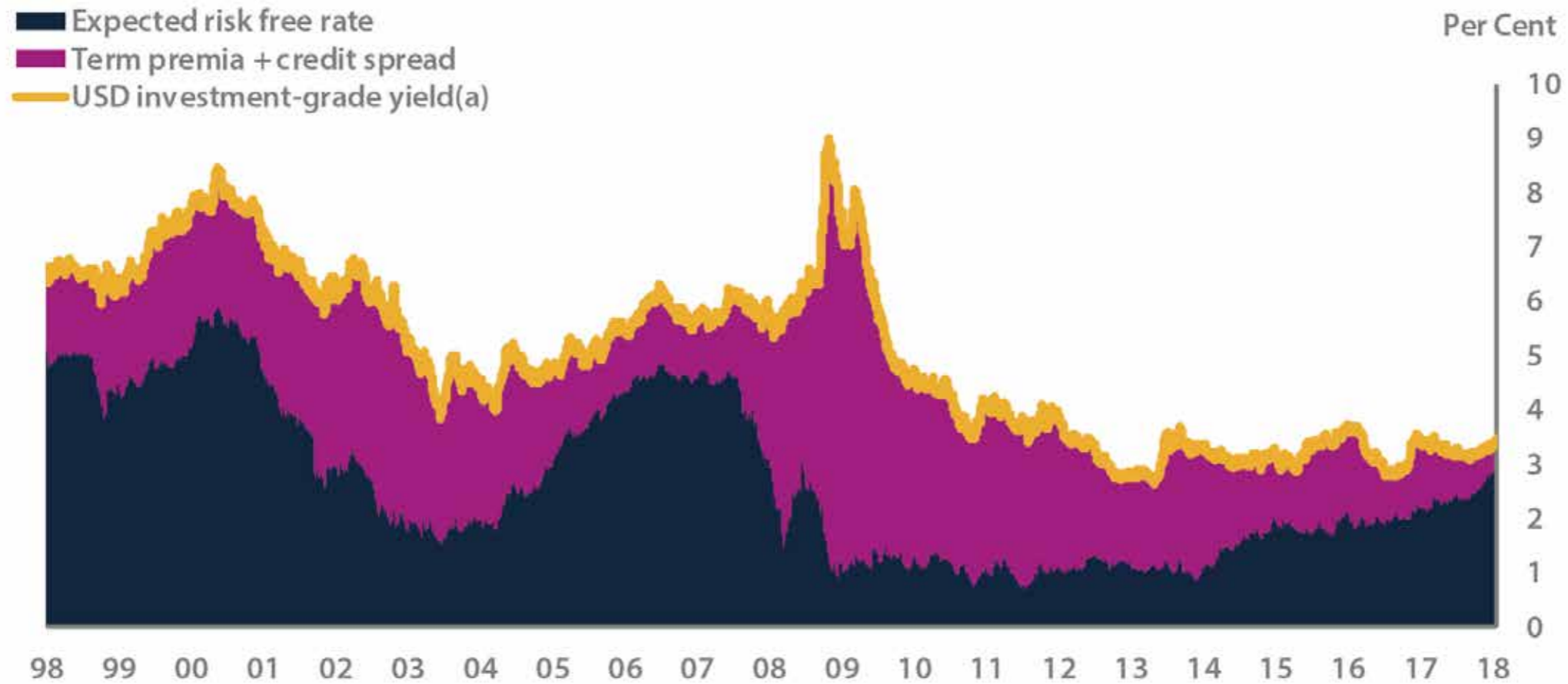
Stretched asset prices as a danger for the economy, back to our channels



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Globally, combined premium for interest rate and credit risk is at an historic low...

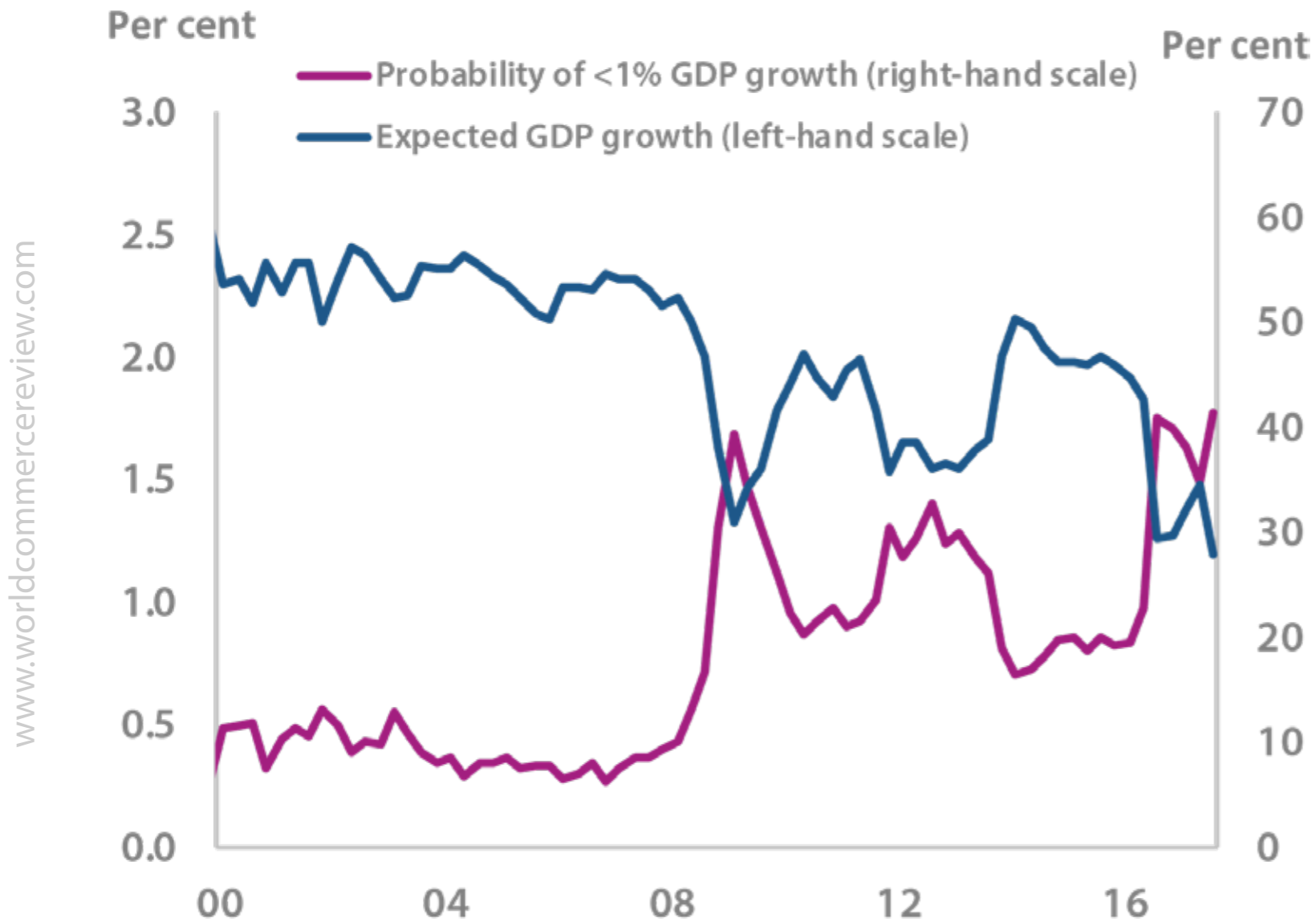
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Sources: ICE BofAML, Federal Reserve Bank of New York, and Bank calculations.

(a) The chart shows USD investment-grade corporate bond yield and the expected risk free rate (based on a risk free rate that has a maturity that is similar to the duration of the corporate bond index over the period shown). The difference between the corporate bond yield and the expected risk free rate is the term premia plus the credit spread.

Investors are pricing in downside risks to UK growth...

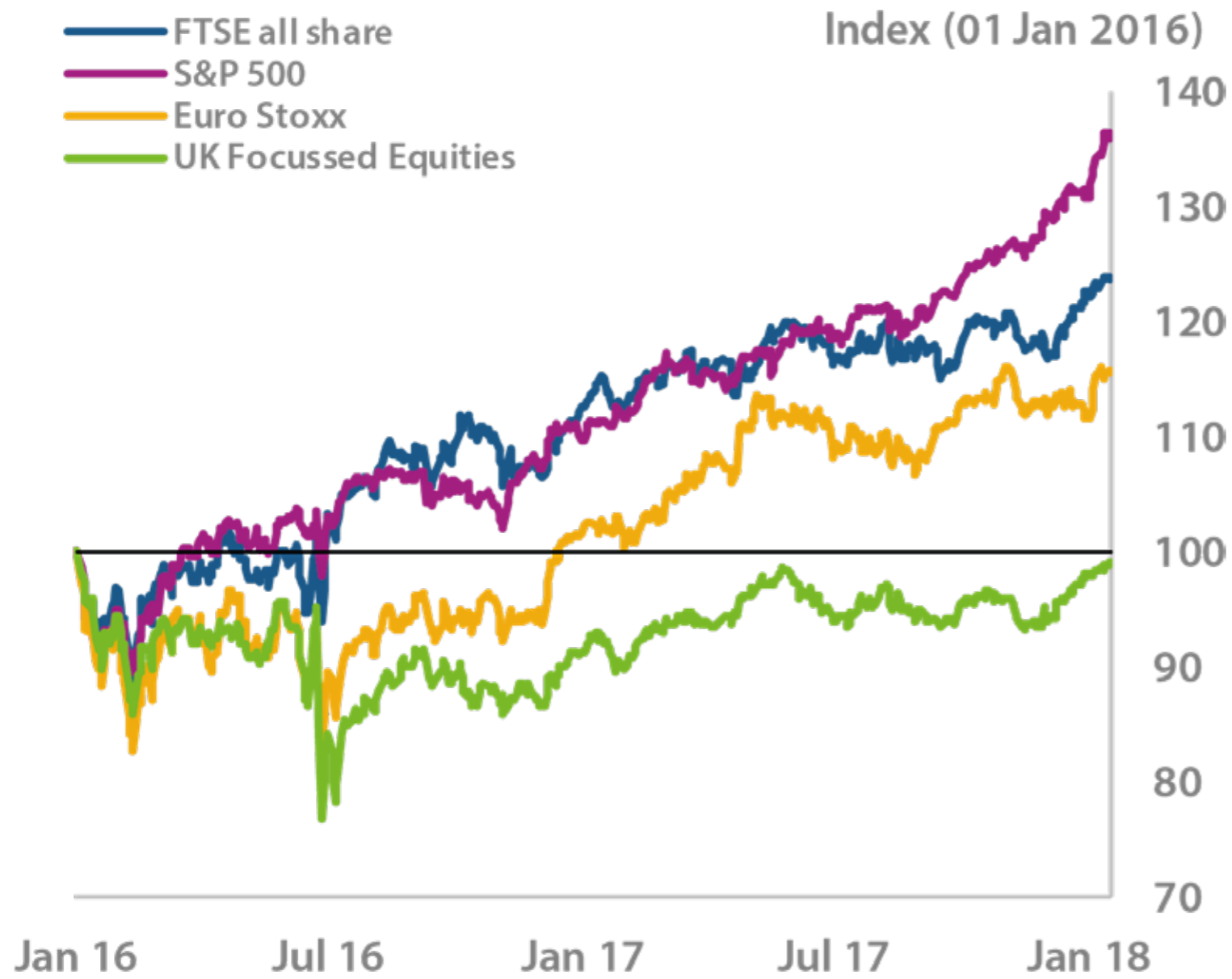


Sources: Bank of England and Bank calculations.

(a) Calculated from the distributions of external forecasters' predictions for UK GDP growth two years ahead, sampled by the Bank and as reported in the Inflation Report each quarter.

Investors are pricing in downside risks to UK growth...

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Sources: Bloomberg Finance LP, Thomson Reuters Datastream and Bank calculations.

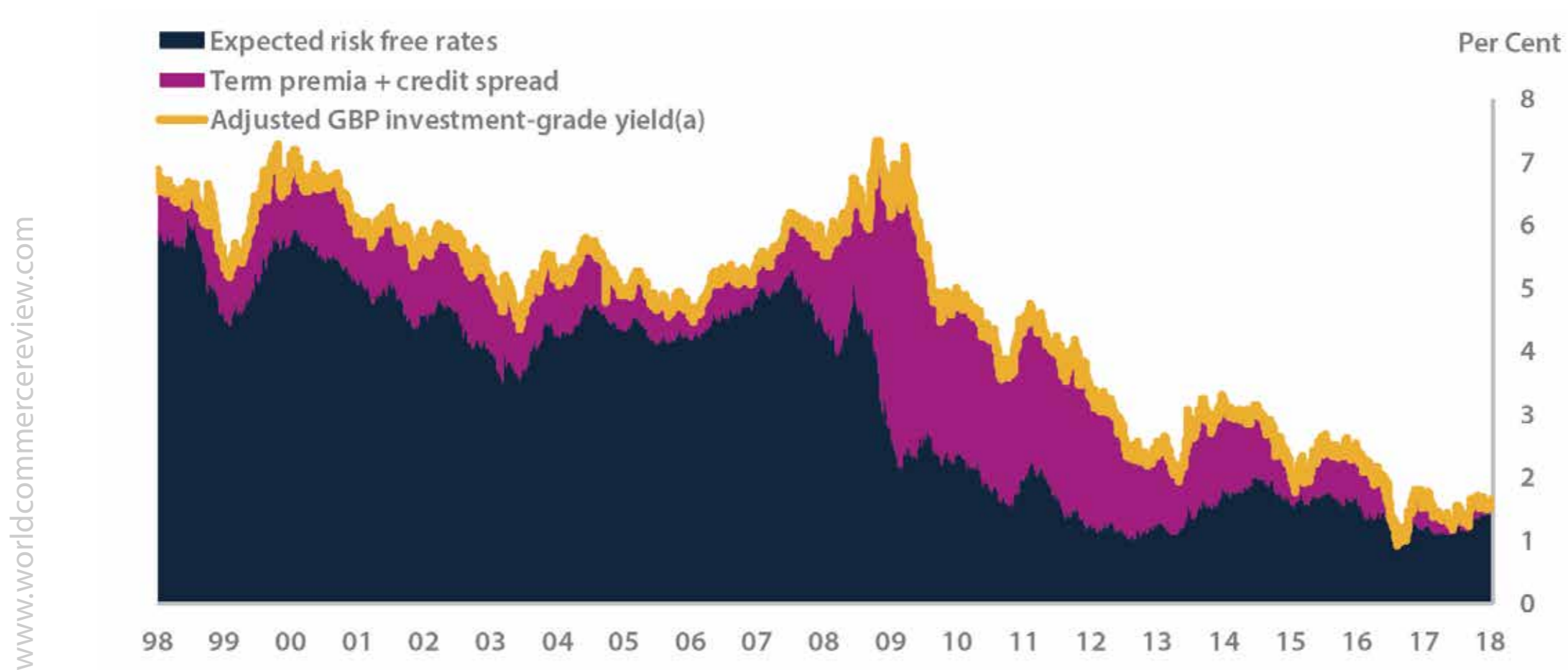
Corporate bond market has tilted towards companies with lower credit ratings and bonds of longer duration



Sources: ICE, BofAML and Bank calculations.

(a) The chart shows the proportion, as measured by market value, of the ICE BofAML sterling investment-grade index that is rated BBB. This index can be used as a representative measure of the sterling investment-grade corporate bond market. However, the index may not capture all sterling investment-grade corporate bonds and alternative indices may contain different proportions of BBB-rated bonds.

Allowing for this, there is zero compensation for risk in sterling corporate bonds

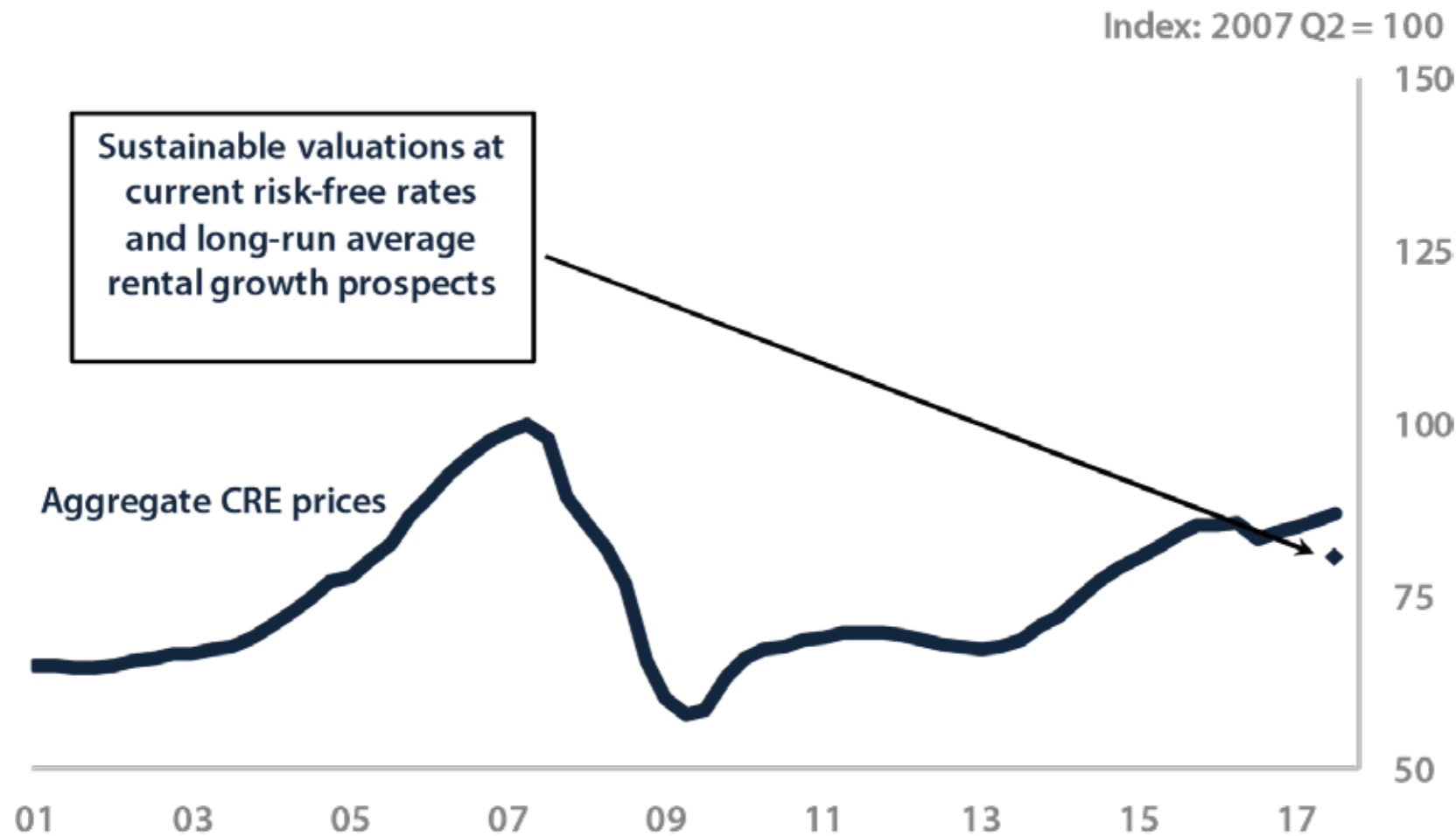


Sources: ICE BofAML, Bloomberg, and Bank calculations.

(a) The chart shows GBP investment-grade corporate bond yield and the expected risk free rate (based on risk free rate that has a maturity that is similar to the duration of the corporate bond index over the period shown). The difference between the corporate bond yield and the expected risk free rate is the term premia plus the credit spread.

Commercial real estate prices appear stretched

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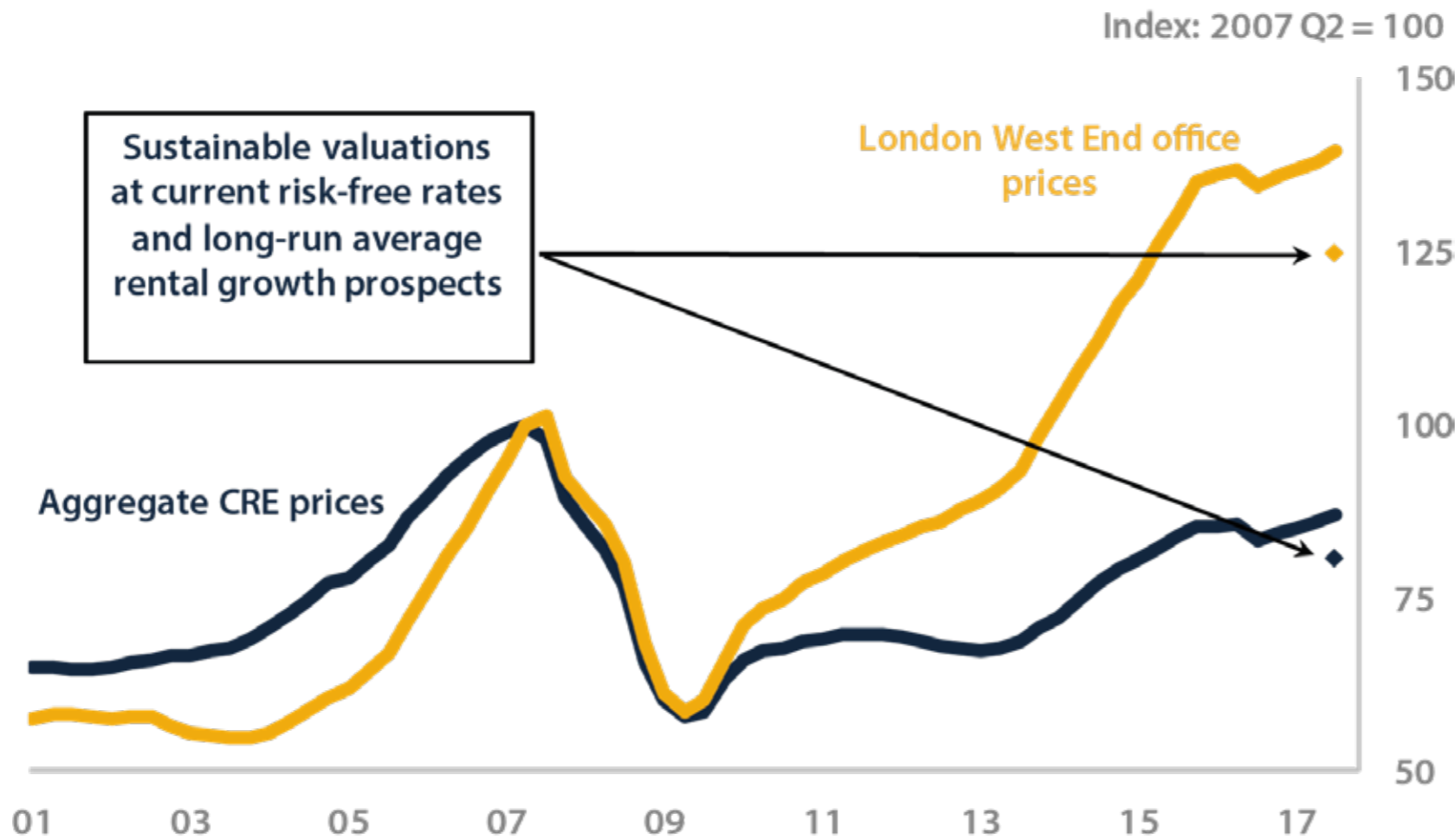


Sources: Bloomberg, Investment Property Forum, MSCI Inc. and Bank calculations.

(a) Sustainable valuations are estimated using an investment valuation approach and are based on an assumption that property is held for five years. The sustainable value of a property is the sum of discounted rental and sale proceeds. The rental proceeds are discounted using a 5-year gilt yield plus a long-run average estimated risk premium, and the sale proceeds are discounted using a 20-year, 5-year forward gilt yield plus a long-run average risk premium. The sale price is determined by rental yields equal to a 20-year, 5-year forward gilt yield plus a long run average risk premium minus long-run average rental growth. Expected rental value at the time of sale is based on Investment Property Forum Consensus forecasts. The sustainable valuations are determined by assumptions about the rental yield at the time of sale: either rental yields remain at their current levels (at the upper end), or rental yields revert to their 15-year historic average (at the lower end). For more details, see Crosby, N and Hughes, C (2011), 'The basis of valuations for secured commercial property lending in the UK', *Journal of European Real Estate Research*, Vol. 4, No. 3, pages 225–42.

... especially in London's West End

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Sources: Bloomberg, Investment Property Forum, MSCI Inc. and Bank calculations.

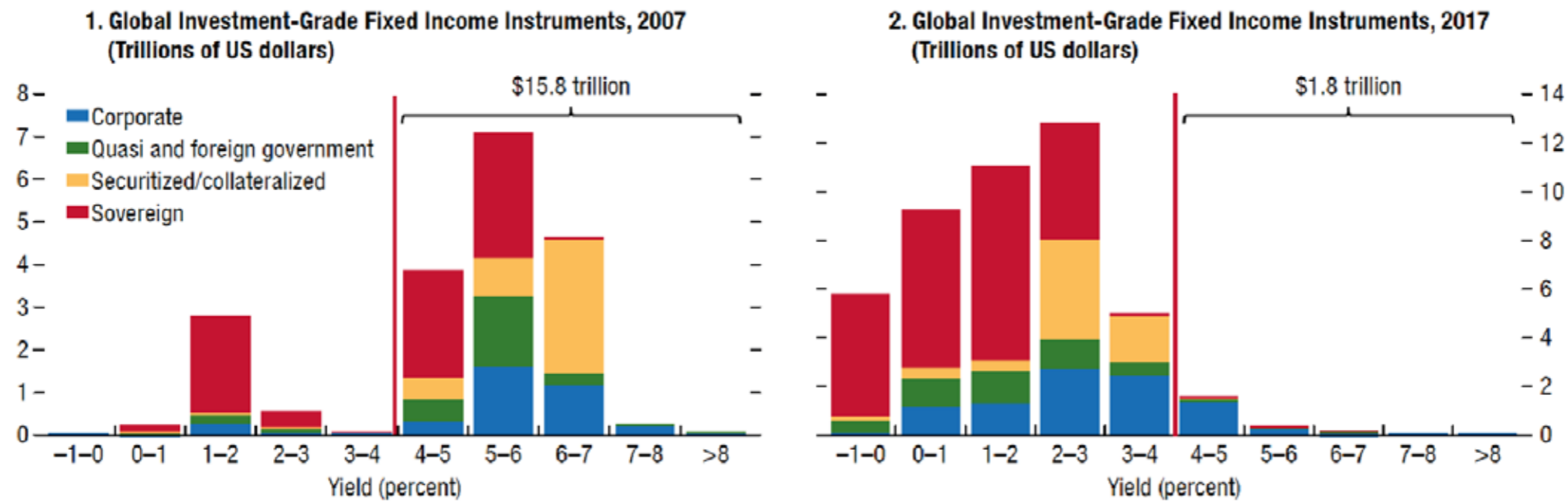
(a) Sustainable valuations are estimated using an investment valuation approach and are based on an assumption that property is held for five years. The sustainable value of a property is the sum of discounted rental and sale proceeds. The rental proceeds are discounted using a 5-year gilt yield plus a long-run average estimated risk premium, and the sale proceeds are discounted using a 20-year, 5-year forward gilt yield plus a long-run average risk premium. The sale price is determined by rental yields equal to a 20-year, 5-year forward gilt yield plus a long run average risk premium minus long-run average rental growth. Expected rental value at the time of sale is based on Investment Property Forum Consensus forecasts. The sustainable valuations are determined by assumptions about the rental yield at the time of sale: either rental yields remain at their current levels (at the upper end), or rental yields revert to their 15-year historic average (at the lower end). For more details, see Crosby, N and Hughes, C (2011), 'The basis of valuations for secured commercial property lending in the UK', *Journal of European Real Estate Research*, Vol. 4, No. 3, pages 225–42.

The stock of bonds yielding >4% has all but disappeared

Figure 1.16. Global Fixed Income Markets and US Corporate Credit Investor Base

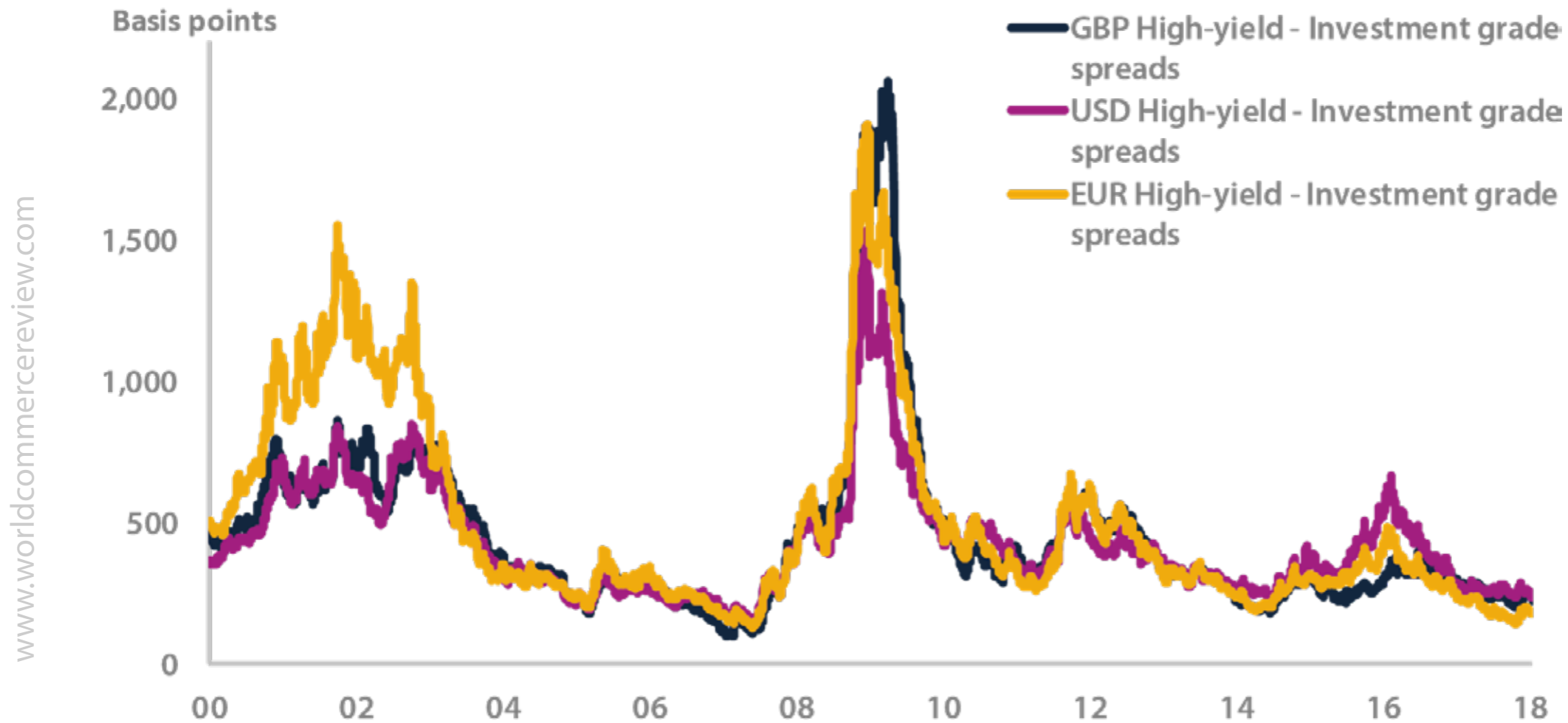
In 2007, a variety of asset classes generated returns in excess of 4 percent.

In 2017, corporate debt is the only significant asset class that provides a comparable return.



Sources: IMF Global Financial Stability Report October 2017.

The difference between spreads on high-yield and investment-grade corporate bonds have shrunk to pre-crisis levels



UK corporate debt to GDP has not increased over the decade

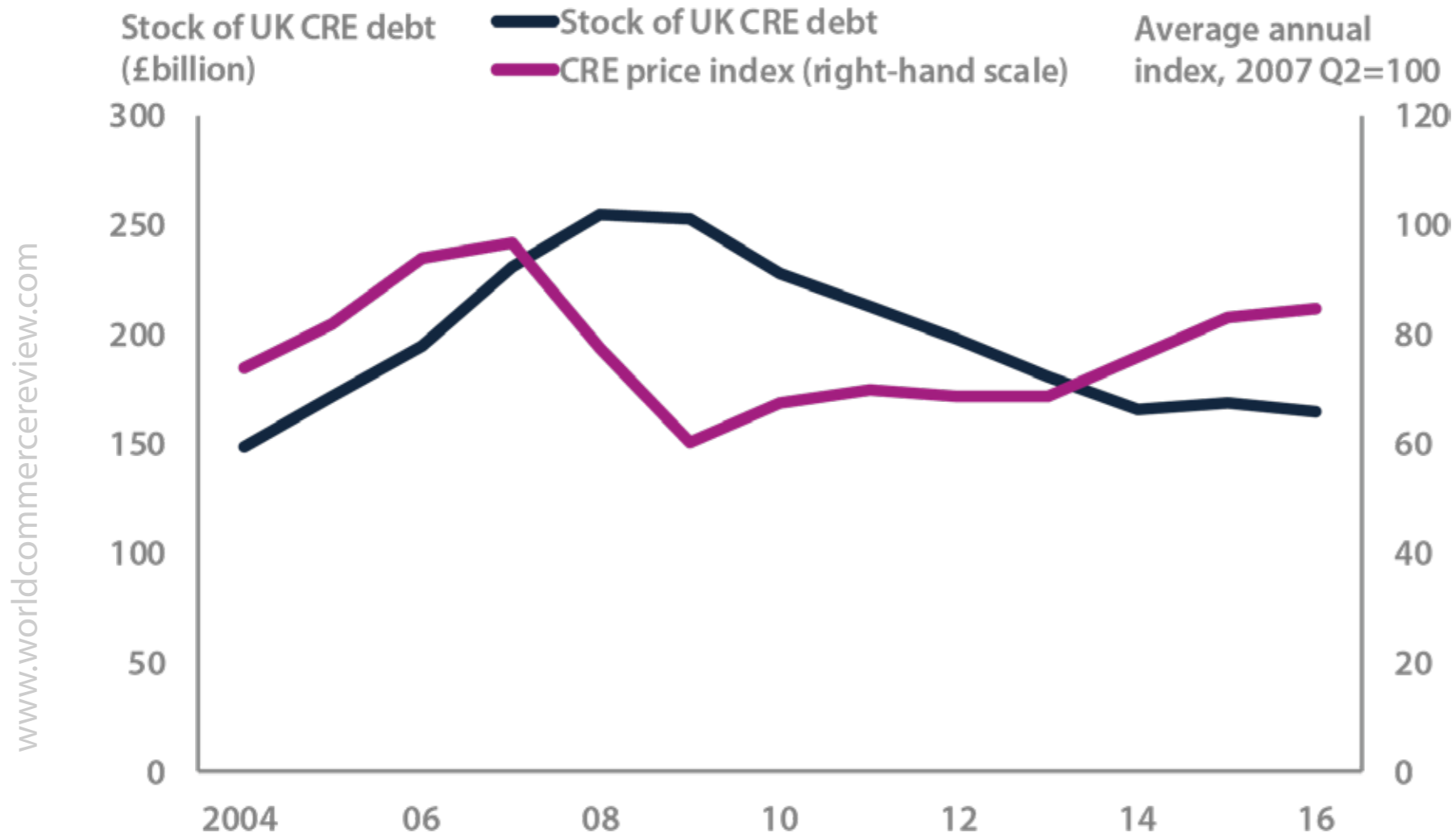
Table 1.1. Sovereign and Nonfinancial Private Sector Debt-to-GDP Ratios (Percent)

		Advanced Economies									Emerging Market Economies									
		JPN	CAN	USA	GBR	ITA	AUS	KOR	FRA	DEU	CHN	BRA	IND	ZAF	TUR	MEX	RUS	SAU	ARG	IDN
General	2006	184	70	64	41	103	10	29	64	66	25	66	77	31	45	38	10	26	70	36
Government	2016	239	92	107	89	133	41	38	96	68	44	78	70	52	28	58	16	13	54	28
Households	2006	59	74	96	90	36	105	70	44	65	11	14	10	39	9	12	8	12	4	11
	2016	57	101	79	88	42	123	93	57	53	44	23	10	35	18	16	16	15	6	17
Nonfinancial Corporations	2006	100	76	65	79	67	73	83	56	49	105	39	38	33	27	14	32	28	20	14
	2016	92	102	72	73	71	79	100	72	46	165	44	45	37	67	28	52	50	12	23
Total	2006	343	221	225	210	205	187	183	164	180	142	118	125	104	81	64	49	66	93	61
	2016	388	295	259	250	246	243	232	226	168	254	145	125	124	113	103	84	78	73	68

Sources: IMF Global Financial Stability Report October 2017. Used Bank for International Settlements; Haver Analytics; IMF, World Economic Outlook database; and IMF staff calculations.

Note: Dark shading denotes a higher debt-to-GDP ratio in 2016 than in 2006. The table shows debt at market values. Advanced economy nonfinancial corporate debt is shown net of estimated intercompany loans where data are available. Data labels in the table use International Standardization Organization (ISO) codes.

Amongst companies investing in commercial property, debt levels are below pre-crisis



Sources: De Montfort University and MSCI Inc.

Developments in the world economy show we cannot take this for granted...

Table 1.1. Sovereign and Nonfinancial Private Sector Debt-to-GDP Ratios (Percent)

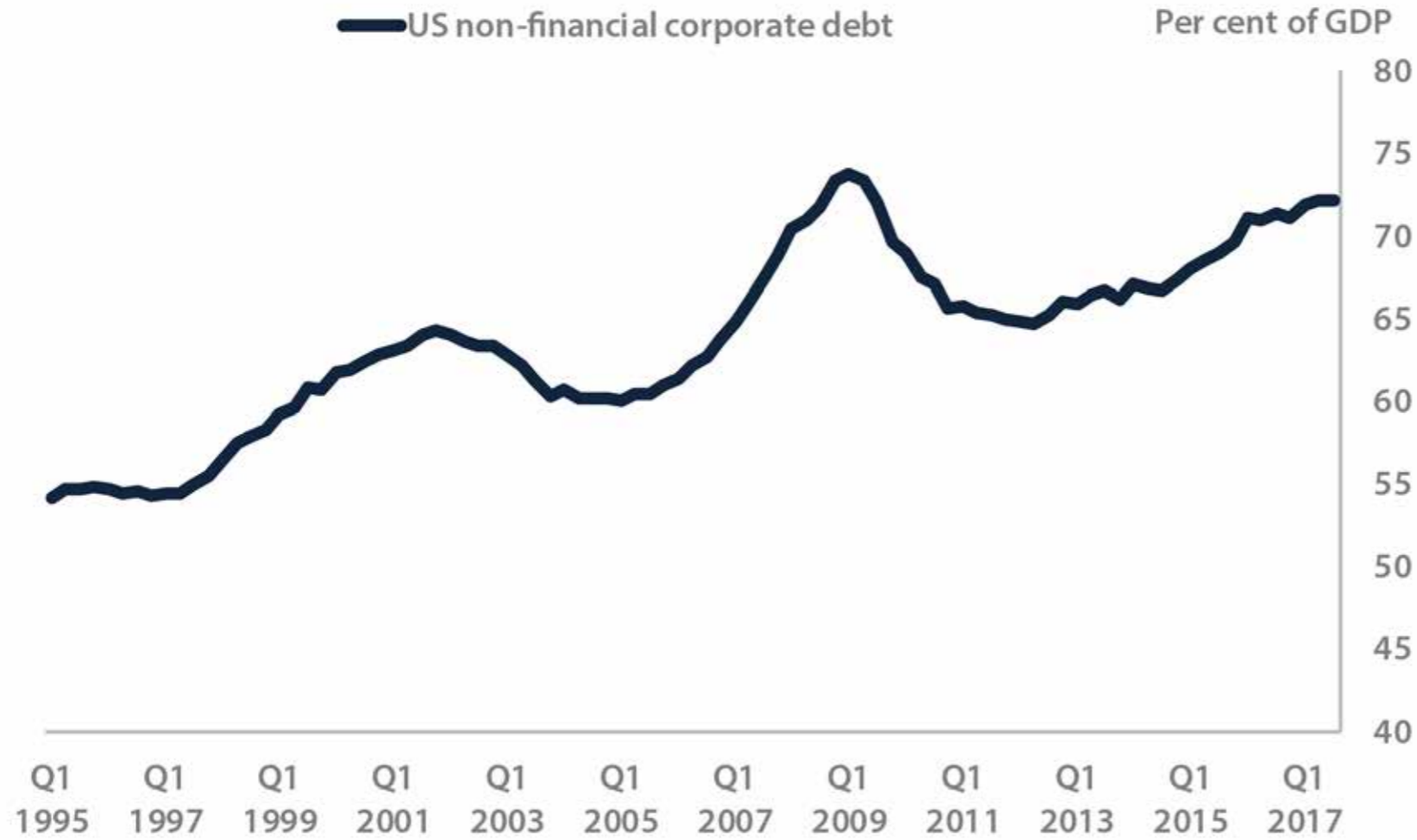
		Advanced Economies									Emerging Market Economies									
		JPN	CAN	USA	GBR	ITA	AUS	KOR	FRA	DEU	CHN	BRA	IND	ZAF	TUR	MEX	RUS	SAU	ARG	IDN
General	2006	184	70	64	41	103	10	29	64	66	25	66	77	31	45	38	10	26	70	36
Government	2016	239	92	107	89	133	41	38	96	68	44	78	70	52	28	58	16	13	54	28
Households	2006	59	74	96	90	36	105	70	44	65	11	14	10	39	9	12	8	12	4	11
	2016	57	101	79	88	42	123	93	57	53	44	23	10	35	18	16	16	15	6	17
Nonfinancial Corporations	2006	100	76	65	79	67	73	83	56	49	105	39	38	33	27	14	32	28	20	14
	2016	92	102	72	73	71	79	100	72	46	165	44	45	37	67	28	52	50	12	23
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In the United States, levels of non-financial corporate sector debt nearing previous peaks

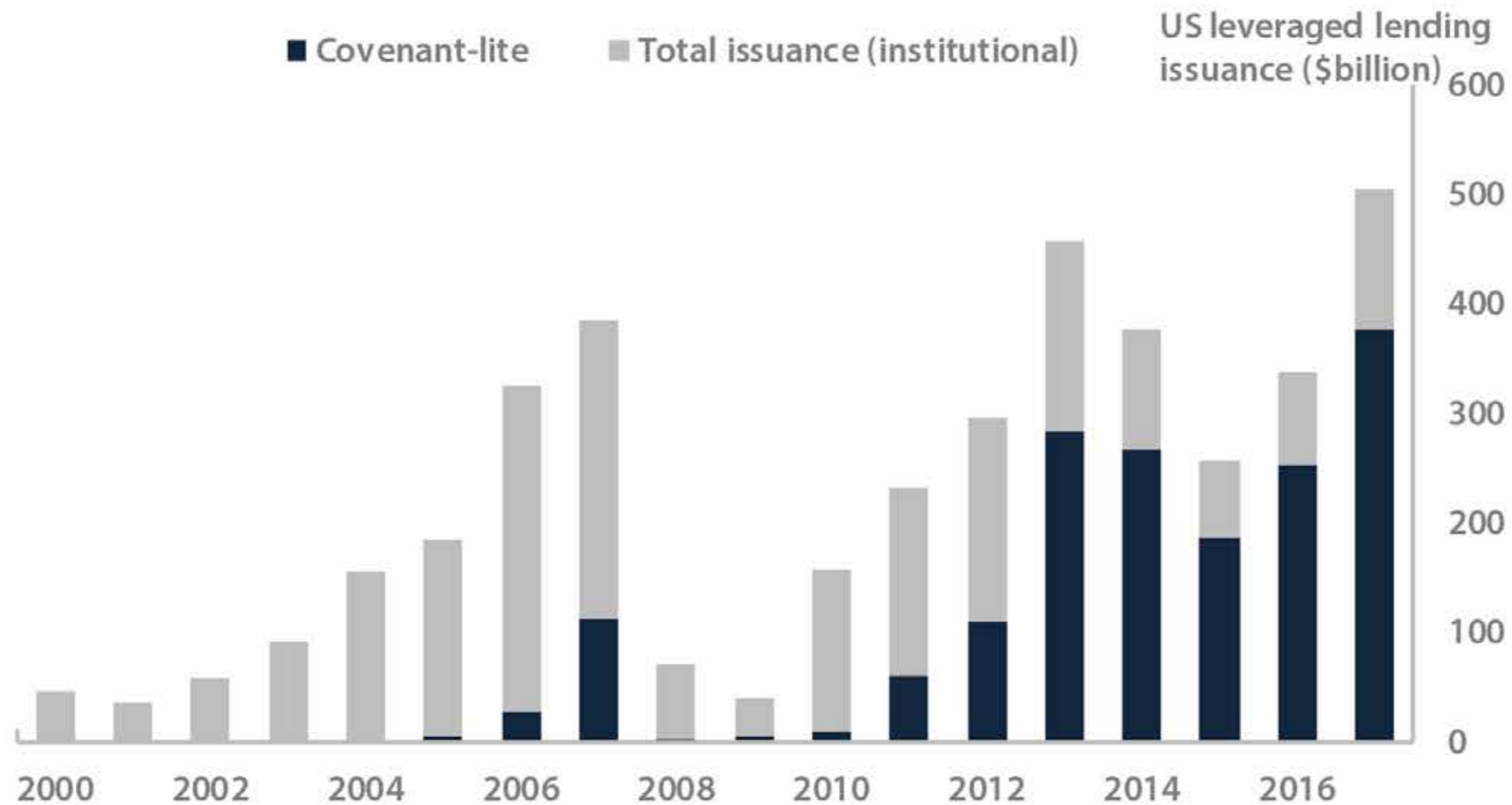
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Sources: Institute of International Finance and Bank calculations
Note: Q3 2017 figure is an IIF estimate

Record US leveraged lending issuance has been accompanied by an increase in 'covenant-lite' loans

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Sources: LCD, an offering of S&P Global Market Intelligence and Bank calculations.

(a) Based on data for public syndication transactions, and excluding private bilateral deals.

(b) Only includes institutional issuance. It does not include leveraged lending issuance that is pro-rata.

(c) Covenant-lite is defined as loans that have bond-like financial incurrence covenants rather than traditional maintenance covenants that are normally part and parcel of a loan agreement.

Bank of England 2017 stress test results

A scenario more severe than the financial crisis



Global and UK recessions

-4.7%
UK GDP



Higher interest rates

4%
BANK RATE



Fall in house prices

-33%
UK

The UK banking system is resilient

Banks lose £50 billion in the first two years of the test...



...but they are strong enough to keep lending in this scenario.

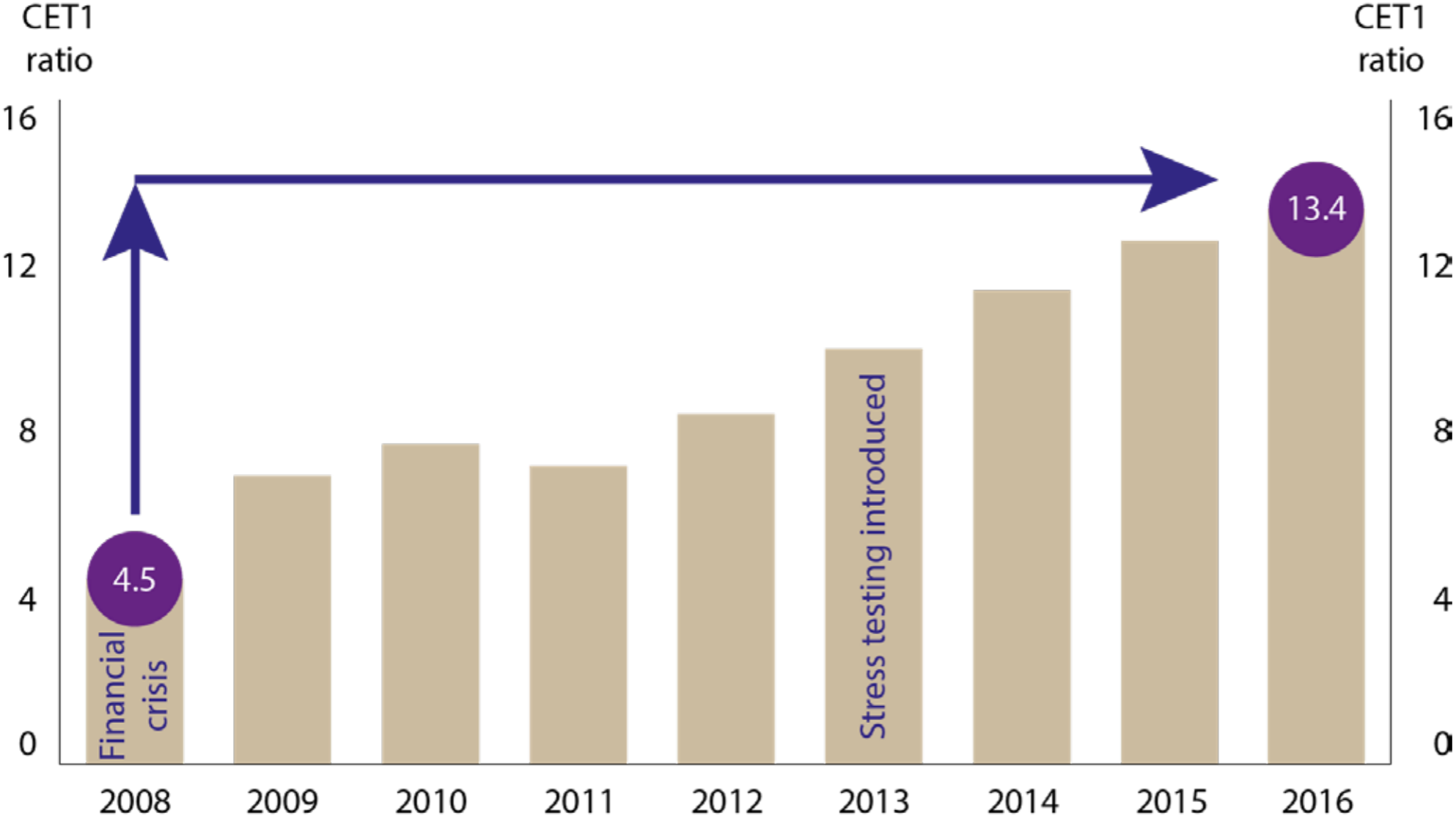


Banks are three times stronger than they were 10 years ago.

No bank needs to strengthen its capital position as a result of the test.

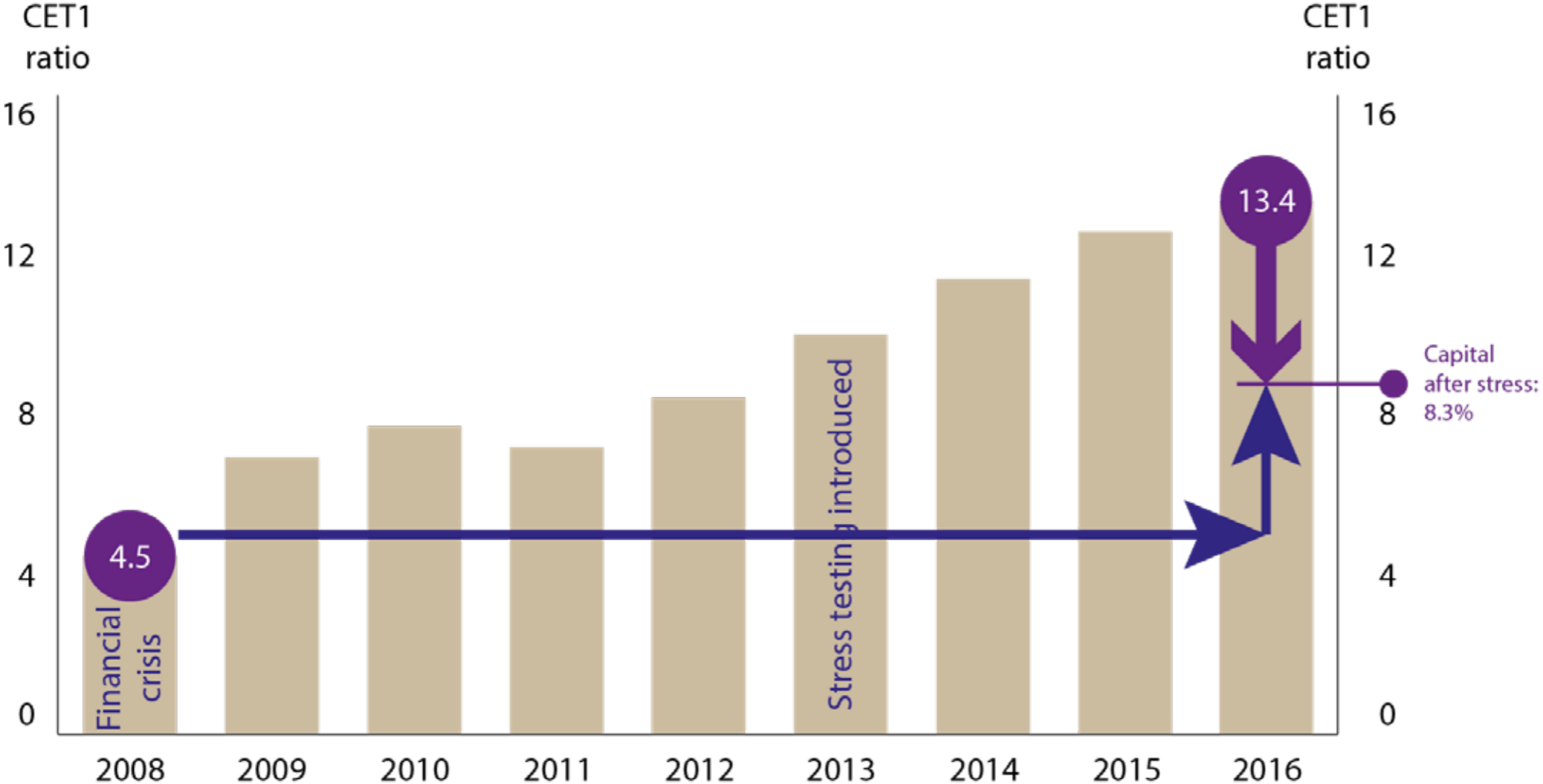
Banks have been increasing their capital ratios

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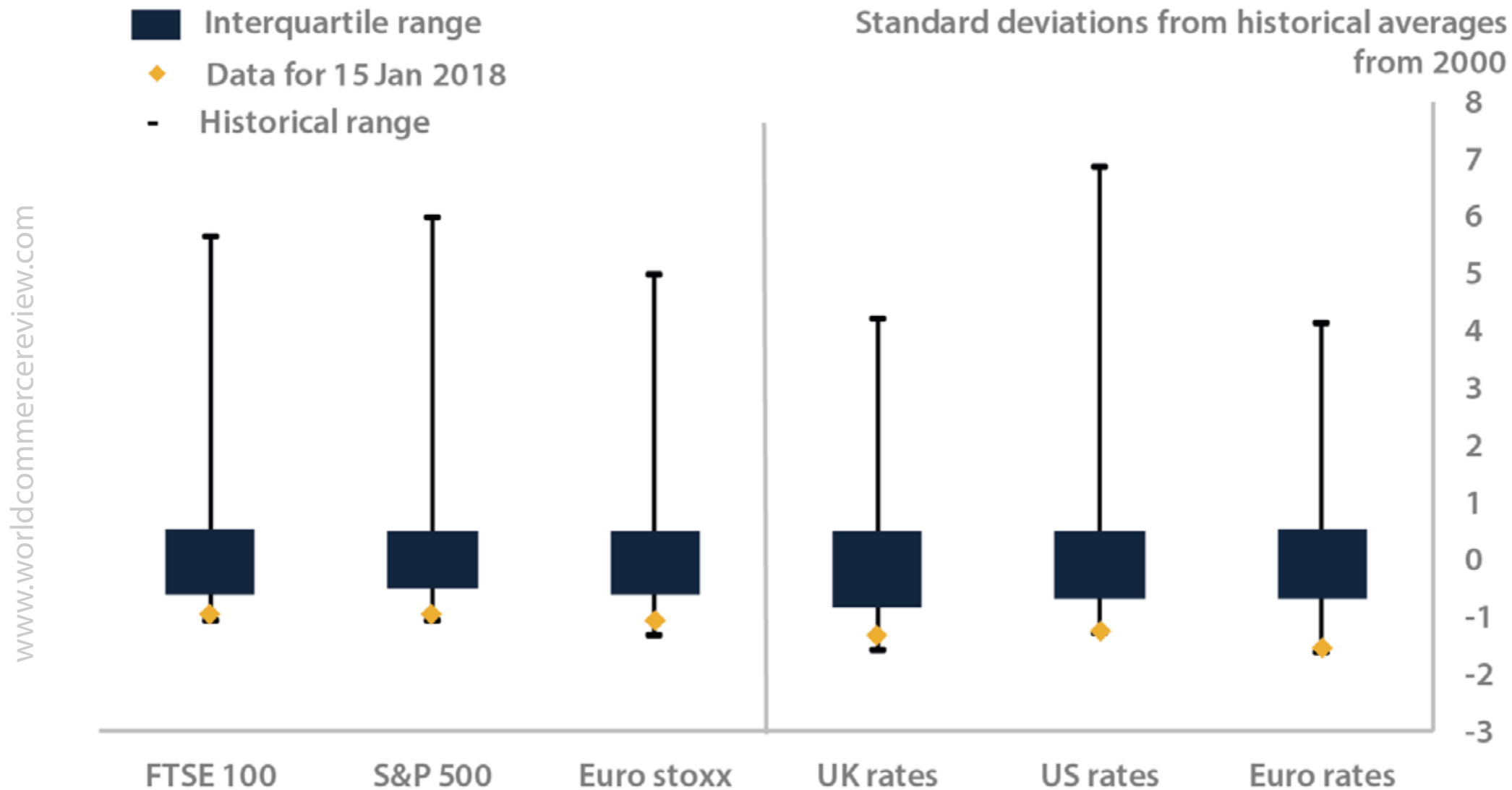


Capital remains almost double pre-financial crisis levels even after the test

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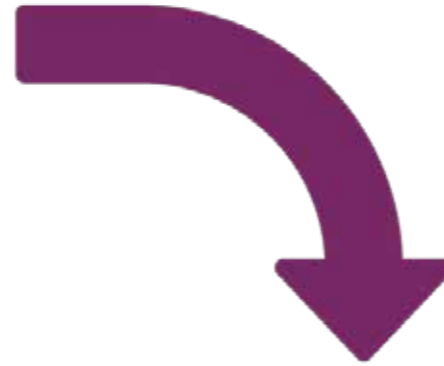
Stability has been a defining feature across a range of market prices



Sources: Barclays Live, BBA, Bloomberg, Chicago Mercantile Exchange, NYSE ICE and Bank calculations.
 (a) Data starts from January 2000

Low volatility begets low volatility

Low market volatility

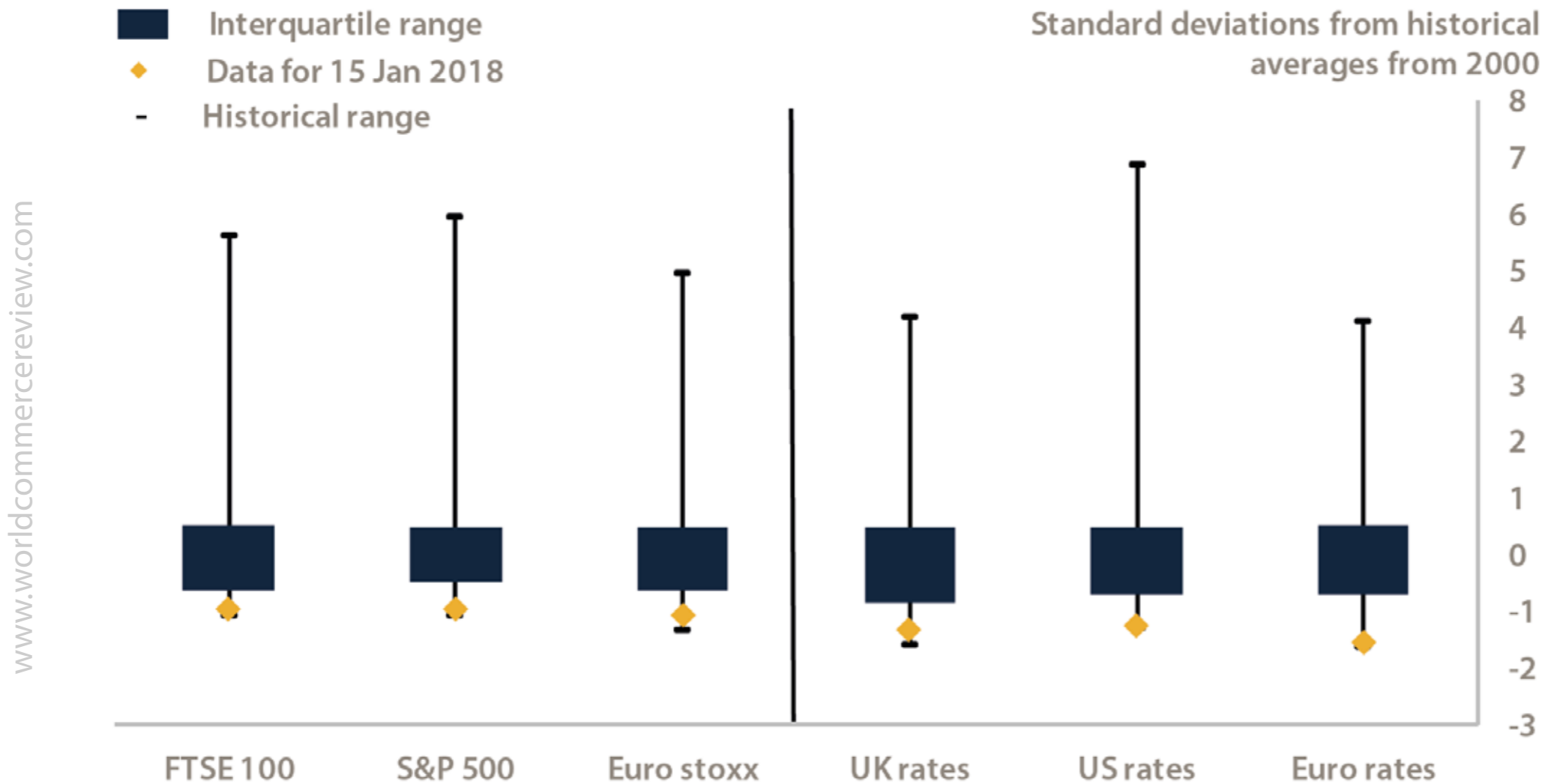


Increasing supply
of insurance

Low implied volatility



'Implied volatility' recently near all-time lows



Sources: Barclays Live, BBA, Bloomberg, Chicago Mercantile Exchange, NYSE ICE and Bank calculations.
 (a) Data starts from January 2000

Low volatility begets low volatility

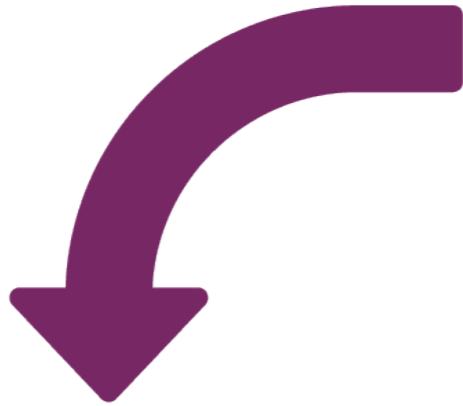
Low market volatility

Dealers' hedging activities tend to stabilise markets

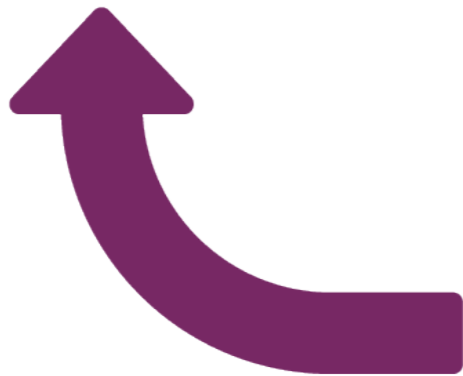
Increasing supply of insurance

Low implied volatility

Low volatility begets low volatility



Greater risk taking

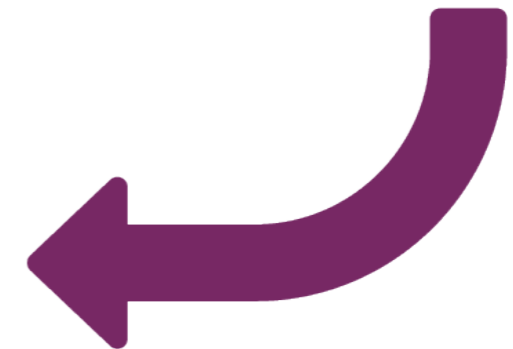


Low market volatility

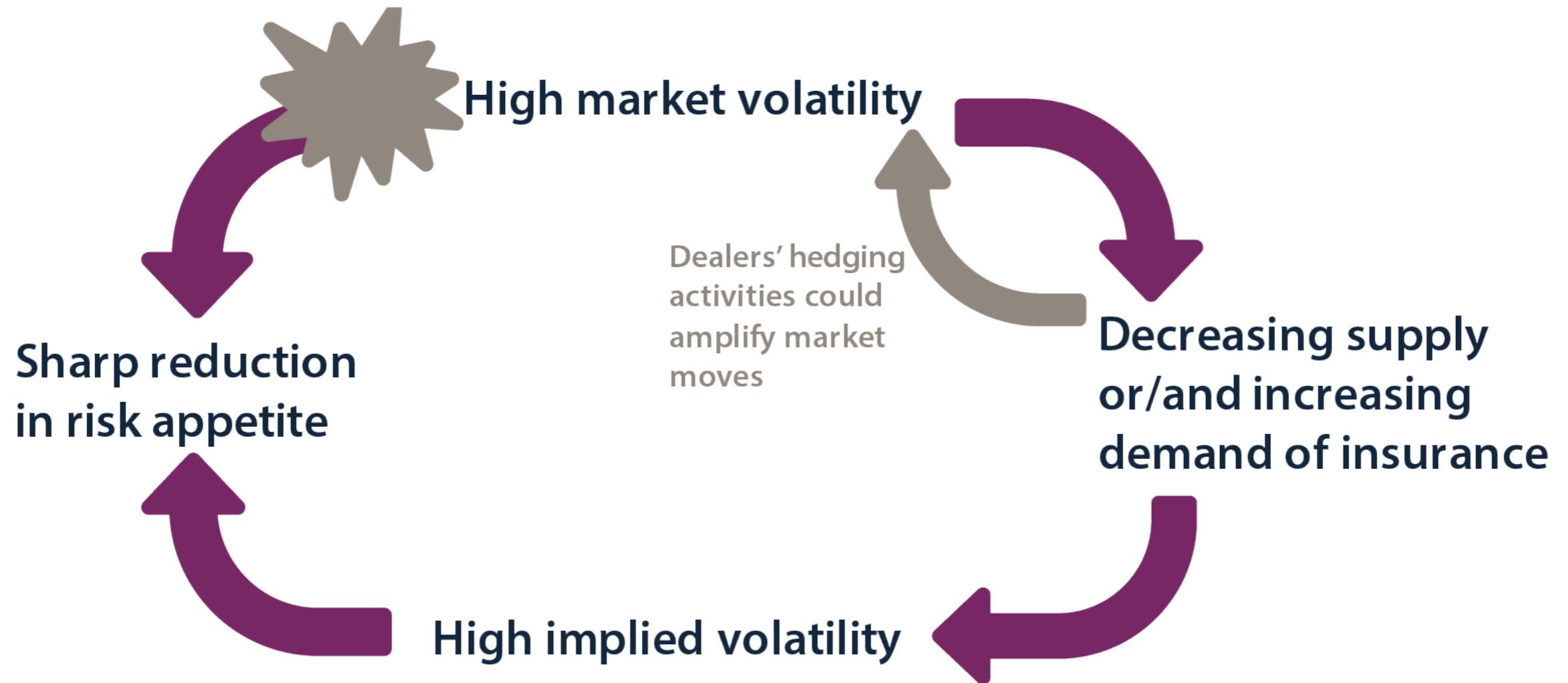
Dealers' hedging activities tend to stabilise markets



Low implied volatility

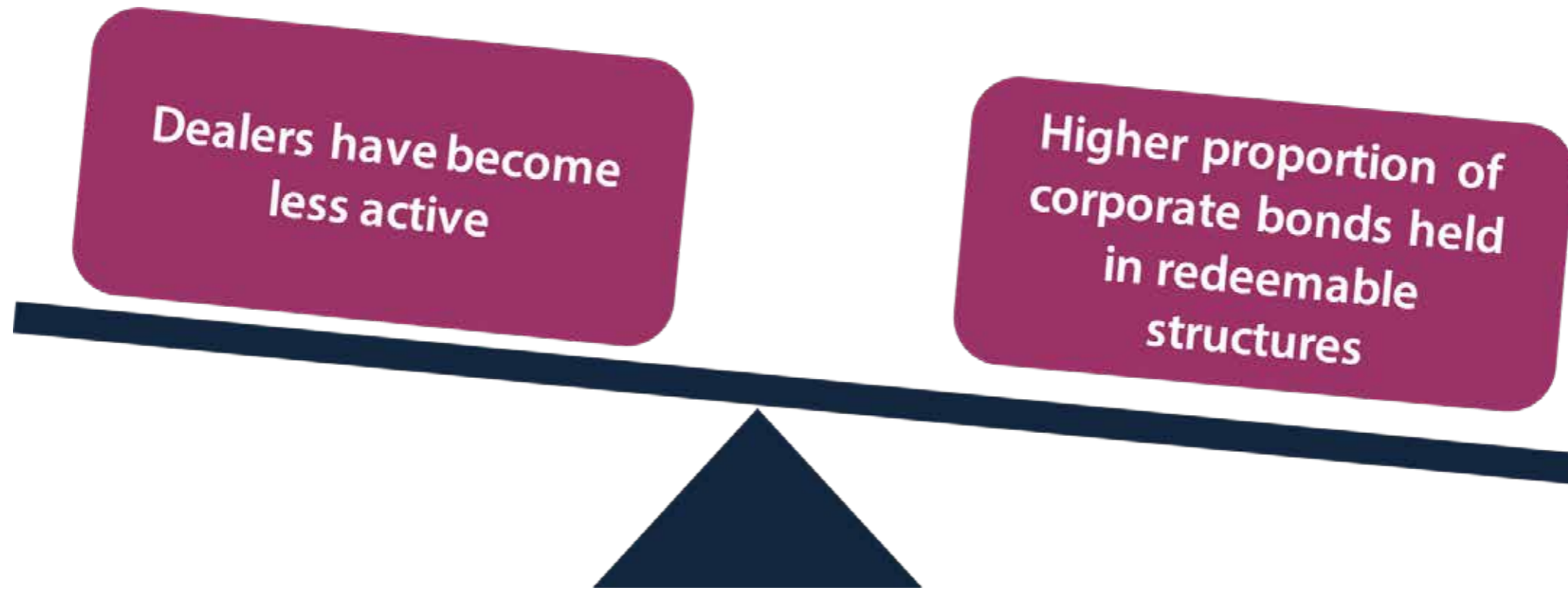


A shock can mean the whole thing goes into reverse



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A liquidity imbalance in a bond market adjustment?



The euro area's three lines of defence

The euro area needs reform. Benoît Cœuré argues that three lines of defence are needed to deliver a stable currency

For a long time, the European Central Bank has been at the forefront of macroeconomic stabilisation in the euro area. There's broad agreement that without our unprecedented actions, the euro area would have fared far worse. Even more people would have lost their jobs, and wages and prices would have stagnated for much longer, or would even have fallen. Although our actions were bold and unparalleled, we acted within our mandate, as confirmed by the European Court of Justice.

The establishment of the European Stability Mechanism, and the progress made in setting up a banking union, have fixed some of the shortcomings in euro area governance and instruments. These steps were important in easing the pressure the crisis has put on the ECB. But many of the institutional failings that caused and perpetuated the crisis remain unresolved. Incentives to pursue sound policies remain too weak and stabilisation of shocks too difficult. These are deep-rooted issues that cannot be resolved by a few years of above-trend growth. To assume that the current economic expansion will heal all wounds is naive. The euro area needs reform.

As the central bank of the euro area, the ECB should not interfere in the details of what is mostly a political debate. But we have a stake in the success of the current discussion. Without further reforms, the next crisis may well force the ECB to test the limits of its mandate. Depending on the nature of the next crisis, policy action might require taking short-term rates much deeper into negative territory. Or it might require purchases of assets that are riskier than public or corporate debt. Or it may draw us dangerously close to monetary financing of governments.

As things stand today, and given member states' still limited fiscal policy space, even a small downturn could create large economic and social costs. It could, once again, test the cohesiveness of the currency union. Unless the euro area finds a way to change direction, to reform itself and to regain space for active macroeconomic policy, the same fractures we saw in 2012 could reappear and widen when the next downturn comes.

Many ideas for reforms are being floated, of course. Some are bolder than others. The recent proposals by German and French economists are a worthwhile attempt to bridge differences and surmount trade-offs. Today I will not offer another blueprint. What I will offer instead are requirements that any euro area reform will have to pass. I will call them the three 'lines of defence' that any well-functioning monetary union depends on. They are needed to deliver a stable currency. They are needed to protect the ECB and its mandate. And they are needed to keep belief in the future of the euro strong.

Achieving lasting economic stability must involve finding a balance of discipline and flexibility in our economies. This will both strengthen support for the euro and help alleviate the pressure and burden on the ECB in crisis times

Flexible markets form the first line of defence. They are indispensable for a currency union. They reduce the need for macroeconomic stabilisation and curb contentious debates about crisis management. Markets that can absorb shocks efficiently do not waste costly political capital. And they create more policy space in downturns, for both fiscal and monetary policy.

To bolster the first line, the way we implement economic policies needs to change. The current system has clearly not delivered its intended benefits. Take the European Commission's country-specific recommendations as an example. In 2016, less than 5% of the recommendations were implemented by member states. Limited enforcement of the recommendations, rather than the incorrect identification of the main issues, has made the existing framework fail.

Why? Because recommendations from outside a country, even if correct on substance, are typically dismissed. Sovereign governments don't accept what they see as diktats from Brussels. Economists should have known better. Incentives are the drivers of our actions. So, if outside recommendations are perceived as being politically too costly, then we need to find solutions that promote national 'ownership' of reform efforts. Money is not the answer. It is political incentives that need resolve.

The other key domain to spur the catalyst function of our market economies is the Single Market. It is incomplete as we all know. Take services as an example. They account for over 70% of the EU's GDP and an equal share of its employment. But we still face significant barriers when it comes to cross-border service provision in the EU. The Services Package that was adopted about a year ago was a step in the right direction but more needs to be done.

Efficient and integrated financial markets are part of the first line of defence. In the United States, around 60% of a shock to a state's GDP is cushioned by financial markets. In the euro area, the share is currently closer to 20%.

Country-specific shocks remain unsmoothed to a large extent, mainly because cross-border equity risk-sharing is hugely underdeveloped in Europe.

A true capital markets union could significantly help to diversify and reduce risk. It would thereby limit the financial burden to be levied by governments in the case of adverse shocks. And it would broaden the scope of monetary policy transmission beyond the banking sector, making policy less vulnerable.

Finally, to avert banking collapses, governments in the past were forced to disburse large sums of public money in the pursuit of economic and financial stability. Completing banking union will reduce risks for taxpayers and break the remaining link between banks and national governments. A European deposit insurance scheme is a precondition for a truly integrated banking system and single money. Let us not forget that 86% of our money is created by commercial banks. The transmission of the ECB's monetary policy will always be incomplete as long as differences in depositor confidence prevail across the euro area.

The second line of defence relates to the role of governments. Even the most flexible and efficient markets cannot fully absorb very large shocks without imposing economic hardship on a considerable number of people. In other words, flexible markets come at a price. They increase uncertainty for employees and often require relinquishment.

Uncertainty, for example, is born of the fear of a loss of employment or of not being able to respond to today's fast pace of change. But it is also born of the fear that governments themselves have been pushed to the sidelines as globalisation has proceeded. Recent election outcomes around the world bear witness to this fear. The more exposed individuals are, the more likely a political backlash.

Governments can mitigate these effects. Unlike the United States, however, the European Union is not a federation. This means that, as a rule, stabilisation and the provision of security in the form of social services takes place first at national level. Keeping governments solvent is a precondition for achieving that. As we saw during the crisis, if perceptions of sustainability among markets decline, then counter-cyclical spending can quickly become constrained. So we need to regain fiscal space, which means building adequate national fiscal buffers.

The current broad-based economic expansion is contributing a lot to this end. But many countries are emerging from the crisis still bearing legacy burdens that could take decades to resolve. This leaves us vulnerable to divergence and fragmentation when a crisis strikes – and in some ways, even more so than before.

Fiscal consolidation therefore needs to go hand in hand with efforts strengthening our area-wide defences. Of course, the ESM is already an important safeguard. But we need to enhance its competences in the field of crisis management and make it more agile. This includes making full use of its existing instruments, such as the direct bank recapitalisation tool and precautionary financial assistance, and moving away from the unanimity requirement. And in the long run, it means bringing the ESM into the community framework. The stability of the euro area cannot be in the hands of one, or a few, member states and their parliaments.

Ultimately, the ESM needs to be accountable to the people of Europe. But union stabilisation cannot stop with the ESM. The euro area needs a fiscal instrument that can help it cope with large shocks without having to rely excessively on the ECB.

Such an instrument would be the third line of defence of our monetary union. It would support aggregate demand in countries experiencing a crisis, drawing on common funds. It would thereby provide an additional layer of stabilisation that safeguards trust in national policies. EU solidarity would then take on a whole new meaning.

Whether such an instrument would directly support national safety nets, or would instead undertake investment projects that create jobs and income, will be subject to much debate. Whether it should be balanced by stronger market discipline will be even more heatedly debated.

These discussions will take time. However important, they should not obscure what should be governments' urgent priority: strengthening the first two lines of defence of our monetary union. Achieving lasting economic stability must involve finding a balance of discipline and flexibility in our economies. This will both strengthen support for the euro and help alleviate the pressure and burden on the ECB in crisis times.

Realpolitik will dictate the speed of reforms. What we do need is broad agreement that they will be built on these three lines of defence, and visible progress on the first two. ■

Benoît Cœuré is a Member of the Executive Board of the European Central Bank

Based on a [speech](#) delivered at the conference "Deepening of EMU", Ljubljana, 2 February 2018

Looking after our money

Jon Cunliffe addresses the role of money in society
and changes in the technologies that support it in
our economy

want to talk about money. It is not something we talk about very much. We spend a lot of time talking about what we could, or should, do with money – who has it, who hasn't, how it is distributed and so on. But money, the thing itself, rather than what it buys or does, is not really something we think about much. That is not surprising. Like other basic things we depend on in society – electricity, water supply, nowadays the internet – it only has to be reliable and safe. You don't have to understand how it works.

And yet, I suspect, we generally understand even less of what money, the 'thing' itself, actually is than we understand of the other basic essential technologies we use. While we use it every day, unless it goes wrong, we don't actually notice it much.

This is not new. JS Mill described money itself, for most of the time, as an 'insignificant' thing, simply a 'machine for sparing time and labour... for doing quickly and commodiously', only 'exerting an influence of its own when it gets out of order'¹.

But it has not always been the case that we do not talk much about money itself. There have been times, times when the machinery of money itself has failed or when it has changed, that there has been debate, often long and bitter, about what money is and how it should work.

The creation of the Bank of England itself, which caused much controversy, in the late 17th century, can be seen as ingenious marriage between the King's fiscal needs and the economy's need for a larger and a state authorised money supply using the new technology of 'notes' or claims drawn on banks².

The same period also saw a protracted debate about the debased state of the English coinage and how to fix the value of money, a debate involving John Locke among others and leading to a painful set of statutory and

technological reforms carried out by Isaac Newton no less. The development of modern economies has been punctuated by debates about the nature and technology of money.

We are not, I am pleased to say, seeing today the sorts of issues that arise when the 'machine' of money, to use Mill's words, 'gets out of order'. But we are seeing changes in the technologies that support money in our economy. And given, as I will explain, that the Bank of England's role is essentially the stewardship of the money of the UK, that is something we need to understand and to which we need to be ready to respond – calmly and carefully.

The way we exercise our responsibility for the 'machine' that is the nation's money has of course changed over time. But the underlying responsibility to ensure the machine runs in good order will remain

Before discussing some of these changes and the role of the Bank, it is worth dwelling a little on what money actually is. I am sure you know the standard answer: money, as you learn on an economics course, has to be *all* of three things:

- A means of payment – everyone has to be able to buy things with it;
- A store of value – everyone has to be able to hold their wealth in it; and
- A unit of account – everyone has to use it as a common measure of the economic value of things. This is as good a practical description as you can get, though defining the boundaries is not easy, as monetary statisticians know³.

It is, essentially, a description of what money does rather than what money actually *is*. Mill and Friedman describe money as a machine but perhaps a better description is a technology. But it is not a physical technology – metallic, electronic or otherwise, though its embodiment may take any number of physical forms⁴. It is in the end, a social convention or what has been called a ‘social technology’, by which we create, hold, use and measure claims on each other⁵.

Societies do not need to have such social technology – there are examples in history of quite advanced societies that have not used it⁶. But modern economies and the changes to living standards to which we have become accustomed would almost certainly be impossible without it. This social technology is of course supported by other technologies - physical, legal and institutional. But these can be very different in different societies and they evolve and change over time.

The claims we hold on each other and exchange can be expressed in physical form, like coins or as records in a paper or an electronic ledger. They can be issued or authorised by the state and governed by law - but they do not have to be. In the end, what counts is that the social convention that is money continues to hold. When it fails, when it gets 'out of order', the damage to society can be very great.

And though money can exist without them and although they can vary, what I have called the supporting technologies matter hugely. The role of the physical forms of money, of the transaction systems, and of the legal and institutional frameworks is to make the social technology function as safely and efficiently as possible to serve societies' needs.

By the same token, if they are abused or deteriorate, as happened to the coinage in Newton's day or the banking system in the US, in the great depression, the underlying social technology of money is harmed – it gets out of order and the damage can be very great. The money of the UK, Sterling, is implemented and supported by a range of technologies.

Only about 3% of the money we use is directly issued by the state. That comprises the £80 billion in notes and coins – effectively claims on the Bank of England (banknotes) and the Crown (coins)⁷. There is another £470 billion of state issued money, but it is not in general circulation; it comprises the deposits that private banks hold in their (electronic) accounts at the Bank of England – the claims on the Bank of England that banks exchange to settle transactions with each other.

The remaining 97% of the money held and used by the public takes the form not of notes and coin but of claims on the private banks in which we all store our money in payment accounts. When we use a plastic card, a cheque, a bank transfer – as we do for over 95% of the £7½ trillion of transactions by value every year in the economy – we are

exchanging our claims on our banks. This is sometimes called 'private' money as opposed to 'public' or state issued money. That is in my view a rather misleading description, for two reasons.

The first is that these claims are denominated in Sterling, the 'unit of account' in the UK, the common measuring stick of economic value that we all accept, that is governed by the Bank of England under the authority of Parliament. The Bank's Monetary Policy Committee is charged with ensuring the stability of the currency's value in terms of what it can buy.

The second is that the private banks that hold our transactional accounts (ie. take deposits) and create money by issuing claims on themselves, have to operate within a comprehensive legal and regulatory framework – supervised by the Bank of England and the FCA.

This framework itself has been greatly strengthened since the financial crisis. It is designed to ensure that the banks that are authorised to take deposits and issue claims on themselves in return, are robust and can absorb losses. They have access to the lending facilities of the Bank of England to meet any shortages of liquidity.

Up to £85,000 of deposits are protected by a statutory deposit guarantee scheme paid for by the banking industry. Banks are also now subject to 'resolution' requirements to ensure that in the unlikely event of failure they can be stabilised and subsequently broken up, sold or wound down to the degree necessary while protecting depositors' ability to make and receive payments – and without requiring taxpayer money.

The payment systems through which claims on private banks are exchanged, are likewise supervised by the Bank of England. And, as I have noted, when private banks settle the claims they have on each other, that happens in 'public' money, by exchanging their claims on the Bank of England.

There have, of course, been examples, as in the US 'free banking' era of the mid 1800s, of private money operating outside the supporting technologies of public institutions and regulation. But that is not the case in the UK today. So rather than talk of 'private money', it is I think more accurate to talk of money issued by and transacted through publicly authorised firms.

You will have noted that I keep coming back to the Bank of England. There are many ways to describe the role of the Bank as a public institution serving the people of the United Kingdom. But in this context, perhaps the best is that our role is the stewardship in the UK of the social technology of money or, in Mill's words, of the 'machine'.

Our statutory objectives, to ensure monetary and financial stability, are in effect to prevent the technology getting out of order. The first sets our responsibility for keeping confidence in the 'unit of account' of sterling. The second sets our responsibility for the financial system, on which the creation of, and the transactions in, our money depend.

And of course, we are responsible also for the safety and soundness of most of the physical money, the banknotes that are used in the UK.

So the technologies that support money in the UK are central to our purpose and we need to assess how changes in those technologies – physical, legal, institutional (public and private) will affect that purpose. Against that background, I want to pick up two changes in the technologies supporting our money. I am not referring here to Bitcoin or crypto-currencies, on which so much ink (physical and virtual) has been expended recently.

I want rather to talk about two related developments that are actually happening or about to happen. The first is the growing use of non-cash technologies for small value payments. And the second is the change to the way we manage and use our payment accounts at banks, the form in which most of us hold our money.

As I noted, some £550 billion, 20%, of the money in the UK is issued by the public sector. A very small amount of this, by value, comprises the coins issued by the Royal Mint. The rest is Bank of England money. Bank of England money is used at the extreme ends of the payments hierarchy – for the very largest and for the very smallest transactions.

At the top end, the very large payments that private banks make to settle their claims on each other must be made in 'Bank of England' money by transfers between the banks' reserve accounts at the Bank of England. This happens over an electronic payment system, the Real Time Gross Settlement (RTGS) system operated by the Bank of England. The objective is to reduce risk in the payment system. At the other end, state issued 'cash' – notes and coin – is used mainly for the smaller value payments that settle the bulk of transactions in our economy.

That has not always been the case. At the end of the 1970s, 90-95% of payments by volume in the economy were made using cash⁸. Private money, in the form of cheques, bank transfers and more recently credit and debit cards were simply too expensive and too cumbersome to use for small value payments.

The trend, however, has been away from cash towards a greater use of private bank money in the economy. The spread of credit and debit card technology meant that by 2000, cash payments accounted for less than 75% of payments by volume⁹. And a number of recent inter-linked developments in what I have called the technologies that support our money may be driving an acceleration of that trend.

New regulations have reduced the cost of credit and debit card transactions by capping the fees that card companies and banks can charge merchants. Parliament has established the Payment System Regulator, a new economic regulator, to improve competition and innovation in the payment systems, through which payments using bank accounts are made hitherto dominated by the large banks.

To support greater competition and innovation, the Bank of England has widened access to RTGS, the high value settlement system, so that large non-bank payment service providers can access it directly rather than having to go through the banks with whom they are in competition¹⁰.

At the same time, the introduction of electronic technology, Near Field Communication, has allowed the development of contactless payments and reduced the 'hassle' of making small value card payments and enabled smart phones to be used as payment devices.

And of course, more commerce is migrating to the internet where physical cash simply cannot be used. Internet sales now account for over 15% of retail sales. We are, as a result, seeing important changes in the way we use money as a means of payment.

New players, from the largest technology companies to challenger banks and internet startups are coming into the various elements of the transaction chain. And there seem to be changes in the way we use cash.

The actual amount of cash in circulation is not going down. Indeed, over the last few years, demand for cash if anything has gone up slightly growing from about £70 billion at the end of 2014 to over £80 billion at end 2017¹¹. Some of this demand can probably be attributed to the use of cash as a store of value – 'money under the mattress' and to the reduced cost of holding it in a low inflation, low interest rate environment.

But while demand for cash has increased, there has been some fall in recent years in the value of cash payments. This stayed pretty constant for roughly the first decade of the century, but has fallen by around 10% since then¹². And there have been even more significant changes in the volume of cash payments. In the latest data, the total number of cash payments fell 16% over two years¹³. It looks likely that last year, for the first time, the number of card

payments overtook cash payments. The driver of these changes is the increasing use of private bank money rather than publicly issued cash for small payments through cards, the internet and new e money providers. It is difficult to predict how far or how fast this shift will go. Cash remains hugely important for payments in the economy. It is still used to settle nearly half of the transactions in the UK.

Although the cost of card and smartphone transactions has come down, cash remains materially the cheapest technology for small transactions. Estimates suggest that cash transactions cost retailers less than 1½ pence per transaction, or 0.15% of the value, compared to over 5 pence per transaction for debit cards 0.24% by value.

And, behaviourally, many people in the economy clearly prefer to use it for a variety of reasons. That could change quickly, as it has done in one or two countries, such as Sweden. But in many others the use of cash has proved extremely stable. For example, in Spain and Italy cash is still used for over 80% of transactions at the point of sale¹⁴. Given our general responsibility for money in the UK, what do these changes in the way money is used as a means of payment mean for the Bank of England?

Our responsibility is to ensure that people can use the money of the UK to transact safely and, subject to that, as efficiently as possible and in line with their preferences. The Bank of England has been very clear that it will issue cash to meet demand, as it has always done. Our investment in new cash technology, safer and longer lasting polymer notes is a demonstration of that commitment.

At the same time however we will continue support innovation and competition in the machinery for making payments in the economy. But we also need to ensure that the private sector that increasingly provides much of the changing technology of our money as a means of payment, does so within an appropriate framework of regulation and authorisation.

Along with our sister regulator, the Financial Conduct Authority we need to ensure that those who offer payment services, new and existing players alike, in any of the links of the transaction chain, are properly authorised and can manage the risks they bear.

And that same risk, for example taking deposits and issuing claims, is treated in the same way, regardless of the business model of the firm offering the service. There needs to be a level playing field in all directions.

Developments in the way we store and manage our money

The supporting structures of law, institutions and physical technology are also about to change in the way we hold and manage the bank accounts in which most of our money resides. The bulk of money in the UK, as I have noted, takes the form of the £1.6 trillion in the tens of millions current accounts we hold in the banking system. At present, we access and manage this money through direct interactions with our bank.

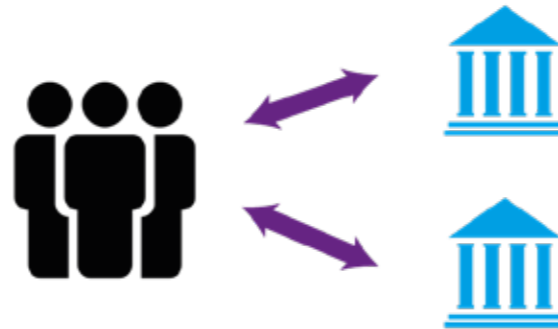
At the beginning of this year, the new EU Payment Services Directive (PSD2) came into force. This has been reinforced by the Open Banking requirements mandated by the Competition and Markets Authority for the major UK banks. PSD2 requires banks to allow a third-party provider of financial services to have access to a customer's online payment accounts if the customer requests it. These third-party providers will have access to the account information and, again if the customer so chooses, they will be able to instruct transactions. These firms will have to be authorised in the UK by the FCA.

Open Banking requires the major banks to use a common data interface (the API). This will reduce barriers to entry by making it easier for third party providers to 'plug into' the banks' systems to manage customers' accounts on their behalf.

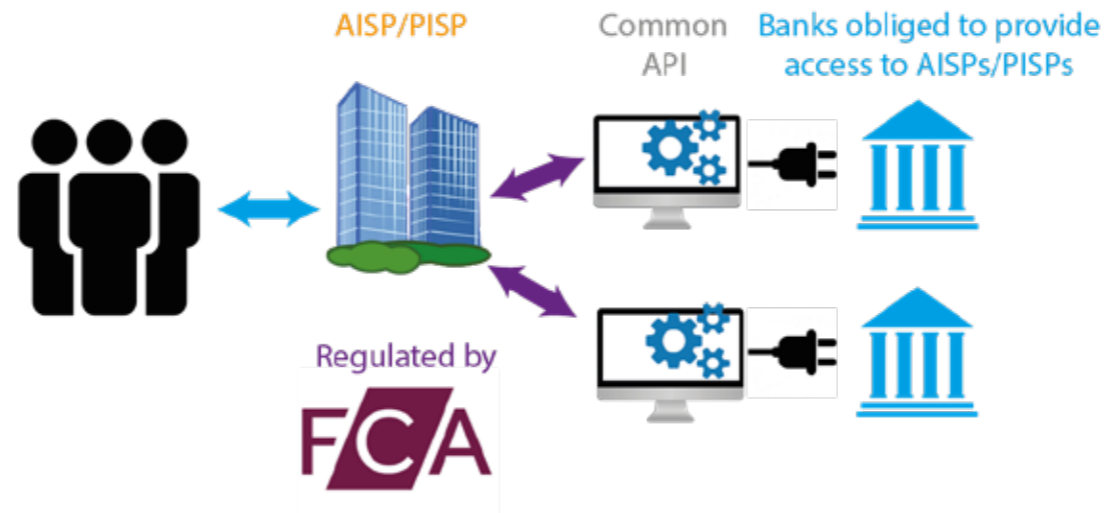
Figure 1. Impact of reforms

Current model - direct interaction with banks

Consumer interacts directly with their account providers to check account information and/or make a payment



Post reform - access accounts through third parties



AISP/PISP: Account Information Service Providers and Payment Initiation Service Providers. API: Application Programming Interface

The reforms are designed to increase innovation, competition and security in payments and banking services – to give us better information, more competitive pricing and new services in the use of the 97% of our money provided by the private banking system. They pave the way for improved and more secure smartphone apps, including the so-called ‘aggregators’ that aim to help customers shop around and switch providers of financial services frictionlessly¹⁵.

Just as many of us have come to use our smartphones as a single tool for things that we used to do over multiple devices, so PSD2 and Open Banking could, at least in theory, enable apps that centralise our personal financial affairs, offer us advice on how we might more efficiently manage our finances (for example, by recommending that more money could go into a savings account, or rival bank that is offering better interest).

They could do the ‘paperwork’ for switching for us, and – crucially for many of us – do the searching for information, filling in forms, and setting up payments that often prove an obstacle in making financial decisions.

It’s difficult to forecast how attractive these services will actually be for customers and how fast any shift might be. Change if it happens could be relatively slow. Surveys suggest the majority of customers are relatively satisfied with their banking services¹⁶. Around 2 million UK bank customers already use rudimentary services of this kind – PSD2 and Open Banking will enable greater security and functionality.

These innovations do not directly involve the Bank of England. However, as I noted earlier it will be supported by the greater access to the high value payment system and related accounts at the Bank of England for non-bank payment that we will in future provide. And to the extent that new players in this area want to be banks, it will be supported by the PRA’s New Bank Start-up Unit¹⁷.

These changes fit within our general responsibility to ensure that people can use the money of the UK to transact safely and, subject to that, as efficiently as possible and in line with their preferences.

However it is not just the new players and the new services we need to think about. The changes happening in the technologies around money will have an impact on the business model of the retail banking system that has deposit accounts at its core and that has hitherto dominated the payment and settlement machinery. It is certainly not our job to protect or preserve any particular business model for the provision of financial services.

But the banking system, operating within the framework of the Bank of England monetary policy to govern the unit of account and under the regulation and supervision of the Bank and the FCA, is at the centre of the creation and of the use of the majority of our money as a means of payment and as a store of value.

Given this role of the banking system in our economy, we have to ensure that the banks and the system as a whole are robust and have the resilience to withstand very severe risks. Our framework of regulation and our annual stress test of the banking system is designed to give this assurance.

But as well as being able to withstand stress, we also need to be confident that the banking system is forward looking – that banks understand and plan, in the way best suited to them individually, to meet future challenges to their core business model.

For that reason, last year, in addition to our regular annual stress test, we set the major banks a longer term ‘exploratory scenario’ exercise. This examined their strategic responses and preparedness to, among other things, increasing competitive pressures enabled by the changes I have described.

In this 'exploratory scenario', customers move their money much more frequently and swiftly than they do at present between banks and different products. As customers become increasingly willing to move their accounts, the brand power of major banks diminishes, and savings not only switch between banks but also migrate more readily to non-banks.

By the end of the scenario, there is much greater competition for retail deposits and the aggregate amount of deposits in the system falls. In the scenario, one consequence of this competition for retail deposits is an increase in pricing – banks have to pay more to attract scarce deposits. At the same time, strong competition in lending markets – mortgages, loans, credit cards, etc – means that banks are not able to simply pass on the higher cost of deposits to borrowers. As a result, in the scenario there is a marked squeeze in banks' net interest margins and hence on banks' revenues.

The scenario also poses a number of risks to banks' market share, to the liquidity of retail deposits, to fees from payment services and to the ability to retain and access customers and to the use of their current data advantage to cross sell products. If firms are depending more on technology like the cloud and third-party providers, this environment could also pose cyber and operational risks.

The impacts are not of course all one-way. There is an upside for existing banks. New technology and customer relationships gives them the opportunity to provide customers with new and better products and services, to compete and, crucially, to become more efficient.

In their responses, the banks in the test judged they could maintain existing business models without increasing overall risk taking, meeting the requirements of both regulators and investors, and using technology to increase efficiency to offset lower margins.

Our assessment was that there were a number of risks to the banks' projections in the exploratory scenario. In particular, Open Banking, PSD2 and other related changes might cause greater and faster disruption to business models and the forecast increases in efficiency may be more difficult to deliver than assumed. Investors might also demand a higher return than banks' forecast in the exercise.

The Bank of England's 2017 Exploratory Scenario was not a pass or fail stress test. It was an exercise designed to assess the level and depth of banks strategic thinking about responses to future challenges, including the challenges to core business models from changes underway in the technologies around money.

The exercise provided the Financial Stability and the Prudential Regulation Committees of the Bank of England with a number of important insights. We will be following up with banks on the results of the exploratory exercise.

Conclusion

Thinking about the future in this way is a key part of our responsibility for the money of the UK. The way we use the social technology of money has a long and very varied history. Money has manifested itself in very different forms over the centuries. The confidence that lies at the heart of the technology that is money has been supported in very different ways. The technology has, on occasion, been abused and misused: to borrow Mill's analogy, the 'machine' has gotten 'out of order' and done serious damage.

The Bank of England has a very long association with the development of money. As I noted at the outset, it has been argued that the creation of the Bank, over three hundred years ago, was the institutional invention that brought public and private money together, providing the liquidity, efficiency and security in the money supply upon which the development of modern economies depended.

The way we exercise our responsibility for the 'machine' that is the nation's money has of course changed over time. And it will continue to evolve with society and as the 'technologies' that support money change. But the underlying responsibility to ensure the machine runs in good order will remain. ■

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

Endnotes

1. Milton Friedman made use of Mill's characterisation of money as a machine when describing 'what monetary policy can do' in his seminal address to the American Economic Association in 1967.
2. In 17th century England, goldsmiths would take custody of their customers' gold and issue a paper note in receipt. These notes evolved to become payable to 'the bearer' rather than just the original depositor making it more convenient for people to carry and exchange the paper notes, rather than the underlying gold. Realising that it was highly unlikely that all of their customers would want to withdraw all of their gold at any point in time, goldsmiths soon began to issue more notes than the value of the gold in their vaults, by making loans. Thus goldsmiths formed the basis of modern banks, and could create money in much the same way as banks do now.
3. For a discussion, see 'Proposals to modify the measurement of broad money in the United Kingdom: a user consultation' by Burgess, S and Janssen, N Bank of England Quarterly Bulletin, 2007 Q3
4. The pacific island of Yap historically used carved stones as a form of money. These stones could be as large as 12 feet in diameter and represented a value determined by both by the stone's size, the quality of its craftsmanship and the history associated it.
5. See for example, 'Money: the unauthorised biography' by Felix Martin.
6. For instance, before the arrival of the Spanish colonist, the Incan economy functioned without a formal form of money.

Instead, Incans were required to work a number of days per year on public projects and in return the state provided them with all they required in terms of food and materials, leading to little to no trade within the domestic economy. Ancient Mesopotamia did not have a circulating currency as its means of payment - coinage only appeared around 2,000 years later. Instead these civilisations had a system of ledger-based accounts of mutual debits and credits, typically denominated in terms of agricultural commodities.

7. Only the Bank of England issues banknotes in England and Wales, but seven commercial banks in Scotland and Northern Ireland can also issue banknotes, the total value of these notes in circulation is £7 billion. The seven banks must, by law, set aside assets that are worth at least the value of all of the banknotes they have in circulation. This ensures that people with genuine banknotes issued by the seven banks receive a level of protection similar to people who have genuine Bank of England banknotes.

8. 'Payment systems in eleven developed countries' Feb 1980, BIS

9. UK Payments statistics, published by the Payments Council

10. Under specified conditions: the Bank of England set these out publicly in July 2017: 'Access to UK Payment Schemes for Non-Bank Payment Service Provider'

11. Total sterling notes and coins in circulation, excluding backing assets for commercial banknote issue in Scotland and Northern Ireland, seasonally adjusted.

12. Statistics from Payments UK (now part of UK Finance) show that the value of cash payments were between £260 billion and £270 billion in each year from 2001-2010 but has fallen over recent years to £240 billion in 2016.

13. From 18.2 billion payments in 2014 to 15.4 billion in 2016 (Payments UK).

14. ECB Use of Cash in Households in Euro Area Survey (2017)

15. The energy market is sometimes cited as a possible comparator for consumer switching. In that market, five and a half million customers in the UK switched provider in 2017.

16. Over 90% of customers described themselves as satisfied with their bank according to a survey by GfK NOP commissioned by the Competition and Markets Authority for its investigation into the personal current account sector.

17. The unit is a joint initiative by the PRA and FCA to provide information and support for those thinking of setting up a new bank in the UK: <https://www.bankofengland.co.uk/prudential-regulation/new-bank-start-up-unit>

Article based on a [speech](#) given at the University of Warwick, Monday 26 February 2018

A time to share

In the euro area, discipline is of the essence, but risk-sharing is no less important, Daniel Dăianu writes

A significant economic recovery in the euro area (EA) has been underway in recent years. Nevertheless, major challenges still remain as the Banking Union (BU) is incomplete and the EA is not yet robust enough when it comes to its tools and policy arrangements. This reality is acknowledged by high-ranking European officials and key official documents (the *Five Presidents' Report* of 2015, the European Commission's *Reflection Paper* of 2017, etc) as well.

In the economies in distress, corrections have been made by implementing belt-tightening programmes and external balances have been restored to equilibrium, yet at the cost of an upsurge in unemployment; external imbalances have been *internalised*, thereby putting pressure on the social fabric and the political domestic setups. Banks, in general, are better capitalised, but the size of overall debt afflicts their balance-sheets. It should be pointed out that the current economic recovery, which includes a cyclical component, is largely reliant on ECB's non-standard policies, ie. very low interest rates and purchases of sovereign and corporate bonds. A new economic downturn will be felt again quite painfully in the EA if adequate policy arrangements are not put in place.

1. Two approaches to the reform of EA functioning

The euro area removed the currency risk, which was a big headache for the countries that formed the EU and sought deeper economic integration. The crisis of the Exchange Rate Mechanism (ERM1) speeded up the preparations for euro introduction. While, prior to the EA creation, external imbalances were corrected mainly via exchange rate adjustments (which fanned inflation) and budget cutbacks, adjustments during the current crisis have taken place via 'internal devaluations', whose costs are not necessarily lower¹. Hence, trying to mend the EA functioning is more than warranted.

EA reforms reveal essentially two approaches². One approach emphasises financial discipline and rules. In a narrow sense, this approach boils down to balanced budget executions throughout the business cycle; in a broader sense,

it implies rules that would not allow public and private imbalances to get out of control.

But the financial crisis that erupted a decade ago has revealed vulnerabilities in the EA that cannot be attributed to soft budget/financial constraints alone; resource allocation in a monetary union which features large development gaps among member states comes into play strongly. This is why the emergence of bubbles and their subsequent effects have to be considered.

Only private risk-sharing schemes would not make the EA more robust. Financial markets are too fickle and produce systemic risks recurrently

The other approach to reforms focuses on 'risk sharing' within a union which is marked by heterogeneity, by member states' uneven capacity to absorb shocks. The EA is pretty diverse in this regard and the non-existence of key policy tools (eg. an autonomous monetary policy and own lender of last resort) can be a big nuisance. The fact is that, except for Greece, wide imbalances in some EA countries were caused primarily by private indebtedness, by cross-border capital flows in search of higher yields that led to speculative bubbles, to boom and bust cycles.

Across the EA, there is a so-called 'doom loop' between sovereign bonds and banks' balance sheets³. This loop is more of a problem when competitiveness gaps among member states are large and local banks show a proclivity for acquiring 'local' government bonds (a bias which is enhanced by the zero-risk weights for sovereigns as well)⁴.

2. Risk reduction and risk sharing

The non-standard operations of the ECB (including its lender of last resort (LoLR) operations) have rescued the EA. A big question is what will happen when the ECB normalises its policy, when interest rates revert, be it very gradually, to positive real levels. Although the correction of external imbalances (deficits) should not be underestimated in judging the reaction of financial markets, it is sensible to think that the current sovereign bond spreads of the 'periphery' over the German Bunds (as a benchmark) do not illustrate member states' economic performances accurately; the ECB's operations have quite likely diminished these spreads.

Euro area creditor countries highlight the need to reduce NPL stocks (*a legacy problem*) as a *risk reduction* measure, prior to implementing a *risk-sharing* scheme (a collective deposit insurance scheme) in the banking sector. By the way, this scheme is the key missing link in the BU architecture, though considerably higher resources for the Resolution Fund would also be needed. But, over time, the flow of non-performing loans hinges, essentially, on economic performance, and not on a particular level of NPLs, which can be brought down through various means⁵.

In the absence of mechanisms and instruments that foster economic convergence in the EA, NPL stocks at national level would tend to diverge widely again.

One can imagine a diversification of banks' loan portfolio that would diminish the threats posed to their balance-sheets by activities in weaker economies. However, a complete decoupling of banks from weaker member states' economies is not realistic and not welcome, and contagion effects can still be significant. And if a decoupling by banking groups were attempted, that would cause further fragmentation in the EA – where finance is largely bank-based. Moreover, there are small- and medium-sized banks whose activity remains quasi-local/national.

A concern of creditor nations is that certain EA reforms would lead to systematic income transfers to some countries, to a 'transfer union', which would call into question the political legitimacy of such arrangements. But a key distinction should be made in this respect: systematic transfers that would stick the 'financially assisted' label to some economies should be distinguished from transfers that help cushion asymmetric shocks and narrow performance gaps. This distinction chimes with the logic of the social insurance system: every income-earner contributes to a pool of resources that should be used when some contributors are in need of justified assistance, not sine die (leaving aside social benefits recipients) transfers.

It is worth mentioning, in this context, the *bailing-in* scheme (creditors' and shareholders' involvement in loss sharing, or haircuts) in contrast to the *bailing-out* scheme, with the latter being prohibited by the Treaties (as the EA was conceived). *Bailing-in* is meant to protect tax-payers from costly resolution operations. But *bailing-in* can trigger contagion effects unless it is done with utmost care - and it is not clear that implacable rules are to be applied in this respect. The ECB was forced by a grim reality to take on a de facto LoLR function from 2010 onwards; and one should not rule out bailouts under exceptional circumstances, when contagion effects may become very threatening.

If banking groups diversified their government bond portfolios while considerable competitiveness gaps persist among member states, and if sovereign bond ratings were no longer 'risk-free', a strong preference for holding safer bonds would ensue. Capital would favour better performing economies, although speculative funds would eye higher (riskier) yields. Banks would discriminate among countries, thus harming economic activity in some member states.

It can be inferred that, unless economic divergence among member states is mitigated, peripheral economies would become even more fragile once non-zero risk bonds come into being. The non-existence of proper risk-sharing schemes would only strengthen such perilous dynamics.

3. A European 'safe asset'

The need to reduce the bank-sovereign doom loop as much as possible lies at the root of attempts to come up with a European safe asset. For years now, Eurobonds have been mentioned as risk-pooling assets that would make the EA more robust. However, mutualisation of risks is rejected by creditor nations, which do not accept the idea of a 'transfer union'.

Hence the idea of a synthetic financial asset (sovereign bond-backed securities – SBBS) came up; this synthetic bond is derived from the pooling and slicing of sovereign bonds into three tranches: a senior one (deemed to be equivalent in strength to the German Bunds), a mezzanine (medium-risk) tranche, and a junior (seen as highly risky) tranche, with the latter bearing the brunt of losses in case of default (*Sovereign bond-backed securities: a feasibility study*, ESRB, Frankfurt am Main, January 2018⁶). This financial asset is intended to be attractive for banks and other financial institutions and to replace much of the current sovereign bond holdings.

But SBBS present a problematic feature: the supply of senior tranches depends fundamentally on the demand for junior tranches, and this demand is likely to fall dramatically during periods of market stress, when some member states' market access may be severely impaired. In those instances, demand will swiftly shift towards top-rated sovereign bonds, towards other safe assets. This is a weak trait of this synthetic asset. In times of crisis, the demand for solid financial assets (such as the German Bunds) would go through the roof, while the demand for periphery bonds would plummet, which would translate into a collapse in the demand for junior tranches as well.

Sure, one can envisage a variation of the composition of SBBSs as a function of member states' market access, but this would make the whole scheme extremely cumbersome to implement. The fact is that, unless market access is secured for all member states, the supply of SBBSs turns too unreliable to make them a workable asset. Moreover, were SBBSs to come into being, their volume would be too small to make much of a difference in financial institutions' balance-sheets, for the foreseeable future at least.

Apart from its functioning under conditions of market stress, the introduction of a synthetic asset (SBBS) should be judged in conjunction with a package of EA policy redesign measures. This package should cover inter alia:

- liquidity assistance available during times of market stress;
- schemes to cushion asymmetric shocks, such as an unemployment benefit scheme (as part of a 'fiscal capacity');
- sovereign debt restructuring should not be triggered automatically (some suggest that automaticity should be a condition for an ESM support programme), for it may cause panic in the markets, more fragmentation in the EA;
- rules for adjusting imbalances should not be pro-cyclical;

- the macroeconomic imbalance procedure should operate symmetrically, for both large external deficits and surplus countries⁷;
- a euro-area-wide macroeconomic policy that should reflect in the fiscal policy stance over the business cycle;
- investment programmes should foster economic convergence;
- no de-reregulation of finance (as it is attempted in the US currently)

EA reform proposals must consider the transition to a steady state. A smooth transition can be hampered if reform measures disregard correlations among them; for instance, if the introduction of sovereign bond-backed securities (SBBS), or of other measures, does not take into account side-effects of setting non-zero risk weights for member states' bonds.

4. What sort of financial integration?

Financial integration in the EA, the establishment of a banking union that includes a collective deposit insurance scheme, raise a fundamental issue: whether the BU can overcome market fragmentation and economic divergence in the absence of fiscal arrangements that would enable accommodation of asymmetric shocks and foster economic convergence. Some argue that a complete BU would dispense with the need of fiscal integration in the euro area⁸.

But is it sufficient for a robust economic and monetary union that risk-sharing applies to finance (banks) only? And would private risk-sharing be sufficient to cope with systemic risks in financial markets? Relatedly, it is not clear that a collective deposit insurance scheme (EDIS) would involve private money only, under any circumstances; some fiscal risk-sharing may be needed in worst case scenarios⁹. What if economic divergence persists, or even deepens, since banks may discriminate among economies not least due to perceived risks that originate in *bailing-in* schemes and other vulnerabilities? A disconnect between a Banking Union, in which 'risk-sharing' operates, and real

economies is hard to imagine; if economies would continue to diverge and risk-sharing would not apply to them too, that would undermine further the EA¹⁰.

Fiscal integration is the biggest hurdle to overcome in the EA since it calls for more than institutional cooperation; it involves institutional integration and a significant EA budget as a form of risk-sharing. But the latter leads to a huge political conundrum, as it faces strong political and constitutional constraints. And here lies a deeply going fragility in the design of the EA, in the spirit of Dani Rodrik's trilemma, namely that there can be no integration (globalisation via a 'single market') in cohabitation with an autonomous economic policy and democratic accountability at national level; something must be given up in this triumvirate.

It is fair to argue that this trilemma simplifies things and that compromises can be found. And yet, it raises a formidable challenge to the EA functioning unless financial integration is accompanied by policy arrangements and mechanisms that combat growing divergence between member states. For excessive divergence would increasingly eat into the social fabric and fuel extremism, populism, euroscepticism.

The progress of the EA, of the BU, demands a reconciliation between rules and discipline on one hand, and risk sharing¹¹ (private and public) on the other hand; with risk-sharing designed in such a way as to reduce moral hazard while, simultaneously, taking into account asymmetric shocks, different strengths of national budgets and of member states' economies¹². It is noteworthy that reform proposals coming up from Berlin and Paris highlight the two approaches mentioned above. But an adequate calibration between rules and risk-sharing, between private and public risk-sharing, is an open question.

Only private risk-sharing schemes would not make the EA more robust. Financial markets are too fickle and produce systemic risks recurrently; the Great Recession showed that public intervention was needed, ultimately, in order to

avoid a catastrophe. Unless it will get adequate risk-sharing schemes, the EA will continue to be very rigid (like the gold standard regime) and prone to experience tensions and crises recurrently. ■

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Author's note: this text presents the authors's views, which should not be interpreted necessarily as the official position of the NBR.

Endnotes

1. Willem Buiter sees the EA as a system of currency boards ("The Euro Area: Monetary Union or System of Currency Boards", *Global Economics View*, 19 March 2015). He argues that "profit and loss sharing" is indispensable for a viable monetary union.
2. What lies behind these two approaches is dealt with in "The Euro and the Battle of Ideas", Markus Brunnermeier, Harold James and Jean Pierre Landau, Princeton University Press, 2016. But the authors seem to downplay the role of the euro area flawed design.
3. Sovereign bonds, when they are solid assets, strengthen banks' balance sheets and vice versa; banks count on state capacity to step in, when needed, either directly or indirectly (via central banks' operations).
4. Though one can argue that in exceptional circumstances, when market access is restricted, this preference can perform

a significant shock-absorber function.

5. As when non-performing loans in banks' balance sheets drop sharply when they are recognised as such (through write-offs), and not because the performance of the economy improves miraculously.

6. This idea was first formulated by Brunnermeier M, L Garicano, Ph, Lane, M Pagano, R Reis, T Santos, D Thesmar, S Van Nieuwerburgh, and D Vayanos, European Safe Bonds (ESBies), The Euronomics Group (2011).

7. Aging does not provide a convincing argument for rationalizing high external surpluses since this demographic phenomenon is occurring all across Europe.

8. Martin Sandbu, "Banking Union would transform Europe's politics", Financial Times, 25 July 2017; as he puts it, "Banking union mimics the fiscal risk-sharing".

9. In the US, the FDIC (The Federal Deposit Insurance Corporation) is funded by private money, but it has behind it the US Government as the most trustworthy institution (the only one that has taxation power).

10. L Bini Smaghi makes an insightful observation, that the most threatening doom-loop is between redenomination risk and sovereign risk; that this doom-loop can be contained by improving economic convergence and shock-absorbers ("Reconciling risk-sharing with market discipline", Policy Brief, LUISS, SEPE, 30 January, 2018.

11. See Benassy-Quere, A, Brunnermeier, M, Enderlein, H, Fahri, E, Fratzscher, M, Fuest, C, Gourinchas, PO, Martin, Ph, Pisani Ferry, J, Rey, H, Schnabel, I, Veron, N, Weder di Mauro, B, Zettelmeyer, J, "Reconciling risk sharing with market discipline: a constructive approach to euro area reform", CEPR, Policy Insight No. 91, January 2018.

12. How to combine market discipline with risk-sharing is an open question and the fears of what may be an inadequate calibration between the two elements is obvious in Marcelo Messori and Stefano Micossi' "Counterproductive proposals on Euroarea reform" CEPS Policy Insight, No.2018, Brussels, February 2018. Their view drew a strong rebuttal from J Pisani Ferry and J Zettelmeyer ("Messori and Micossi's reading is a misrepresentation", CEPS Commentary, 19 February, 2018. The fact is that unless adequate risk-sharing is achieved, bad dynamics in the EA would further cripple it.

Making a reality of Europe's Capital Markets Union

André Sapir, Nicolas Véron and Guntram Wolff suggest that capital markets will only transform with concrete action, and that policymakers need to set priorities for the CMU project to move forward

The deepening and integration of the European Union's capital markets is a long-term structural endeavour. Although difficult to achieve, it is worthwhile for several reasons: a meaningful body of economic analysis strongly suggests that purely bank-based financial systems are more prone to crises and might produce lower growth performance; widely-accepted analysis suggests that cross-border capital market integration can be an important complement to fiscal risk sharing; and the departure from the EU of the United Kingdom – home to the EU's main capital market centre – makes the project even more relevant. Although integrating and deepening capital markets has been a long-standing goal of the EU, actual progress has been limited.

The European Commission's welcome Capital Markets Union (CMU) agenda has led to many legislative proposals to advance the development of EU capital markets. Although the European Council has repeatedly underlined the CMU's importance, only a few of these legislative proposals have been adopted. At this stage, significant progress will only be feasible if clear priorities are set.

We argue that strengthening and expanding the role of the European Securities and Markets Authority (ESMA) should be prioritised because: (a) it is a relatively easily implementable step; (b) it would entrust an institution with driving the agenda forward; and (c) it would put an effective check on the potential financial stability and business conduct challenges that might arise from cross-border capital markets integration. Other major legislation, in particular on business insolvency and on personal pension products, could also be prioritised for completion during the current European Parliament legislative term.

The Capital Markets Union project: great promise, difficult delivery

Capital markets play a crucial role in modern economies. Their purpose is to match the supply of funds from investors with the demand for funding from companies and governments. Sources of financing such as equity

and bonds, securitisation, lending from insurance companies and asset managers or venture capital, complement lending by banks and help allocate financial resources to where they can be most efficiently deployed.

Capital markets have long been underdeveloped in Europe, partly because they tend to be fragmented along national lines. Much effort has been devoted over the years to integrate European capital markets: the Single Market project in the 1980s, with the liberalization of capital movements and the creation of the European passport for financial services; the Financial Services Action Plan starting in 1999 and the Lamfalussy process starting in 2001; and the *Larosière Report* in 2009 (Larosière, 2009), which enshrined the vision of a single rulebook and resulted in the creation of the European supervisory authorities (ESAs).

Support for the project has been pledged at the highest political level several times. But capital markets will only transform with concrete action

The economic case for capital markets union

There were good reasons for the Juncker Commission to launch the Capital Markets Union (CMU) initiative in 2014, shortly after the 2007-09 financial crisis and the 2010-13 euro area banking and sovereign crisis. This sequence of crises was a painful reminder that Europe needed to improve its regulatory and supervisory environment to better ensure financial stability. It was also a wake-up call that the EU economy had been too dependent on bank lending and needed a more diversified funding system in which non-bank finance would play a significant role.

According to Sapir and Wolff (2013), while it was crucial for the euro area to decide (in 2012) on the creation of a banking union to address vulnerabilities in its banking system, it was equally important for the EU – and crucial for the euro area – to complement the creation of the banking union with decisions on fostering capital market integration. As they noted, *“the EU and in particular the euro area need to develop a genuine cross-border equity and corporate bond market, in part to be able to absorb shocks...This would reduce the heavy reliance of the EU economy on bank funding and improve economic stability thanks to better financial risk sharing”*¹.

Pagano *et al* (2014) and Langfield and Pagano (2016) reviewed the debate in the finance literature on the relative merits of bank-based and market-based financing systems in terms of their effects on economic growth and on the allocation of risk. They found that the theoretical literature contains no clear-cut prediction about the superiority of one system over the other in promoting the efficient allocation of funding, and therefore better economic performance. Instead, each system seems to have a comparative advantage in funding different types of investment project, suggesting that diversification of funding systems is beneficial.

The same authors also studied empirically the extent to which banks and markets enable efficient risk sharing and enhance the resilience of the economy to macroeconomic shocks. One of their findings is that, on the macroeconomic level, bank lending is more volatile and pro-cyclical than bond financing, especially during financial

crises. This suggests European countries were more affected by the financial crisis than the United States, since they are more reliant on bank finance.

On risk sharing, ECB (2017a) found that the extent of risk sharing between euro area countries and the contribution of capital markets both increased after the adoption of the euro. However, during the financial and sovereign debt crises, both declined, with the contribution of capital markets falling to a low level.

The European Central Bank has welcomed the CMU initiative. It considers that *“the CMU is the natural complement to the banking union – it will strengthen EMU and deepen the Single Market. It will...help foster financial stability..., thereby increasing the resilience of the financial system and the economy at large”* (ECB, 2017a). We concur with the ECB that more cross-border private financial risk sharing will support the functioning of Economic and Monetary Union by smoothing the effects of economic cycles. In particular, cross-border equity ownership and foreign direct investment have better shock-absorption properties than cross-border bank lending that in crisis times can lead to sudden stops, especially if the banking union remains incomplete.

CMU and banking union are complementary long-term projects. The emergence of more cross-border banks will help the development of European capital markets. Conversely, a successful CMU will make pan-European banking business models comparatively more attractive. These two policies are to be viewed as complements, not substitutes.

The widespread recognition that the EU economy and Economic and Monetary Union would have probably had a less difficult time during the financial and sovereign debt crises if capital markets had been more developed was essential to the CMU initiative. It gave a major impetus to the Juncker Commission to try and overcome the political economy obstacles that had long plagued the development and integration of such markets.

The empirical picture so far: little progress

But so far, there has been little change in long-established financial intermediation channels². The EU's financial activity is more dominated by bank lending than that of the US (and to some extent the UK), where equity and debt play a bigger role (Figure 1).

Bank lending was the prevailing channel of financial intermediation to non-financial corporations in most EU countries before the crisis but became less relevant in 2016 as bank credit growth remained subdued, reflecting a combination of deleveraging and in some cases supply constraints (Figure 2 and Figure A1 in the annex). Debt securities such as corporate bonds also play a role, but mostly for large companies. Equity financing has meanwhile increased in importance in the EU27 but rarely to fund SMEs (Figure A2 in annex).

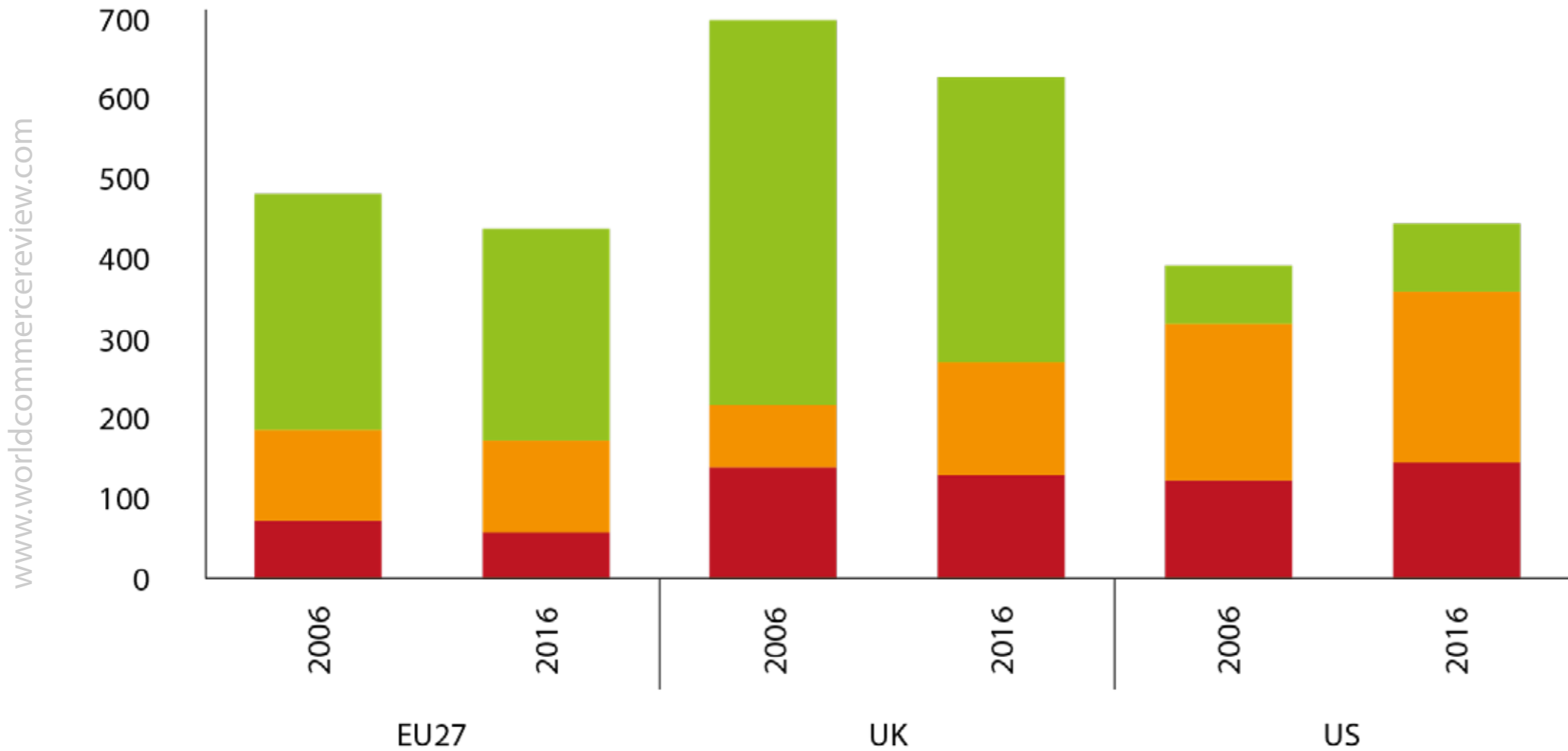
Private sector debt is relatively high in many EU countries and many countries have found it difficult to reduce corporate and household debt overhangs, in part because of non-existent capital markets for non-performing loans (Ahearne and Wolff, 2012; Demertzis and Lehman, 2017).

The financial portfolios of households in the EU27 remain strongly biased in favour of bank deposits, while equity plays a lesser role than in the US (Figure 3).

Not only do capital markets play only a modest role in the financing of the European economy compared to bank lending, financial intermediation also remains mostly national. For example, the proportion of equity that is of domestic origin often exceeds 50 percent, a strong home bias that effectively prevents risk-sharing across borders (Figure 4). Also, bank lending is mostly national and cross-border asset holdings, let alone cross-border bank mergers, have not even recovered to pre-crisis levels (Sapir and Wolff, 2013; Goncalves Raposo and Wolff, 2017, Figure A3 in the annex).

Figure 1. Size of the financial sector and capital markets, % GDP

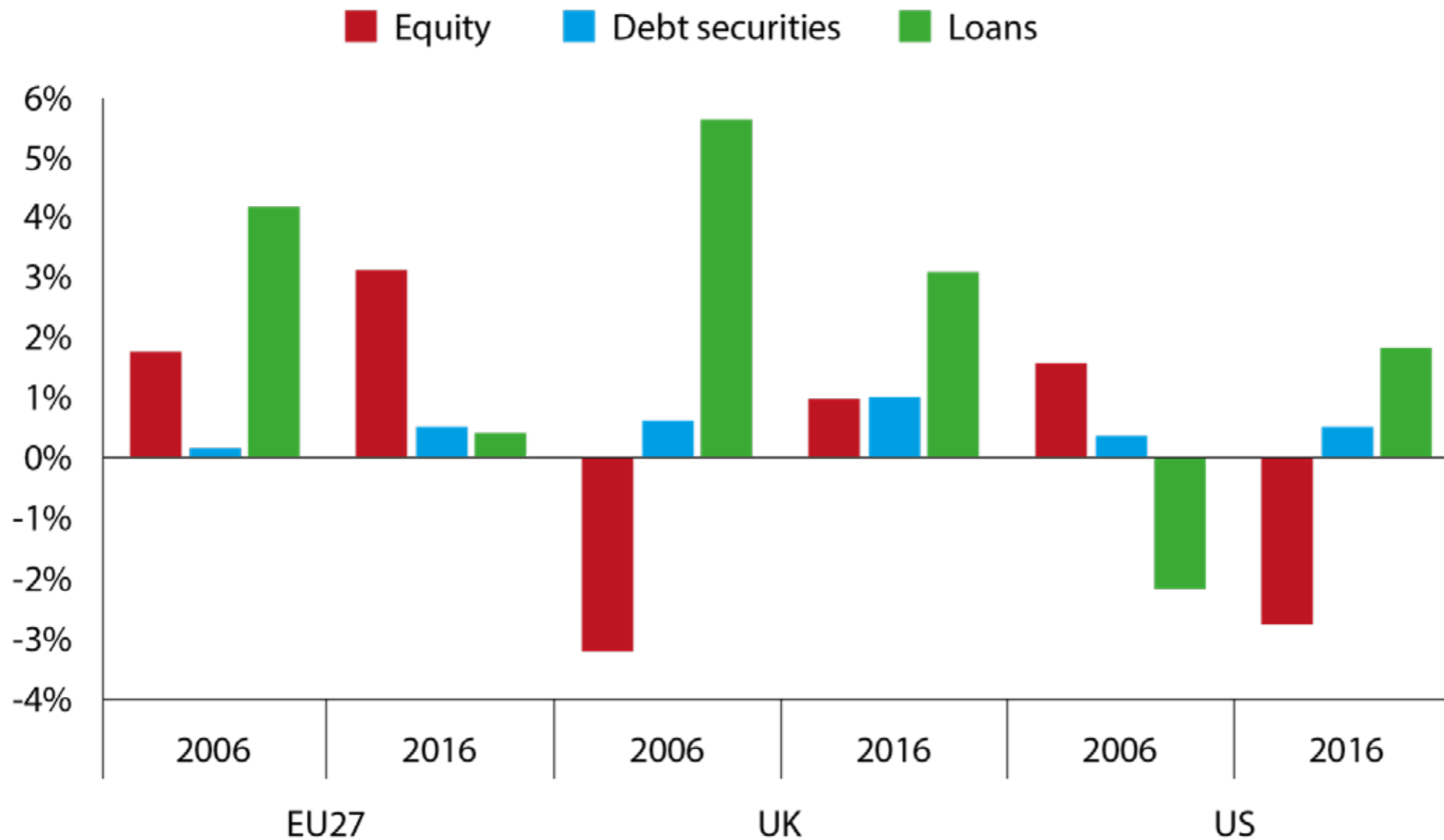
■ Bank assets ■ Corporate & government debt ■ Equity markets



Source: Bruegel based on IMF World Economic Outlook, Bloomberg, Association for Financial Markets in Europe (AFME), Securities Industry and Financial Markets Association (SIFMA). EU27 is the EU excluding the UK.

Figure 2. Size of different financial intermediation channels to the non-financial corporate sector as share of GDP, 2016 and 2006

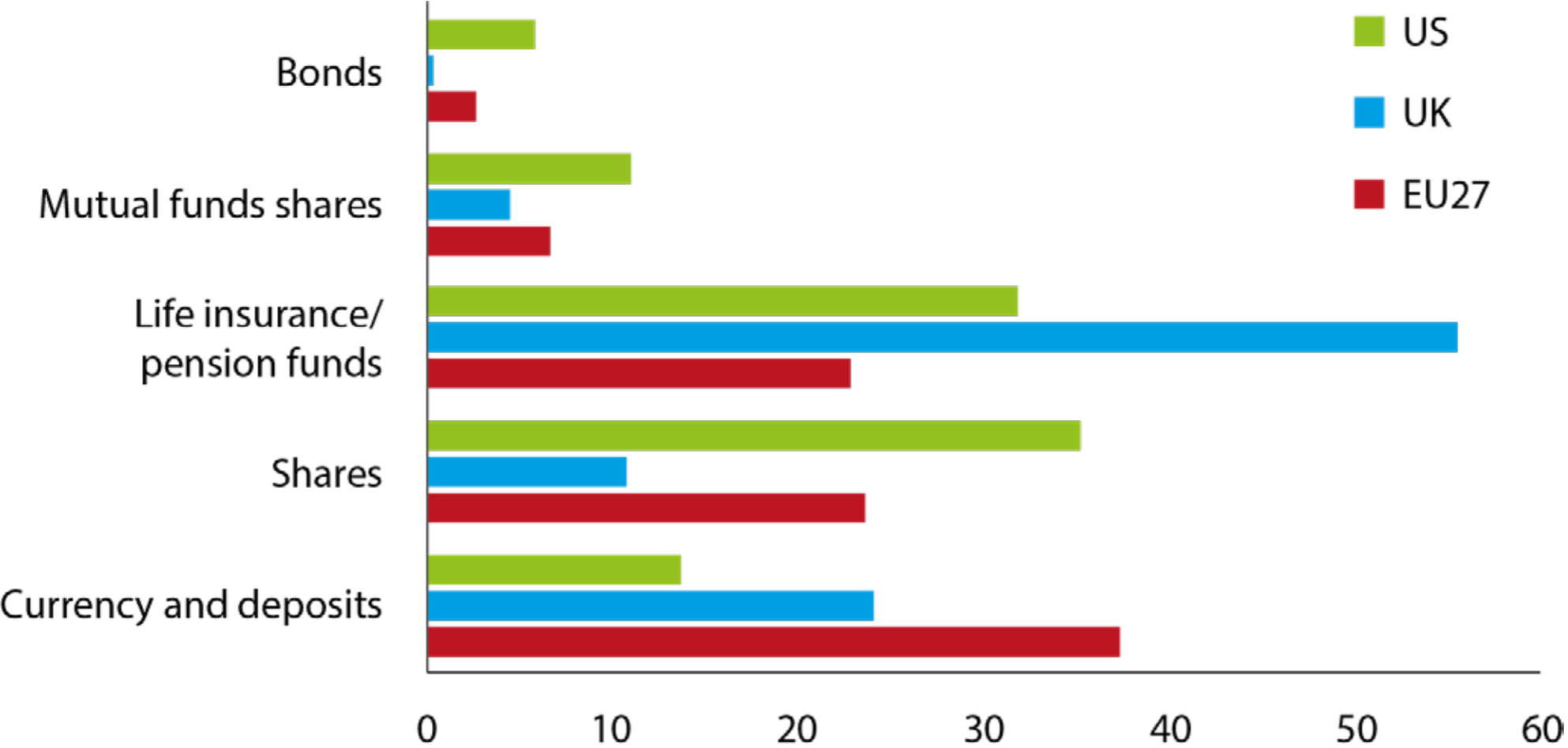
www.worldcommercereview.com



Source: Eurostat and Federal Reserve.

Note: Given the volatility of flows we use three-year averages.

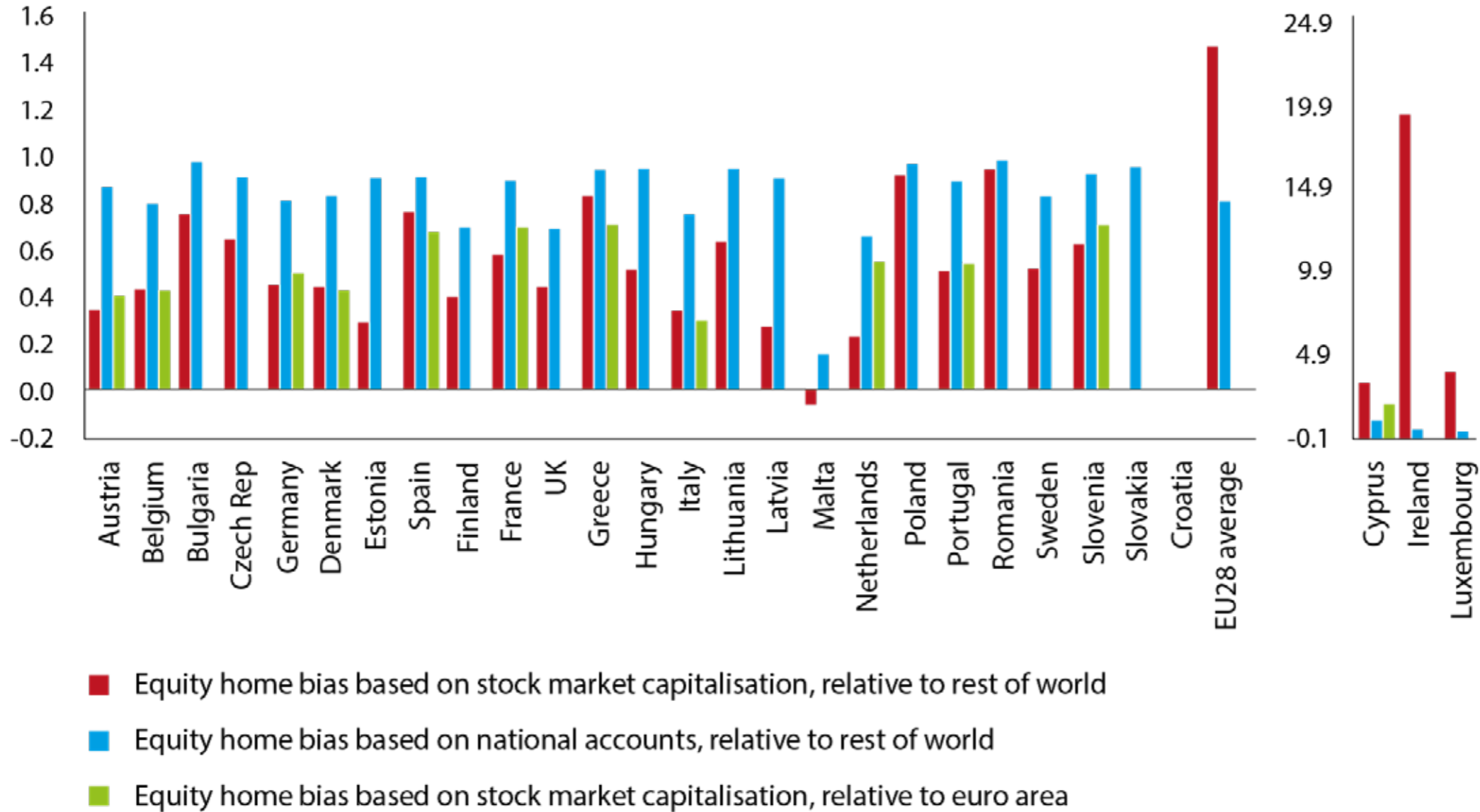
Figure 3. Financial portfolio of households in the EU and US (% of total financial assets), 2016



www.worldcommercereview.com

Source: OECD National Accounts at a Glance.

Figure 4. Equity home bias



Sources: Darvas and Schoenmaker (2017), Bruegel based on IMF CPIS and ECB.

Note: Equity home bias relative to the rest of the world is presented as in Darvas and Schoenmaker (2017) for 2014. Equity home bias relative to the euro area is computed for 2016. The indicator is computed as one minus the ratio of the share of foreign equities in the home and world portfolios. An equity home bias of 1 implies that domestic investors invest 100 percent in domestic equity. An indicator of 0 signals no home bias, a negative indicator signals a bias for holding foreign securities.

The European Union's CMU-related legislative initiatives so far

In February 2015, barely three months after taking office, the Juncker Commission published a green paper on CMU (European Commission, 2015a). In September 2015, it issued its action plan listing the legislative and non-legislative proposals it would table in 2015-18 for constructing the CMU (European Commission, 2015b). The action plan covers six areas: (1) financing for innovation, start-ups and non-listed companies; (2) entering and raising capital on public markets; (3) facilitating long-term investment; (4) fostering retail and institutional investment; (5) facilitating securitisation; and (6) facilitating cross-border investment. In June 2017, the Commission published a mid-term review taking stock of the progress so far and adding new priorities to its CMU action plan (European Commission, 2017).

At the time of writing, in April 2018, progress on the CMU can be described as follows:

- Legislation listed in the 2015 action plan, proposed by the Commission and adopted by the Council and/or Parliament: a regulation of June 2017 (Regulation (EU) 2017/1129) replacing the earlier securities prospectus directive; a regulation of December 2017 creating a new regime for securitisation (Regulation (EU) 2017/2402); and a regulation of October 2017 creating a new regime for European venture capital funds and European social entrepreneurship funds (Regulation (EU) 2017/1991).
- Legislation listed in the 2015 action plan, proposed by the Commission but not yet adopted by the Council and/or Parliament: a directive on a Common Consolidated Corporate Tax Base (CCCTB) proposed in October 2016 (COM(2016) 685); and a directive proposed in November 2016 on business insolvency and early restructuring (COM(2016) 723).
- Legislation listed in the 2015 action plan and abandoned by the Commission: none.
- Legislation added to the action plan by the 2017 mid-term review, proposed by the Commission but not yet adopted by the EU co-legislators: a regulation creating a pan-European personal pension product proposed

in June 2017 (COM(2017) 343); a regulation amending the role of the European Securities and Markets Authority (ESMA) and the other ESAs proposed in September 2017 (COM(2017) 536, hereinafter ESA Review or ESAR)³; a regulation on the prudential requirements for investment firms proposed in December 2017 (COM(2017) 790); a regulation on the law applicable to the third-party effects of cross-border assignments of claims proposed in March 2018 (COM(2018) 096); a regulation on crowdfunding proposed in March 2018 (COM(2018) 109); a directive and a regulation on covered bonds proposed in March 2018 (COM(2018) 093); a directive and a regulation modifying the existing framework on the cross-border distribution of investment funds proposed in March 2018 (COM(2018) 110); and a directive on markets for non-performing loans (NPLs) proposed in March 2018.

- Legislation added to the action plan by the 2017 mid-term review and abandoned by the Commission: none.
- Legislation formally outside the CMU action plan but directly relevant to the CMU project: a regulation amending the European Market Infrastructure Regulation (EMIR) to create a new framework for the recovery and resolution of central counterparties (CCPs), proposed in November 2016 (COM(2016) 856); another amendment proposal to streamline EMIR in May 2017 (COM(2017) 208); and a proposal on CCP supervision amending both the ESMA Regulation and EMIR (COM(2017) 331, June 2017). These three proposals are often collectively referred to as 'EMIR2'.
- Legislation that the Commission still plans to propose in 2018 and 2019: none⁴.

This list testifies to the Juncker Commission's intense legislative activity. Altogether it has put forward 13 different pieces of legislation, which map into five of the six areas of its 2015 action plan. In addition, the Commission has made legislative proposals on CCPs and market infrastructure, and adopted a host of non-legislative decisions in favour of the CMU – including on facilitation of long-term investment, the action plan's only area where the Commission has proposed no new legislation.

If and when they are adopted, these legislative texts would amount in our view to significant achievements in the pursuit of the goal of building a Capital Markets Union, though they would by no means represent the completion of that project. In the meantime, much remains to be done and we agree with the European Commission's (2018) call for the European Parliament and the Council *"to accelerate work on all pending legislative proposals relevant for the completion of Capital Markets Union, to ensure their adoption before the elections to the European Parliament in mid-2019 at the latest"*.

An important question is whether the urgency of the CMU policy agenda is further reinforced by Brexit and possibly also by the development of fintech.

Between 40 and 80 percent (depending on the segment of the market) of all capital markets activity in the EU is conducted in the United Kingdom (Wright, 2017). Obviously, London is a global financial centre and not all of this activity, therefore, involves EU27-based clients. Sapir, Schoenmaker and Véron (2017) made a rough estimate that about 35 percent of the London-based activity of investment banks – key players in capital market transactions – is related to EU27-based clients. Thus, depending on the extent to which UK-based financial firms lose their EU passporting rights after Brexit, the UK's exit from the EU could involve sizeable migration of capital market activity from London to EU27 locations.

This situation entails both risks and opportunities for the EU27 in the pursuit of the CMU agenda. These translate into concrete policy choices on the removal of barriers to cross-border activities and the oversight of EU capital markets. Such choices need to be resolved urgently⁵. The objective is to make the EU27 a more attractive place to conduct capital market operations while avoiding a regulatory race to the bottom among the 27 member states. Therefore, we share the view of the Commission that Brexit strengthens the case for CMU⁶.

Fintech could also significantly alter certain segments of capital markets. Unless developments in this area trigger appropriate changes to the EU regulatory and supervisory environment, there is a serious danger that a fragmented and uncompetitive fintech landscape could become a permanent feature of EU27 capital markets (Demertzis, Merler and Wolff, 2018).

Institutional architecture reform as a catalyst: a stronger ESMA as the key to progress

The supervisory challenge

A highly stylised but broadly apt description of the current status of capital markets policy is that (1) financial regulatory harmonisation has made considerable progress in the last near-20 years since the Financial Services Action Plan of 1999, with EU financial legislation increasingly taking the form of regulations and not just directives (even though several areas of insufficient harmonisation persist); (2) supervisory integration remains extremely limited outside of the euro area banking sector, with only small market segments directly supervised by ESMA and a still weak (though improved) framework for ESMA-led supervisory convergence; and (3) almost no convergence yet in broader legislative areas that frame the operation of capital markets but also serve other primary purposes, such as in insolvency, taxation, housing finance and pensions.

Specifically, a lesson of the past two decades is that even fully harmonised legislation can still lead to diverging national outcomes if EU laws are enforced only by national competent authorities (NCAs). Many (though not all) areas of EU capital markets regulation have been extensively harmonised, bringing the vision of a single rulebook close to reality, but practitioners know that this has not brought consistency in regulatory practice or a seamless single market. Examples include the Markets in Financial Instruments Directive and Regulation (MiFID/MiFIR), the European Market Infrastructure Regulation (EMIR), and the accounting and auditing framework, as framed in particular by the EU accounting regulation of 2002 and the latest audit regulation and directive, both of 2014.

In all these cases, the rulebook is mostly or entirely harmonised, but supervision and enforcement is mostly in the hands of NCAs such as securities regulators or audit supervisors. In accounting and financial reporting, a similar observation (established by more abundant analytical literature) applies at the global level: many jurisdictions, including the EU, have adopted identical or near-identical versions of International Financial Reporting Standards (IFRS), but full convergence of practices and outcomes has not been achieved⁷.

As recently as ten years ago, supranational supervision in the EU was widely viewed as a possibly desirable but wholly unrealistic proposition. This has now changed fundamentally, first with the creation of ESMA in January 2011 and then with the transfer of prudential supervisory authority over euro area banks to the ECB in November 2014. Furthermore, the decision of the UK to leave the EU will remove a consistent and powerful voice against supervisory integration from EU legislative debates.

Even so, the institutional integration of capital markets supervision has so far only progressed in haphazard steps. ESMA is not primarily designed as a supervisory authority, but rather (like its siblings the European Banking Authority and the European Insurance and Occupational Pensions Authority) as an assisting agency to the European Commission for the preparation of highly technical financial-market rules, complemented by constrained tasks of supervisory coordination. The addition, in 2011 and 2013 respectively, of direct supervisory tasks in relation to credit rating agencies (CRAs) and trade repositories (TRs)⁸ was limited to newly supervised market segments, and was not accompanied by adjustments to ESMA's governance to bring it closer to best practices for independent supervisors.

European policymakers should consider the institutional strengthening of ESMA as the catalyst for the fulfilment of their CMU objectives. Creating a stronger central authority would increase the drive towards regulatory harmonisation and would increase the trust of capital markets in moves towards integration. In other words,

a stronger ESMA is necessary because regulatory harmonisation alone will unlikely be sufficient for market integration. Furthermore, this step could be implemented relatively rapidly (compared to action on the above-listed broader legislative challenges, in which substantial convergence can only be envisaged as a long-term project). It is also a feasible step, as the establishment of the Single Supervisory Mechanism (SSM) as an authoritative financial supervisor with a major scope of responsibility has shown⁹.

A vision for a stronger ESMA

The European Commission's legislative proposals on the review of ESAs (ESAR) and CCP supervision (in EMIR2) together form an appropriate basis for this discussion. The former is about the governance and funding of ESMA (and the other ESAs), while one of the key contributions of the latter is to put third-country CCPs under ESMA's supervisory authority.

In our view, a three-pronged approach should guide the policy discussion on the Commission's legislative proposals on ESAR.

First, ESMA should be more explicitly acknowledged as a supervisory authority, in contrast to EBA and EIOPA which are more aligned with the initial compromise of the *Larosière Report* of 2009, namely as instruments of integrated technical rulemaking and supervisory coordination¹⁰.

Second, in order to take on more fully its supervisory role, ESMA needs an institutional overhaul to bolster its independence and authority. In its current governance framework, all policy decisions are taken by the board of supervisors, which is a purely intergovernmental body (the chair has no voting rights)¹¹. ESMA's funding, by a mix of EU budget funds and national contributions, is also not conducive to independence from political interference. Instead, its funding should come entirely from levies on the capital markets industry, with a clear framework of EU-

level accountability akin to those created for the SSM and the Single Resolution Board (SRB). This would ensure a more credible claim to independence than the European Commission's proposed mix of national and EU resources and capital-markets levies, and would be in line with international best practice¹². At the core of ESMA should be a compact decision-making board with a clear framework in which it is accountable to EU institutions. This would be broadly similar to the SRB. All NCAs should remain involved in some ESMA decisions, such as those on rulemaking.

Given the highly specialised skillset needed for the supervision of specific market segments, ESMA's core decision-making board should rely on excellent segment-specific staff expertise in areas such as CCPs, investment bank business conduct or audit supervision. However, we advise against the fragmentation of decision-making authority to prevent dysfunction and inefficiency¹³.

Third, ESMA's scope of responsibility should be clarified and expanded. The underpinning long-term vision should be one in which wholesale market oversight is directly performed by ESMA, while tasks with a more retail orientation (ie. the protection of savers and investors) are still mostly performed by NCAs but with binding tools for ESMA to enforce true supervisory convergence. Even though the boundary between wholesale and retail capital markets supervision is somewhat judgmental, such a broad division of labour would be both practical and politically legitimate. It cannot be achieved in one fell swoop, however, if only because ESMA is currently very far from having the operational capability to assume all wholesale market oversight. This is why governance and funding reform should be front-loaded in the sequence of reform.

The EU co-legislators should therefore carefully consider the proposals on the table and amend them as suitable¹⁴. In the future, additional legislative projects may be needed to further develop the proposed vision, for example by establishing direct ESMA supervisory authority over EU-based CCPs and trading venues, audit supervision and

IFRS enforcement¹⁵, or specifically reinforcing its supervisory convergence tools in these and/or other areas. These, however, cannot realistically be initiated during the current European Parliamentary term.

The long road to a real CMU

The deepening and integration of EU capital markets is a long-term structural endeavour that will require persistence and hard work¹⁶. Although difficult, this work is important for several reasons. First, as the economic literature strongly suggests, purely bank-based financial systems are more prone to crises and might produce lower growth. Second, the literature also suggests that cross-border capital market integration can be an important complement to fiscal risk sharing and is therefore particularly important to Europe's monetary union. Third, the urgency of making concrete progress with the CMU initiative at this point in time is further reinforced by the departure of the UK – home to the EU's main capital market centre – from the EU.

The Juncker Commission has now tabled all the legislative proposals it intended to put forward as part of the CMU initiative. So far, as noted above, only three of these proposals have been adopted by the EU co-legislators. At its March 2018 meeting, the European Council, once again, endorsed the importance of the CMU project, but the real question is which of the Commission proposals the Council and Parliament should prioritise, because it is difficult to imagine they will be able to adopt all the proposals before the next elections to the European Parliament in May 2019.

In our view, and as we have argued, the reform of ESMA deserves special attention as a relatively easily implementable next step. Strengthening ESMA as a core institution of CMU would help to implement the CMU legislation in the spirit of genuine integration, and to drive forward the process of developing and integrating European capital markets¹⁷. It would also be an important step to recognise from the outset that more-integrated cross-border capital markets will require a cross-border supervisory structure to ensure proper financial stability

and business conduct oversight. This would be much preferable to fostering cross-border integration first and only later confronting possible negative consequences.

The CMU project obviously goes well beyond ESMA reform. Progress needs to be made in the areas of insolvency, taxation of investments and savings, housing finance and pensions. We also note that venture capital markets in Europe are underdeveloped and that accessing financing for scale-ups is more difficult, reducing Europe's growth potential (Duruflé, Hellmann, Wilson 2017).

Equity funding more generally in the EU is comparatively weak. A number of regulatory and tax policies give the advantage to debt financing, with negative implications for financial stability and growth¹⁸. Without progress in these areas, capital markets in Europe are likely to remain highly fragmented along national lines, undermining financial stability, and are unlikely to more strongly enhance Europe's growth potential.

It would be useful therefore to use what remains of the current legislative term to address not only ESMA reform but also some other significant CMU legislation. This would strongly anchor expectations and demonstrate the political will to structurally transform European capital markets. Our discussions with stakeholders suggest it would be particularly promising to focus on the proposals on business insolvency and on personal pension products.

Major differences in insolvency regimes and uncertainty over the application of insolvency regimes in multi-country operations are significant obstacles to greater cross-border capital market integration. The Commission's proposal was regarded by several of our interlocutors as a good starting point for the long-term project of greater harmonisation of insolvency regimes, and also of great importance to the banking union¹⁹.

Adoption of the pan-European personal pension product proposal (PEPP) would also be an important step forward. It would provide a concrete response to a concrete demand for cross-border pension products from individuals who work in several countries.

Overall, we consider it is high time to make the CMU project real. Support for the project has been pledged at the highest political level several times. But capital markets will only transform with concrete action. ESMA reform should be a priority but cannot be the only one. Policymakers need to set priorities that will move the project forward. ■

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Endnotes

- 1. Brühl et al (2015) were early supporters of the CMU initiative, because it “would come with a greater choice set for users of European financial markets and institutions. It would, potentially, imply a boost to Europe’s potential growth. And it should translate into higher employment. These are, evidently, objectives very much at the core of the European project”. At the same time, they warned that information asymmetries, which are inherent to financial markets, would need to be adequately addressed in the CMU proposals to ensure that the project reaches its full potential.*
- 2. Véron (2014) and Quaglia, Howarth and Liebe (2016) discuss the way special interests might hinder the development of capital markets.*
- 3. See also European Parliament (2018).*
- 4. According to the annex of European Commission (2018).*

5. As discussed by Sapir, Schoenmaker and Véron (2017).
6. See, for example, the Commission in its June 2017 mid-term review and again in its March 2018 Communication on CMU (European Commission, 2017 and 2018a).
7. See for example Ball (2016) and Tokar (2016) for an exchange of arguments and references on this debate.
8. Disclosure: one of the authors (Nicolas Véron) has since 2013 been an independent board member at DTCC Derivatives Repository plc (formerly DTCC Derivatives Repository Ltd), a TR supervised by ESMA.
9. Legal arguments that the Meroni jurisprudence would prevent ESMA from assuming more autonomous authority are unconvincing: see eg. Lintner (2017).
10. This fundamental divergence of paths between the three ESAs is similarly emphasised in European Parliament (2018). The EBA is highly unlikely to ever be granted supervisory authority of its own because the SSM has been created in the meantime. As for insurance, it appears more likely in the long run that the ECB may expand its supervisory scope in that area (involving treaty change), than having EIOPA built up as a separate supranational supervisory authority. Because of the secular trend of blurring boundaries between banking, insurance, and other financial firms, the institutional separation of prudential supervision of insurers from that of banks is increasingly outdated. EU member states that keep them separate are increasingly few (namely Cyprus, Greece, Italy, Luxembourg, Portugal, Slovenia and Spain). China also recently decided to merge its banking and insurance supervisory commissions. Article 127(6) of the Treaty on the Functioning of the EU, however, currently prohibits the assumption of insurance supervisory tasks by the ECB.
11. ESMA's more compact management board only deals with organisational issues such as the agency's budget and human resources policy.
12. For practical reasons, however, the collection of levies on behalf of ESMA from smaller financial firms could be left to the national competent authorities. A compromise solution would be to separately identify ESMA's costs linked to rulemaking (as opposed to supervisory) activity, and to have these covered by contributions from the member states' and/or EU budgets. We believe, however, that full funding of ESMA by levies on the capital markets industry would be both simpler and more consistent.

13. In the United States, longstanding challenges arise from multiple separate authorities coexisting at the federal level. Many state-level regulators also still play a significant role, even though overall the system is much more integrated than in Europe. See GAO (2016) for reference analysis.

14. This Policy Contribution is not the place for detailed recommendations, but we would suggest consideration of the following items: the elevation of the proposed executive board, possibly expanded to five or seven full-time members, as ESMA's highest decision-making body, replacing in this role the Board of Supervisors, and the assumption by that executive board of the CCP supervisory authority entrusted in the EMIR2 proposal to an ill-conceived (and confusingly labelled) 'CCP executive session'; the full funding of ESMA through levies on capital markets participants; and possibly as an offset to help swift adoption, scaling down controversial proposals such as direct ESMA authority over certain prospectuses and investment funds, or ESMA's role in the delegation or outsourcing of key functions to third-country entities, specifically in the asset management industry (Art. 31 ESAR). These issues are not urgent, and the one on delegation sends an ambiguous signal as to the international openness of the CMU in the context of Brexit. Our suggestions here are in line with Demarigny and Lannoo (2018), who provide more detail and context.

15. Among others, the ECB (2017b, page 6) has called for the integration of IFRS endorsement and enforcement at the EU level, implying ESMA authority over these areas.

16. This was already noted by Véron and Wolff (2015).

17. Allen and Pastor (2018) concur that expanding the powers of ESMA is key to the success of the CMU project.

18. The Commission's CCCTB initiative includes proposals for reducing the debt-equity tax bias and thereby potentially lowering the cost of equity.

19. Looking ahead, the Commission's initiatives could be complemented by proposals for the harmonisation of other core insolvency aspects and for the establishment of harmonised out-of-court processes. Some of these proposals are also relevant in the context of the completion of the banking union. For instance, the absence of out-of-court settlement mechanisms has been identified by the ECB Banking Supervision as obstacle to efficient resolving of NPLs ('Stock-take of national supervisory practices and legal frameworks related to NPLs', available at <https://www.bankingsupervision>).

europa.eu/press/pr/date/2017/html/ssm.pr170630.en.html).

References

Ahearne, A and G Wolff (2012) 'The debt challenge in Europe', Working Paper 2012/02, Bruegel

Allen, F and L Pastor (2018) 'The Capital Markets Union: key challenges', CEPR Discussion Paper Series, DP 12761, Centre for Economic Policy Research

Ball, R (2016) 'IFRS – 10 years later', *Accounting and Business Research* 46(5): 545-571

Brühl, V, H Gründl, A Hackethal, HH Kotz, JP Krahenen and T Tröger (2015) 'Comments on the EU Commission's capital markets union project', White Paper No. 27, SAFE Policy Center, Goethe University, Frankfurt

Darvas, Z and D Schoenmaker (2017) 'Institutional investors and home bias in Europe's Capital Markets Union', Working Paper 02/2017, Bruegel

De Larosière, J, L Balcerowicz, O Issing, R Masera, C McCarthy, L Nyberg, J Pérez and O Ruding (2009) Report of the High-Level Group on Financial Supervision in the EU, European Commission

Demarigny, F and K Lannoo (2018) 'Navigating the minefield of the ESA review', ECMI Commentary No. 49, European Capital Markets Institute

Demertzis, M and A Lehmann (2017) 'Tackling Europe's crisis legacy: a comprehensive strategy for bad loans and debt restructuring', Policy Contribution 11/2017, Bruegel

Demertzis, M, S Merler and G Wolff (2018) 'Capital Markets Union and the Fintech Opportunity', *Journal of Financial Regulation*, Volume 4, Issue 1

Durufié, G, T Hellmann and K Wilson (2017) 'From start-up to scale-up: examining public policies for the financing of high-growth ventures', Working Paper 04/2017, Bruegel

European Central Bank (2017a) Financial integration in Europe, May

European Central Bank (2017b) 'ECB contribution to the European Commission's consultation on the operations of the European Supervisory Authorities', June, available at https://www.ecb.europa.eu/pub/pdf/other/ecb_consultation_on_

[operations_of_ESA_201707.en.pdf?293cf1575920e5a08e0b54165f961e62](#)

European Commission (2015a) 'Building a Capital Markets Union', COM(2015) 63

European Commission (2015b) 'Action Paper on Building a Capital Markets Union', COM(2015) 468

European Commission (2017) 'On the Mid-Term Review of the Capital Markets Union Action Plan', COM(2017) 292

European Commission (2018) 'Completing the Capital Markets Union by 2019 – time to accelerate delivery', COM(2018) 114 final

European Parliament (2018) 'Working Document on the proposals to amend the European System of Financial Supervision', 23 January, available at <http://www.europarl.europa.eu/sides/getDoc.do?type=COMPARL&reference=PE-616.735&format=PDF&language=EN&secondRef=01>

GAO (2016) Financial Regulation: Complex and Fragmented Structure Could Be Streamlined to Improve Effectiveness, Report to Congressional Requesters GAO-16-175, US Government Accountability Office

Gonçalves Raposo, I and G Wolff (2017) 'How has banking union changed mergers and acquisitions?' Bruegel Blog, 13 September

Langfield, S and M Pagano (2016) 'Bank bias in Europe: effects on systemic risk and growth', Economic Policy 31(85): 51-106

Lintner, P (2017) 'De/centralized Decision Making Under the European Resolution Framework: Does Meroni Hamper the Creation of a European Resolution Authority?' European Business Organization Law Review 18:3

Pagano, M, S Langfield, V Acharya, A Boot, M Brunnermeier, C Buch, M Hellwig, A Sapir and I van den Burg (2014) Is Europe overbanked? Report no.4 of the European Systemic Risk Board's Advisory Scientific Committee

Quaglia, L, D Howarth and M Liebe (2016) 'The Political Economy of European Capital Markets Union', Journal of Common Market Studies 54 (S1): 185-203

Sapir, A, D.Schoenmaker and N Véron (2017) 'Making the best of Brexit for the EU27 financial system', Policy Brief 2017/1, Bruegel

Sapir, A and G Wolff (2013) 'The neglected side of banking union: reshaping Europe's financial system', Policy Contribution

presented at the informal ECOFIN, 14 September, Vilnius, Bruegel

Tokar, M (2016) 'IFRS – ten years later: a standard-setter's view', Accounting and Business Research 46(5): 572-576

Véron, N (2014) 'Defining Europe's Capital Markets Union', Policy Contribution 2014/02, Bruegel Véron, N and G Wolff

(2015) 'Capital Markets Union: a vision for the long term', Journal of Financial Regulation 2(1): 130–153

Wright, W (2017) 'What have the capital markets ever done for us? And how could they do it better? Analysis of the central role of investment banks and asset managers in driving growth', New Financial, February

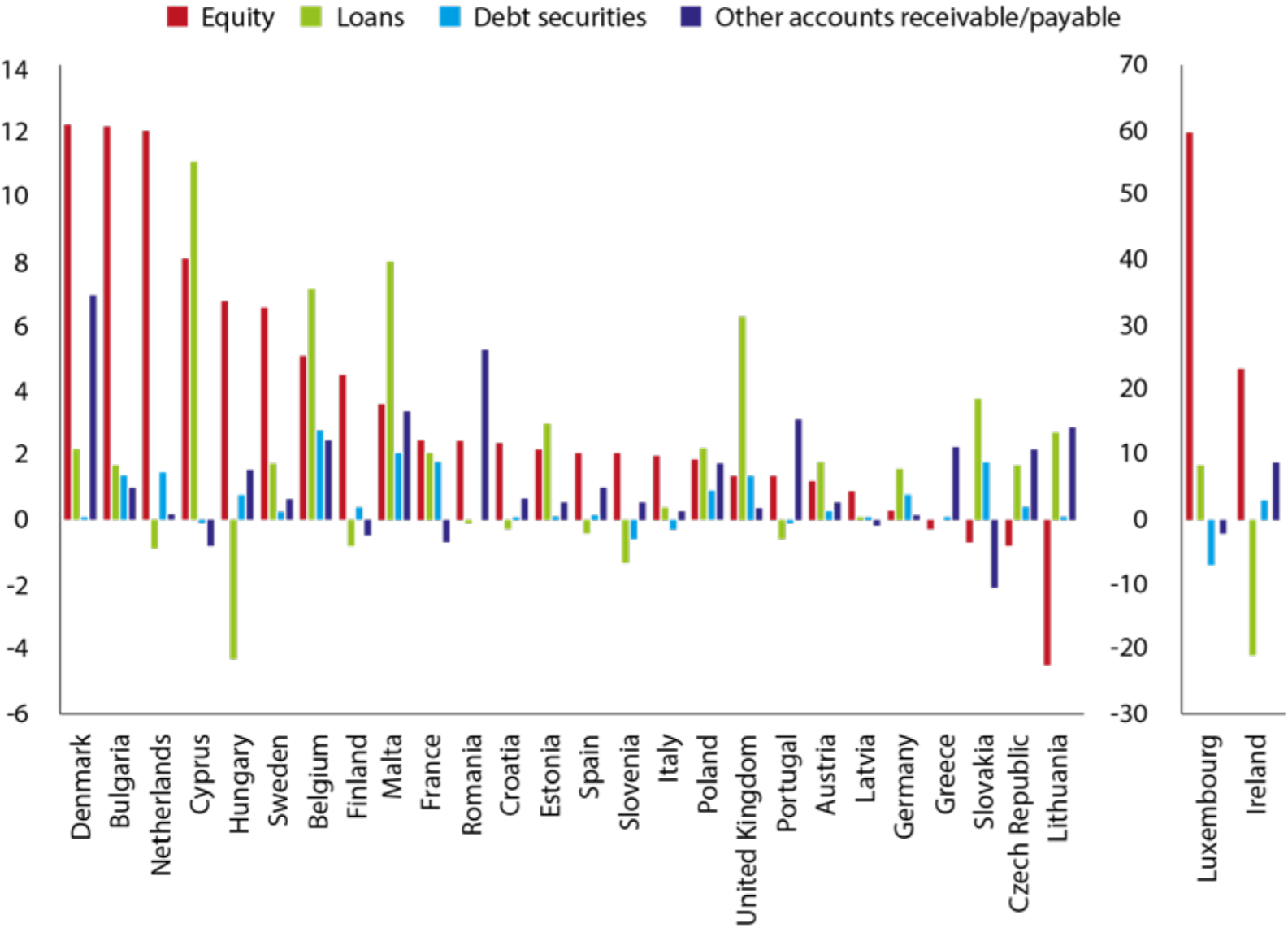
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Annex

Figure A.1. Size of different financial intermediation channels to the non-financial corporate sector, % of GDP, 2016

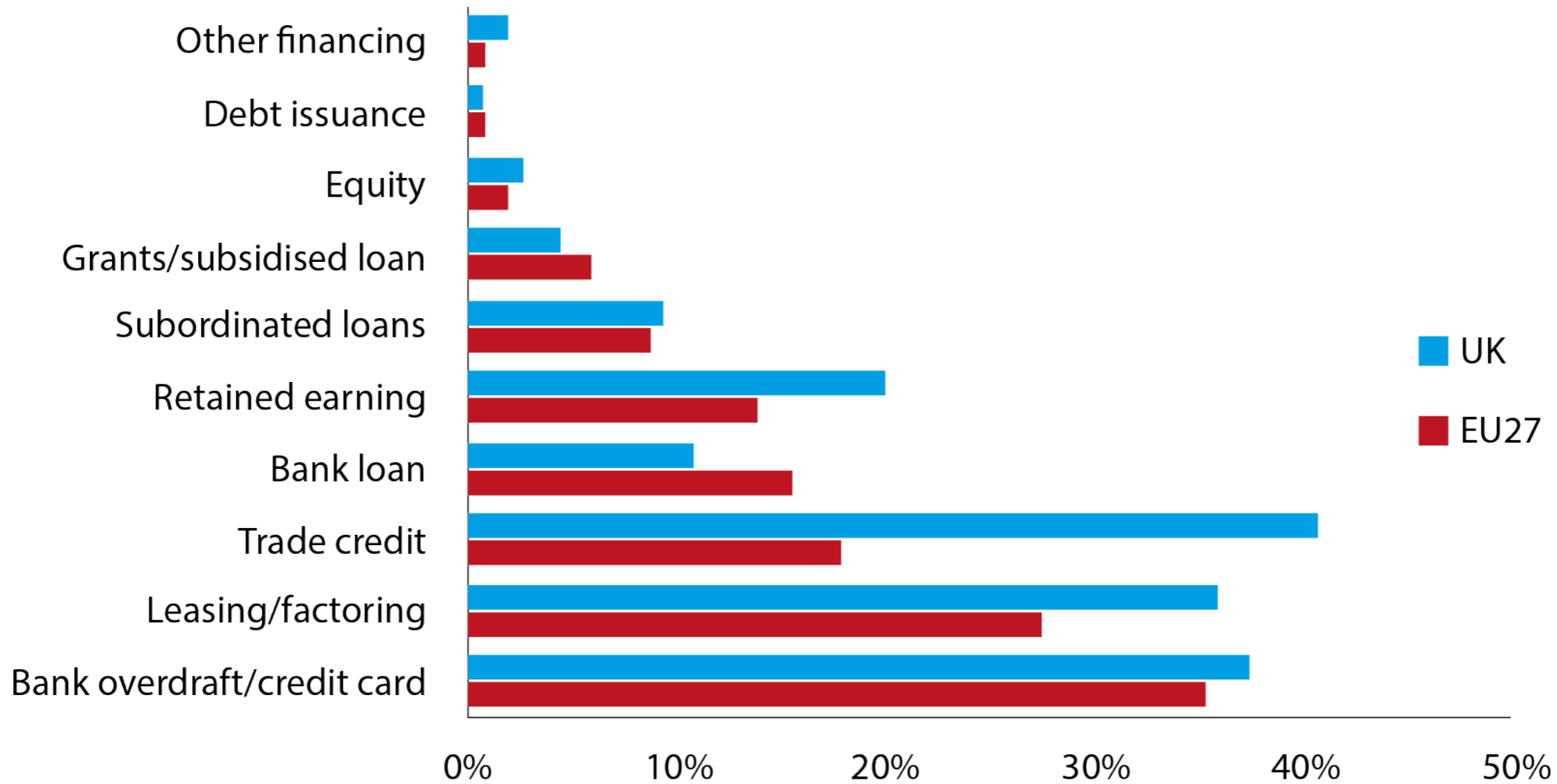
www.worldcommercereview.com



Source: Eurostat financial flows [nasa_10_f_tr]. Note: Loans exclude intra-NFC loans.

Annex

Figure A.2. Sources of SME financing in the past six months (% of EU28 SMEs)



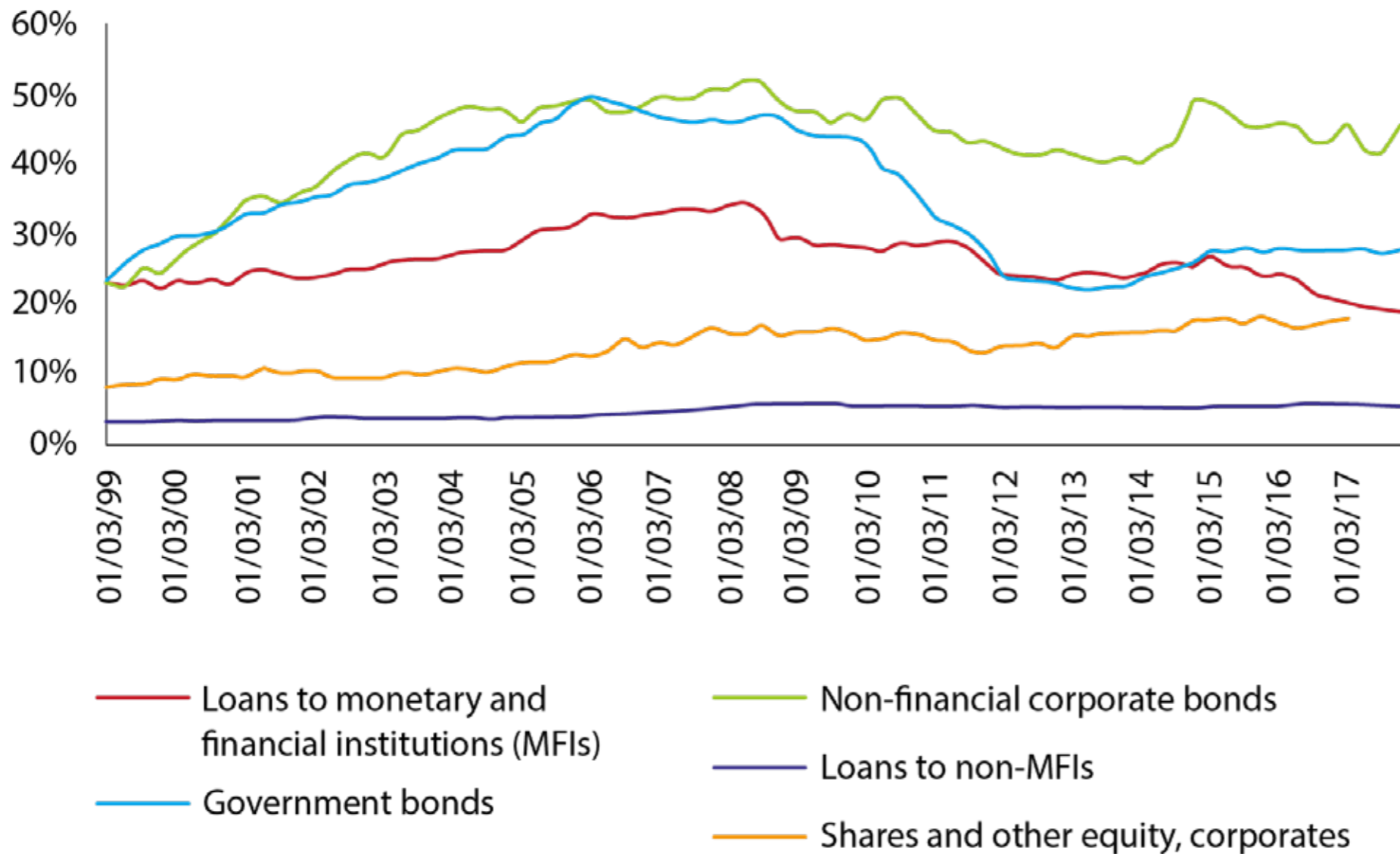
www.worldcommercereview.com

Source: Bruegel based on European Commission, ECB SAFE survey, wave 17 (November 2017).

Annex

Figure A.3. Cross-border holdings of assets of euro area Monetary and Financial Institutions (MFIs) as % of total assets

www.worldcommercereview.com



Source: Bruegel based on ECB.

Financial engineering will not stabilise an unstable euro area

Paul De Grauwe and Yuemei Ji argue that financial engineering cannot stabilise a financial system that is fundamentally unstable

A number of economists and officials have recently proposed different schemes aimed at using financial markets to impose the right amount of discipline in the euro area. This column argues that this would not eliminate the inherent instability of the sovereign bond markets in a monetary union. During crises this instability becomes systemic, and no amount of financial engineering can stabilise an otherwise unstable system.

One thing we have learned from the financial crisis is that financial markets cannot be trusted as a disciplining device. During the booming years prior to the crisis euphoria dominated in financial markets, leading consumers, banks, firms, and investors to be blind to risk (Kindleberger 1978, Minsky 1986). As a result, encouraged by equally euphoric rating agencies, they took up massive amounts of debt, disregarding the risks they took on their balance sheets. This was the time financial markets considered that Greek sovereign bonds exhibited the same risk as German sovereign bonds. Financial markets were an engine of indiscipline.

When the crash came, financial markets panicked. Suddenly they detected risks everywhere, forcing consumers, firms, and governments into excessive austerity and thereby deepening the recession (De Grauwe and Ji 2013). Financial markets became engines of excessive discipline.

All this is not new. Those who are interested in economic history and read deceased economists (Kindleberger 1978, Minsky 1986) have known for some time that financial markets almost never apply the right amount of discipline (see also Lo 2012). During booms markets apply too little discipline, thereby amplifying the boom; during recessions they impose too much discipline, thereby making the downturn worse.

It is therefore surprising that a number of economists and officials have recently proposed different schemes aiming at using financial markets to impose the right amount of discipline in the euro area. A group of French and

German economists has proposed various schemes, such as sovereign bankruptcy procedures and triggers, that would force governments to issue different tranches of debt in the hope of garnering the disciplining powers of the markets (Bénassy-Quéré *et al.* 2018, Lane and Langfield 2018). The European Systemic Risk Board published a report containing a proposal to create a 'safe asset' for the euro area that is based on a repackaging of the risks of sovereign bonds (ESRB 2018). The hope is that this financial engineering will stabilise an otherwise unstable system of sovereign bond markets in the euro area.

The danger of financial engineering proposals is that they create a fiction allowing policymakers to believe that they can achieve the objective of stability via some technical wizardry without having to pay the price of a further transfer of sovereignty

In this column, we discuss these two proposals and analyse whether the financial engineering that is implicit in them will help to stabilise the euro area. We will argue that financial engineering cannot stabilise a financial system that is fundamentally unstable.

We first describe the nature of the instability of the government bond markets in a monetary union (De Grauwe 2011, De Grauwe and Ji 2013). We then analyse whether the proposals will succeed in stabilising government bond markets in the euro area.

The instability of government bond markets in a monetary union

The instability of the sovereign bond markets in the euro area can be described as follows. National governments in a monetary union issue debt in a currency that is not their own, but is equivalent to a foreign currency. As a result of this lack of control over the currency in which the bonds are issued, these governments cannot guarantee that the bondholders will always be paid out at maturity. This contrasts with governments of countries issuing their own currency. These governments can give a full guarantee to the bondholders because they know that the central bank stands ready to provide liquidity in times of crisis.

All this leads to a situation in which government bond markets in a monetary union can be hit by self-fulfilling crises: investors, distrusting the capacity (or willingness) of a government to continue to service its debt, sell the bonds, thereby raising the yields and making it more difficult for that government to roll over its debt. A liquidity crisis erupts which results from a fear that the government will be hit by a liquidity crisis.

This usually happens during recessions when budget deficits and government debts increase automatically. Investors will then single out those governments perceived to be most at risk, sell their bonds, and acquire bonds issued by governments perceived to be less risky. As a result, massive capital flows across the borders of

the monetary union are set in motion, destabilising the whole system. This is exactly what happened during the sovereign debt crisis of 2010-12.

The instability of the government bond markets in a monetary union is aggravated by a possible 'doom loop' between the banks and the sovereign. When banks are in trouble, the sovereign who is obliged to save the banks will also be hit by a liquidity, and possibly a solvency, crisis. This was the problem for Ireland. The reverse can also happen: a sovereign debt crisis leads domestic banks, holding large amounts of domestic sovereign bonds, into illiquidity and insolvency (the Greek problem). The doom loop amplifies a sovereign debt crisis. That does not mean, though, that sovereign debt crises and the ensuing destabilising capital flows cannot erupt in the absence of a banking crisis.

Let us now turn to the two proposals mentioned earlier.

1. The Franco-German reform proposals

There is much of intellectual value in the Franco-German reform proposals with which we agree (such as the proposals to complete the banking union and to create some fiscal space at the euro area level). Here, we concentrate on two proposals that aim at enforcing market discipline by financial engineering¹.

- The first is a proposal to change the existing structural budget balance rule by an expenditure rule that, if exceeded, would force governments to issue junior debt.
- The second proposal aims to enforce sovereign debt default procedures on governments that have become insolvent.

Let us discuss these consecutively. The idea behind the proposal to force governments to issue junior debt if their expenditures exceed some threshold value is that this will subject governments to more market discipline. The reasoning is as follows. When governments spend too much, they are forced to finance the extra spending by issuing junior bonds. As a result, the buyers of these bonds will face more risk and demand a risk premium. These governments will thus pay a higher interest rate, which will enforce more discipline. The market will do its job of reining in the tendency of governments to spend too much.

All this sounds plausible. The evidence from past financial cycles of booms and busts, however, is that this disciplining mechanism typically fails. During booms, euphoria prevails and few investors perceive risks. As mentioned earlier, during the euro area boom years, investors saw no difference in risk between Greek and German sovereign bonds. It is likely that when euphoria prevails, they will see no significant difference in risks between the different tranches of outstanding government bonds.

During the downturn, exactly the opposite will happen. In fact, the existence of junior bonds will work as wake-up call and set in motion panic reactions of flight. As a result, governments which have issued junior bonds are more likely to be hit by a self-fulfilling liquidity crisis, forcing them into excessive discipline and austerity.

The reality is that financial markets are not well-equipped to enforce discipline on sovereigns. The introduction of some new financial instrument will not change that reality. (It should be noted that the Franco-German reforms proposals also include a proposal to create a safe asset; we discuss this separately below).

The second proposal of the French and German economists aims at instituting a formal sovereign debt restructuring procedure. As these economists argue, governments that are insolvent should be forced to restructure their debt. In other words, the holders of these governments' bonds should be forced to accept losses.

As a result, investors would realise that, without a possible bailout by the sovereign, their investments would be risky. This would lead them to ask for a risk premium, thereby introducing market discipline on the behaviour of the sovereign.

Again, at first sight this sounds reasonable. The same criticism we levelled against the forced issue of junior bonds, however, applies here too. There is very little evidence that investors ask for risk premia during boom phases – that’s when euphoria blinds them into not seeing risks properly. And during the bust phase the opposite occurs – that’s when the knowledge of the existence of debt restructuring procedures will act as triggers that create fear and panic. As a result, the existence of a sovereign restructuring procedure may actually trigger crises more easily during the bust.

There is an additional problem with this proposal, which has to do with identifying when governments are insolvent. It is easy to say that an insolvent sovereign should be forced to restructure his debt. It is much more difficult, during crises moments, to distinguish between solvency and liquidity problems. This difficulty arose during the sovereign debt crisis of 2010-12.

It was relatively easy to conclude that the Greek government was insolvent, but what about countries like Ireland, Spain, or Portugal? These countries were gripped by massive sales of their sovereign bonds, leading to a liquidity crunch that made it impossible to roll over their debt at normal market conditions. Quite a few economists concluded that these countries were insolvent and should restructure their debt. It turned out that this advice was wrong and that these countries were solvent but had become illiquid. Had they been forced to restructure their debt, economic recovery would have been much more difficult.

2. The safe asset proposal

The proposal to create a safe asset in the euro area which was made by the ESRB explicitly aims at eliminating the destabilising capital flows across the borders of the monetary union and at stabilising the system. Will it do this? This is the question we now turn to.

In contrast with earlier proposals to create Eurobonds (De Grauwe and Moesen 2009, Delpla and von Weizsäcker 2010), which assume that participating governments are jointly liable for the service of the national debts, the 'safe asset' proposal makes no assumption of joint liability. Instead, in this proposal national governments are individually liable for their own debt. There is no pooling of risks.

The 'safe asset' is created when financial institutions (private or public) buy a portfolio of national government bonds (in the primary or in the secondary markets) and use this portfolio as a backing for their own issue of bonds, called 'sovereign bond-backed securities' (SBBSs). These have the following characteristics.

- One tranche, the junior tranche, is risky. When losses are posted on the underlying portfolio of government bonds, the junior tranche takes the hit².
- The second tranche, the senior tranche, is safe.

The proponents of SBBSs take the view that a 30% junior tranche is a large buffer to take potential losses on the underlying sovereign bonds so as to make the senior tranche (70%) risk-free. Based on simulations of underlying risk patterns, the authors claim that their proposal will allow the size of safe assets in the euro area to more than double. In addition, they claim that the existence of SBBSs will replace the destabilising capital flows across national

borders in the euro area by a movement from the risky asset (the junior tranche) into the safe asset (the senior tranche), thereby eliminating instability in the euro area.

How likely is it that these SBBSs will help to stabilise the euro area? Note that in the way we formulate the question we do not dispute that, in normal times, the creation of a safe asset may not increase the efficiency of the financial system in the euro area. It probably will do so by supplying a new type of asset that can provide for a better diversification of normal risks. The issue is whether the safe asset will be an instrument for dealing with systemic risks in times of crisis. Our answer is negative for the following reasons.

First, the creation of a safe asset does not eliminate the national government bond markets. This is recognised by the proponents of a safe asset (ESRB 2018, Brunnermeier *et al.* 2016). In fact, these proponents have made the continuing existence of national sovereign bond markets a key component of their proposal. According to the ESRB, *“the SBBS issuance requires price formation in sovereign bond markets to continue to be efficient”* (ESRB 2018: 33). The markets for sovereign bonds must remain large enough so as to maintain their liquidity. That is also why the ESRB proposes to limit the total SBBS issuance to at most 33% of the total outstanding stock of sovereign bonds.

This constraint on the issue of SBBSs implies that national sovereign bond markets will be ‘alive and kicking’. As a result, the major problem that we identified earlier – the potential for destabilising capital flows across the borders of the monetary union – will still be present. However, since the markets of sovereign bonds will have shrunk, the yields are likely to be more volatile during crisis periods.

Second, we observe that during crises, the correlation pattern of yields changes dramatically. Yields in high-risk assets become highly positively correlated, reflecting the dynamics of contagion. At the same time as investors are looking for safe havens, the yields in the safe assets tend to decline sharply and become negatively correlated

with the high-risk yields. This pattern was very pronounced during the sovereign debt crisis of 2010-12. In their simulations of the risks involved in SBBSs, Brunnermeier *et al.* (2016) do take into account the fact that risks can be correlated. However, this correlation pattern is fixed, while during crisis periods correlation patterns change dramatically. We show this feature in Table 1. We find that during the sovereign debt crisis of 2010-12, the government bond yields of the periphery countries under stress were highly positively correlated. At the same time, these yields were negatively correlated with the yields of the core (safe) countries such as Germany, Finland, France, and the Netherlands.

The implication is that during crises it is very unlikely that the senior tranche in the SBBSs can maintain its status of safe asset. It will consist of bonds that investors dump and 'safe-haven' bonds. The senior tranche will continue to depend on the cash flow generated by bonds that panicking investors deem to be extremely risky. The perception that this senior tranche is equally safe as the safe-haven sovereign bonds (eg. German bonds) is very unlikely when markets are in panic mode. As a result, it is also likely that investors will flee the senior tranches of the SBBSs to invest in the 'real thing', ie. super-safe sovereign national bonds.

A third problem is related to the previous one. During normal times, the safe asset will have been used in the pricing of derivatives and other financial instruments and it will be an important part of the repo market providing liquidity in that market. As a result, a large part of the financial markets in the euro area will depend on the perceived safety and liquidity of the SBBS construction. When, during crisis periods, the safety of that construction is put into doubt (as we argued in the previous section), liquidity will tend to disappear and the whole financial sector of the euro area will be at risk. In the end we may have more rather than less financial stability in the eurozone.

There is an historical analogy here. During the boom years, collateralised debt obligations (CDOs) were created backed by different types of securities (for example, mortgages). At the time, many people were enthusiastic

Table 1a. Correlation of yields before crisis (2000M1-2009M12)

	Germany	Finland	Netherlands	Austria	France	Belgium	Italy	Spain	Ireland	Portugal	Greece
Germany	1.00										
Finland	0.97	1.00									
Netherlands	0.97	1.00	1.00								
Austria	0.94	0.99	0.99	1.00							
France	0.98	1.00	1.00	0.99	1.00						
Belgium	0.94	1.00	0.99	1.00	0.99	1.00					
Italy	0.89	0.97	0.96	0.99	0.96	0.98	1.00				
Spain	0.94	0.99	0.99	1.00	0.98	1.00	0.99	1.00			
Ireland	0.61	0.78	0.76	0.83	0.74	0.81	0.88	0.83	1.00		
Portugal	0.90	0.98	0.97	0.99	0.96	0.99	0.99	0.99	0.87	1.00	
Greece	0.68	0.83	0.82	0.87	0.80	0.86	0.92	0.88	0.96	0.91	1.00

Source: European Central Bank and authors' own calculations.

Note: The yields are yields on 10-year government bonds.

Table 1b. Correlation of yields during crisis (2010M1-2012M09)

	Germany	Finland	Netherlands	Austria	France	Belgium	Italy	Spain	Ireland	Portugal	Greece
Germany	1.00										
Finland	0.98	1.00									
Netherlands	0.99	0.99	1.00								
Austria	0.89	0.93	0.91	1.00							
France	0.83	0.89	0.87	0.98	1.00						
Belgium	0.45	0.58	0.54	0.74	0.80	1.00					
Italy	-0.66	-0.57	-0.58	-0.34	-0.21	0.28	1.00				
Spain	-0.62	-0.60	-0.55	-0.48	-0.34	0.02	0.81	1.00			
Ireland	0.16	0.24	0.24	0.28	0.38	0.68	0.38	0.44	1.00		
Portugal	-0.62	-0.52	-0.54	-0.32	-0.19	0.29	0.88	0.73	0.54	1.00	
Greece	-0.82	-0.79	-0.78	-0.62	-0.50	-0.13	0.81	0.81	0.23	0.85	1.00

Source: European Central Bank and authors' own calculations.
 Note: The yields are yields on 10-year government bonds.

Table 1c. Correlation of yields after crisis (2012M10-2017M12)

	Germany	Finland	Netherlands	Austria	France	Belgium	Italy	Spain	Ireland	Portugal	Greece
Germany	1.00										
Finland	1.00	1.00									
Netherlands	1.00	1.00	1.00								
Austria	1.00	0.99	1.00	1.00							
France	0.99	0.99	0.99	0.99	1.00						
Belgium	0.99	0.99	0.99	0.99	0.99	1.00					
Italy	0.92	0.91	0.92	0.93	0.95	0.95	1.00				
Spain	0.90	0.90	0.90	0.92	0.92	0.94	0.97	1.00			
Ireland	0.93	0.93	0.93	0.95	0.95	0.96	0.97	0.99	1.00		
Portugal	0.78	0.78	0.79	0.82	0.83	0.85	0.93	0.93	0.92	1.00	
Greece	0.31	0.31	0.31	0.35	0.34	0.38	0.45	0.58	0.55	0.57	1.00

Source: European Central Bank and authors' own calculations.

Note: The yields are yields on 10-year government bonds.

about this and believed that CDOs would make the financial markets more efficient via a better spreading of risks. Ultimately, it was believed, this would lead to more financial stability. The SBBSs proposed by the ESRB has the same CDO structure as the previous ones. It would be surprising if financial engineering, which in the past failed dismally in stabilising financial markets, were to do so in the future.

Conclusion

We have argued that various recent proposals aimed at stabilising the euro area via financial engineering do not eliminate the inherent instability of the sovereign bond markets in a monetary union. During crises this instability becomes systemic, and no amount of financial engineering can stabilise an otherwise unstable system.

The proposals made by the French and German economists (Bénassy-Quéré *et al.* 2018) have clearly be inspired by concerns about moral hazard. These concerns are very intense among German economists and have left their mark on the reform proposals of the Franco-German group of economists. Moral hazard means that agents consciously take too much risk because they expect others to bail them out. It is very unlikely, however, that the sovereign debt crisis had much to do with moral hazard. It stretches the imagination to believe that the Greek, Irish, Portuguese, or Spanish governments decided to allow their debt levels to increase in the expectation that they would be bailed out by the governments of Northern euro area countries.

Our hypothesis that the sovereign debt crisis erupted as a result of a boom that led private and public agents to disregard risk makes more sense. But even if moral hazard was a cause of the crisis, those who took on too much risk will have learned that the punishment for being bailed out by Northern euro area governments is severe. It should by now be clear that no government would wish to be bailed out by these governments. Stabilisation via financial engineering will not work. Real stabilisation of the euro area goes through two mechanisms.

The first is the willingness of the ECB to provide liquidity in the sovereign bond markets of the euro area during times of crisis. The ECB has set up its Outright Monetary Transactions (OMT) programme to do this. However, OMT is loaded with austerity conditions, which will be counterproductive when used during recessions (which is when crises generally occur). That is why a second mechanism is necessary. This consists in creating Eurobonds that are based on joint liability of the participating national governments. Without such joint liability, it will not be possible to create a common sovereign bond market. The creation of such a common bond market is the *conditio sine qua non* for long-term stability the eurozone.

The political willingness to go in this direction, however, is non-existent today. There is no willingness to provide a common insurance mechanism that would put taxpayers in one country at risk of having to transfer money to other countries. Under those conditions, the sovereign bond markets in the euro area will continue to be prone to instability.

The danger of financial engineering proposals is that they create a fiction allowing policymakers to believe that they can achieve the objective of stability via some technical wizardry without having to pay the price of a further transfer of sovereignty. ■

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Endnotes

1. For a more general criticism of the Franco-German reform proposals, see Messori and Micossi (2018).

2. In the ESRB proposal (ESRB 2018), this tranche is split further into two tranches: a junior tranche proper with the highest risk (10%), and a mezzanine tranche (20%) which takes the losses after the junior tranche has been depleted.

References

Benassy-Quéré, A et al. (2018), ["Reconciling risk sharing with market discipline: A constructive approach to euro area reform"](#), CEPR Policy Insight No 91.

Brunnermeier, M, S Langfield, M Pagano, R Reis, S Van Nieuwerburgh and D Vayanos (2016), ["ESBies: Safety in the tranches"](#), ESRB Working Paper No. 21.

De Grauwe, P (2011), ["The Governance of a Fragile Eurozone"](#), CEPS Working Document.

De Grauwe, P and W Moesen (2009), ["Gains for All: A Proposal for a Common Eurobond"](#), Intereconomics, May/June.

De Grauwe, P and Y Ji (2013), ["Self-fulfilling Crises in the Eurozone: An Empirical Test"](#), Journal of International Money and Finance 34: 15–36.

Delpla, J and J von Weizsäcker (2010), ["The Blue Bond Proposal"](#), Bruegel Policy Brief, May.

European Systemic Risk Board (ESRB) (2018), ["Sovereign bond-backed securities: a feasibility study"](#), January.

Kindleberger, CP (1978), *Manias, Panics and Crashes: A History of Financial Crises*, Wiley.

Lane, P and S Langfeld (2018), ["The feasibility of sovereign bond-backed securities in the euro area"](#), VoxEU.org, 28 February.

Messori, M and S Micossi (2018), ["Counterproductive Proposals on Euro Area Reforms by French and German Economists"](#), CEPS Policy Insight 2018/04.

Minsky, H (1986), *Stabilizing an Unstable Economy*, Yale University Press

Tabellini, G (2017), ["Reforming the Eurozone: Structuring vs restructuring sovereign debts"](#), VoxEU.org, 23 November.

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Monetary policy in the euro area

Mario Draghi says that monetary policy still needs to be patient, persistent and prudent, despite improvements in the euro area economy

Over the past year, the ECB has progressively recalibrated its asset purchase programme. We have thereby tuned our monetary policy stance to the changing pitch of the recovery – what I have previously termed “*accompanying the recovery*”¹.

During this time, the economy has developed even more strongly than we expected and confidence in the euro area has increased. But it is not because real growth is strong that we can declare the job done.

There is a very clear condition for us to bring net asset purchases to an end: we need to see a sustained adjustment in the path of inflation towards our aim, which is a headline inflation rate of below, but close to 2% over the medium term.

Thereafter, our monetary policy will have to be calibrated so as to ensure that inflation continues along this path. While we are now more confident than in the past that inflation is on the right track, risks and uncertainties remain. For this reason, even once the outlook becomes less dependent on net asset purchases, monetary policy still needs to be patient, persistent and prudent to guarantee the return of inflation to our aim.

Developments in the real economy

The economy has been growing consistently above current estimates of potential growth, by more than a percentage point last year. All euro area confidence indicators are close to their highest levels since the start of monetary union, even if the latest readings came in slightly below expectations. And there are signs of pent-up demand for both consumption and investment that still needs to be satisfied.

For consumption, one useful indicator is the gap between essential purchases, such as food and rent, and non-essential ones, such as electrical goods and holidays. Non-essential purchases – which make up around 50%

of household spending in the euro area – tend to be postponed during recessions and then to catch up as the business cycle advances². Such purchases are currently only 2% above their pre-crisis level, compared with 9% for essential ones. This implies that discretionary household spending still has scope to support the expansion.

Business investment is also gathering steam as uncertainty in the euro area recedes. It now stands 7% above its pre-crisis level and surveys point to continued strong investment demand: capacity utilisation in the capital goods-producing sector is close to all-time highs for the euro area and for the four largest economies. Moreover, housing

... the strong performance of business investment could prolong the productivity cycle and push back the time when ULC growth leads to price pressures

investment is still 17% below its pre-crisis level and is only now starting to pick up, which will likely add an extra impulse to the recovery dynamic.

This positive assessment of the growth outlook is reflected in the latest ECB staff macroeconomic projections. Annual real GDP is forecast to increase by 2.4% in 2018, 1.9% in 2019 and 1.7% in 2020. Compared with the December 2017 exercise, growth has been revised up for 2018 and remains unchanged for 2019 and 2020.

The strong performance of the real side of the economy is also visible in the labour market, which continues on a recovery path. With employment rising by almost 7.5 million since the trough in mid-2013³, all of the job losses recorded during the crisis have now been recovered. The unemployment rate is the lowest since December 2008, despite a 2% increase in the labour force in that time.

There are some questions about the quality of these jobs: we have seen a rise in part-time and temporary work. But surveys point to continued employment momentum. Employment expectations are near record highs for both industry and services. We project that unemployment will fall to 7.2% by 2020.

The contribution of monetary policy to these developments has been crucial. Our non-standard monetary policy measures have had a decisive influence on credit aggregates, as well as on bank-based transmission more broadly. We estimate that the growth rate of bank lending to euro area firms would be roughly half as strong today without our measures. Bank lending rates to firms would be almost 50% higher.

These positive findings are further buttressed by survey-based evidence. In the *Bank Lending Survey*, participating banks reported that our asset purchases contributed to an improvement of their liquidity position and their market financing conditions, and indicated that they have mainly used the additional liquidity related to these purchases to

grant loans. Similarly, the ECB's negative deposit facility rate is assessed by banks to have had a positive impact on their lending volumes.

These beneficial effects of our policy measures have been accompanied by improvements in direct market financing conditions and, taken together, have made a substantial contribution to the economic recovery. Considering all of the monetary measures taken between mid-2014 and October 2017, the overall impact on euro area growth and inflation is estimated, in both cases, to be around 1.9 percentage points cumulatively for the period between 2016 and 2019.

All this has also been facilitated by two further factors. The first is the strengthening of banks' balance sheets since the crisis, with CET1 ratios for significant banks rising by 580 basis points above their 2008 levels. The second is the improving the debt sustainability of both firms and households. Corporate and household indebtedness are now back to their early 2008 levels.

Developments in the inflation outlook

The key question then becomes how quickly stronger demand will translate into rising prices. Both the ECB staff projections and those of other international institutions suggest that inflation is moving in the right direction, over the medium-term horizon that is relevant for monetary policy. The latest ECB projections foresee a pickup in headline inflation from an average rate of 1.4% this year to 1.7% in 2020.

This is the latest in a sequence of projection vintages with relatively similar end-points. This stands in contrast with the disinflationary period from 2012 to 2015, where we saw continuous downward revisions to the inflation profile from one projection round to the next. But there are reasons why we still need to firm our confidence in this forecast.

In particular, the performance of underlying inflation remains subdued compared with previous recoveries. Looking at a broad range of measures of underlying inflation, we certainly see an upward shift relative to the lows of 2015. But most measures have yet to show convincing signs of a sustained upward trend.

This is relevant because underlying inflation provides the slow-moving trend that exerts a pull on wage- and price-setting in the medium term. Measures of underlying inflation can therefore provide information about the medium-term 'attractor' to which headline inflation will gravitate once short-term shocks have faded out⁴.

There are two factors that might explain why the reaction of underlying inflation to a strengthening economy is slower than in the past.

First, the responsiveness of inflation to slack has weakened in recent years – a phenomenon we have seen across advanced economies as they recover from the crisis. Comprehensive analysis by the Eurosystem suggests this disconnect should be temporary, as cyclical forces linked to the crisis have been the main driver⁵. But it is still uncertain how persistent the effects of these forces might be.

Second, the degree of slack itself is uncertain. Even if slack is now receding, estimates of the size of the output gap have to be made with caution. Strong growth may be leading to higher potential output, as crisis-induced hysteresis may be reversed in conditions of stronger demand. And the effects of past structural reforms, especially in the labour market, may now be showing up in potential output.

For example, three-quarters of employment growth over the recovery has come from older workers and more than half from women. This is in part because past labour market reforms have encouraged both groups to enter the

workforce in response to higher growth⁶. If substantially more workers can be drawn into the labour force, it would be possible for the labour market to strengthen further without generating wage pressures.

In this environment, policymakers have to be more cautious than in the past about the assumptions that underpin our forecasts – and simple policy rules based around estimates of the output gap are no longer a useful guide for our actions. The severity of the crisis means that we cannot rely exclusively on traditional historical relationships to determine how quickly real developments will be passed through into nominal ones.

The key issues we need to examine are wage dynamics, their pass-through to prices, and the possible risks to the inflation outlook. Wage growth has been trending upwards for the euro area as a whole, rising by 0.5 percentage points from the trough in mid-2016⁷. But consistent with the weakening of the relationship between slack and inflation, the adjustment of wages during the recovery has so far been atypically slow.

That said, our analysis suggests that, as the cycle advances, the standard wage Phillips curve should hold better for the euro area on average. The unexplained residuals in the model – which in the past were sizeable – are diminishing, suggesting the link between unemployment and wages should improve.

Moreover, the anchors for wage formation are gradually becoming more aligned with our inflation objective. Backward-looking factors appear to be becoming less important, and the forward-looking anchor, inflation expectations, is strengthening.

Phillips curve decompositions find that past low inflation dragged down wage growth from its long-term average by around 0.2 percentage points each year between 2014 and 2017. But these same analyses suggest that, as headline inflation recovers to more normal levels, the impact of past low inflation on wages could be waning.

In terms of the pass through from wages to prices, the signals remain mixed. As wages have picked up, labour productivity has also recovered. Labour productivity grew by 0.5 percentage points in 2017, more than offsetting the increase in compensation per employee in the same period. This has in turn caused the growth rate of unit labour costs (ULC) to slow, leading to questions about how quickly we can expect rising wages to feed through into inflation.

There are reasons why this phenomenon might be temporary. For example, in conditions of stronger demand, productivity tends to accelerate initially because GDP rises more strongly than capital and labour inputs, since it takes time to hire more staff or invest in new machinery. But as these inputs catch up, productivity growth typically slows, and wage pressures translate into higher ULCs.

At the same time, after a long spell of very weak capital formation, the strong performance of business investment could prolong the productivity cycle and push back the time when ULC growth leads to price pressures.

So this is an issue we will have to monitor closely, especially in an environment where one has to be cautious about extrapolating past relationships into the future. To build confidence that inflation dynamics are on track, we will need to see the actual data improving over time, which means stronger evidence of both strengthening wage growth and wage growth translating into ULC growth.

Moreover, there are still two risks to the outlook that could – if they intensify – conspire to reduce our confidence in the inflation path. The first risk relates to the global environment, and in particular the possible spillovers of the new trade measures announced by the US administration.

Our own internal estimates suggest that the first-round effect on the euro area of the proposed measures is likely to be small, even if there is symmetric retaliation from US trading partners. But there are potential second-round effects that could have much more serious consequences. These include the risk of retaliation across other goods and an escalation of trade tensions; and the potential for negative confidence effects, which would weigh on business investment in particular.

The second risk relates to developments in foreign exchange markets and wider financial markets. The euro has appreciated since the beginning of last year, and according to our analysis, this has recently been driven more by exogenous factors – that is, purchases of euros that cannot be explained solely by the economic expansion. This might weigh on inflation down the line as it does not fully arise from stronger euro area fundamentals. So this is a development we need to monitor closely.

In terms of wider financial markets, the volatility we saw in February has so far remained concentrated in equities, and the spillovers to other asset classes in the euro area that are more correlated with sentiment indicators has been moderate. But should there be any further sharp repricing in financial markets, we will need to monitor the consequences carefully.

Implications for monetary policy

So what does this mean for the sustained adjustment in the path of inflation, which is the key condition for bringing net asset purchases to a gradual end?

A sustained adjustment is a forward-looking concept, consistent with the medium-term orientation of our monetary policy framework. It is not determined by the latest flow of data or the performance of any specific indicator of price pressures.

Rather, we have to look through short-term price fluctuations and focus on how inflation will develop at the end of a medium-term horizon. This means a span of time that is not too short – as monetary policy cannot control inflation in the near term – and that is not too long, because our commitment to our inflation objective has to be verifiable. Specifically, a sustained adjustment requires three conditions to be in place.

The first is convergence: headline inflation has to be on course to reach our aim over a meaningful definition of the medium term. The second is confidence: we need to be sure that this upward adjustment in inflation has a sufficiently high probability of being realised. The third condition is resilience: the adjustment in inflation has to be self-sustained even without additional net asset purchases.

As I said, successive rounds of projections give us comfort that inflation is on a rising path and is converging toward our aim in the medium term. As for the second criterion, the confidence interval of our baseline projections has both narrowed and become less skewed on the downside. Nevertheless, the upward trend of inflation is still subject to some degree of uncertainty and downside risks have not disappeared. And this trend is still dependant on quite some amount of monetary policy support.

This is why the fundamental conditionality built into our reaction function, which makes the horizon of the asset purchase programme conditional on a sustained adjustment in the path of inflation, remains in place.

At present, our policy stance is made up of three main elements: the flow of net asset purchases, the stock of outstanding bonds and principal reinvestments, and our forward guidance on the future path of key policy rates. But it is evident that the relative importance of the different elements will evolve over time, in three key ways.

First, net asset purchases remain necessary for now to validate the stimulus that is already priced into key indices of financial conditions and on which the inflation path depends. Thereafter, when progress towards a sustained adjustment in the path of inflation is judged to be sufficient, net purchases will come to an end. At that point, next to our forward guidance, appropriate financial conditions will be maintained by our reinvestment policy.

Re-investments will ensure a continued presence in the market, long after net asset purchases expire. The cumulative redemptions under the asset purchase programme between March 2018 and February 2019 are expected to be around €167 billion. And reinvestment amounts will remain sizeable thereafter.

Second, as regards the evolution of our policy rates beyond the end of our net purchases, we will maintain the sequencing that is currently set out in our forward guidance, namely our pledge to keep key interest rates at their current levels 'well past' the end of net purchases. This time-based element of our guidance is already vital today, in particular to ensure that our policy stimulus is not weakened by premature expectations of a first rate rise, and so financial conditions remain consistent with inflation convergence.

Third, as we move forward in time, the anchor for monetary policy, and the main tool for shaping the stance, will become the path of our key policy rates and forward guidance about their likely evolution. Our forward guidance has assured in the past, and continues to assure today stability to the short-end of the curve. As such, our communication, and rate path itself, will be calibrated to ensure that inflation continues to evolve along a trajectory that is consistent with the sustained adjustment path.

Adjustments to our policy will remain predictable, and they will proceed at a measured pace that is most appropriate for inflation convergence to consolidate, taking into account continued uncertainty about the size of the output gap and the responsiveness of wages to slack.

We have proven in the past that our forward guidance is credible. This has been the case both for our guidance on rates and on our reaction function, notably when we laid out the contingencies that would justify launching an asset purchase programme in response to a too-prolonged period of low inflation⁸.

Conclusion

To conclude, we currently see inflation converging towards our aim over the medium term, and we are more confident than in the past this convergence will come to pass.

But we still need to see further evidence that inflation dynamics are moving in the right direction. So monetary policy will remain patient, persistent and prudent. ■

Mario Draghi is President of the ECB

Endnotes

1. Draghi, M (2017), "Accompanying the economic recovery", speech at the ECB Forum on Central Banking, Sintra, 27 June 2017.
2. This relationship is based on evidence from France and Finland in the 1980s and 1990s. For similar evidence from the United States, see McCarthy J. (2017), *Discretionary Services Spending Has Finally Made It Back (to 2007)*, Liberty Street Economics, Federal Reserve Bank of New York.
3. Data until 2017Q3.
4. For further details, see Box 7 entitled "The relationship between HICP inflation and HICP inflation excluding energy and food", ECB Economic Bulletin, Issue 2/2016.

5. See “Low inflation in the euro area: Causes and consequences”, ECB Occasional Paper Series, No 181, January 2017.
6. Bodnár, K (2018), “Labour supply and employment growth”, ECB Economic Bulletin, Issue 1/2018.
7. All data on wages, productivity and GDP deflator components are until 2017Q3.
8. See [speech](#) by Mario Draghi, Monetary policy communication in turbulent times, at the Conference De Nederlandsche Bank 200 years: Central banking in the next two decades, Amsterdam, 24 April 2014.

This article is based on a [speech](#) given at the ECB and Its Watchers XIX Conference organised by the Institute for Monetary and Financial Stability, Frankfurt, 14 March 2018



Economic crisis and structural reforms in Southern Europe: policy lessons

Paolo Manasse and Dimitris Katsikas explore the economic, political, and institutional factors that differentially affected the success of these prescriptions from country to country

The basic ingredients of the policy prescriptions in response to the euro area debt crisis were quite similar across Southern Europe. This column explores the economic, political, and institutional factors that differentially affected the success of these prescriptions from country to country. Policy timing and sequencing, the balance between fiscal consolidation and structural reforms, and external constraints all play crucial roles. Future reform programmes should be calibrated to the distinct economic, social, and political features of targeted countries.

The euro area debt crisis was, for the most part, a crisis of the European periphery, in particular of the European south. Some Southern European countries (Greece, Portugal, and Cyprus) had to resort to bailout agreements, which entailed the implementation of comprehensive economic adjustment programmes; Spain negotiated a more limited and targeted financial package for its ailing financial sector. Even countries that did not enter a financing agreement, like Italy, came under intense pressure to adjust their economies. Fiscal consolidation and structural reforms were the two pillars of the euro area's strategy for handling the crisis in exchange for bailout funds (Baldwin and Giavazzi 2015).

In a new book, *Economic Crisis and Structural Reforms in Southern Europe: Policy Lessons*, we bring together contributions from academic and applied economists that cover the recent experiences of Southern European countries in dealing with structural reforms while struggling with their worst recession period since WWII (Manasse and Katsikas 2018).

The different chapters span a wide range of topics, from banking reforms in specific countries such as Cyprus and Spain, to labour market reforms in Spain and Portugal, to product market reforms in Greece. Other chapters take a comparative perspective, discussing the effects of structural reforms on the functioning of the labour market, the banking system, and the current account and political issues that arose during the reform effort.

While the basic ingredients of the policy prescriptions imposed by international institutions were quite similar across countries, they were introduced in heterogeneous economic, political, and institutional environments by governments with varying degrees of commitment and competence, and were implemented by administrations of different technical ability.

Finally, they were met by different degrees of resistance in terms of public opinion and organised special interests. Despite this heterogeneity, success or failure in the implementation of reforms seems to revolve around the

... many of the design issues and political economy preoccupations that accompany structural reform programmes, particularly during a crisis, need to be calibrated for the distinct features of the individual countries' economic, social, and political systems

alchemy of a small number of ingredients: delay, ownership, external constraint, timing, sequencing, the balance of reforms, and fiscal consolidation. This column proceeds by considering each of these ingredients in turn.

Delay

Economic crises may occur overnight, but are typically the results of decades-long imbalances, which myopic policymakers have consistently ignored. Examples from Southern Europe abound: stagnant productivity growth in Portugal and Greece; obsolete labour market institutions in collective bargaining, hiring, and firing procedures in Portugal, Greece, and Spain; high entry barriers in product markets and bureaucratic obstacles for setting up new firms in Greece and Portugal; inefficient supervision, nepotistic corporate governance, and political interference in the banking sectors of Cyprus, Greece, and Spain; bloated government sectors with high political interference in Greece and Portugal.

The longer the delay in reforms, the larger the imbalances become; the larger the imbalances, the larger the social cost associated with reforms, and the more difficult it becomes to share it among stakeholders, resulting in further delay.

Ownership

Delay has an additional perverse 'cultural' implication – it often generates the illusion in the public opinion that, having endured for decades, obsolete institutions pose no threat, and, more importantly, they are not the culprit of the current hardships, but rather that it is reformers who are to blame.

In fact, one of the explanations for the (relative) success of reforms in the Portuguese banking sector, and in the labour markets in Portugal and Spain, was that the governments and the public opinion in these countries were

aware of the need for reform, and the countries had a history of partial reforms. In Greece, by contrast, political polarisation and instability prevented any consensus.

In Cyprus, the conflict extended to political institutions, with the central bank and government openly disagreeing on measures to recapitalise the ailing banking sector. Finally, ownership turns out to be important not only for implementing reforms, but also for keeping them in place.

External constraint

The ability of international institutions to enforce reforms upon recalcitrant governments is limited. International creditors can credibly threaten to withdraw or not renew credit lines and liquidity support, as the ECB, European Commission, and IMF did in Greece. The external scapegoat may relieve some of the domestic political pressure from reform-prone governments, as in the case of Portugal and, to some extent, Spain.

However, the case of banking resolutions in Greece illustrates that there are limits to external interventions, particularly as concern the reform implementation phase. On the other hand, the cases of Cyprus and Spain provide illustrations of the detrimental effects of the absence of an external constraint. Initially, the Cypriot authorities explored alternative possibilities of funding (eg. Russia), which they hoped would come with no strings or conditions attached. This only delayed the banking resolutions and made the required adjustment more painful. Similarly, in Spain, it was only when the European institutions forced a bailout of the financial sector that substantial restructuring took place.

Timing of reforms

Are economic crises catalysts for reforms? The answer to this long-standing question provided by the examples discussed in the book is 'it depends'. When the economy has deteriorated substantially, achieving political and social consensus on – and not back-tracking from – reforms becomes virtually impossible.

The case of Greece is a clear example. The international institutions' failure to address the issue of debt restructuring early on, during the first adjustment plan, required a harsh fiscal consolidation programme, which eventually played into the hands of anti-reformers. To a large extent, the international institutions did not understand, or were unwilling to consider, the importance of the domestic political constraint, which limits the feasibility of fiscal consolidation as well of structural reforms.

On the other hand, the examples of the labour market reforms introduced in Portugal and Spain suggest that an incoming crisis can, at an early stage, force a consensus on the need of change, particularly if there is a history of public debate on reforms (see the previous point on 'ownership'), and provided the economy has not already deteriorated too much.

Balance and timing of fiscal consolidation and structural reforms

In the examples discussed in the book, the ghost of fiscal tightening always hovers over the effects of structural reforms. The empirical analysis shows that product market reforms in Greece had positive effects on employment and prices, but these took some time to manifest and were retrospectively swamped by the short-run recessionary effects of expenditure cuts and by the inflationary effects of tax hikes.

Also, there is convincing evidence that improving the competitiveness of labour and product markets in the euro area has long-run benefits and short-run costs – more competitive labour markets are associated with lower unemployment persistence and a faster recovery in the long run, but more flexibility also implies that the rate of unemployment becomes more sensitive to output-shocks in the short run, so that job losses rise during a recession. Hence, fiscal consolidation should be phased in gradually to make sure that the positive effects of structural reforms are not compromised and that a political backlash is avoided.

Sequencing of reforms

A reasonable sequence of reforms must respect two domestic political constraints. The first one is that 'political capital' is a scarce resource for the government. It should be invested in a few crucial reforms that identify the more 'stringent' bottle-necks to economic growth (Rodrik 2016). Political capital is quickly dissipated if invested in across-the-board programmes, and when this happens, reforms back-track.

The case of Portugal shows that the authorities successfully sequenced reforms by starting from those in the labour market, whose positive effects improved 'ownership' and their sustainability. By contrast, Greece gave priority to the reforms which apparently presented the least resistance, again those of the labour market, rather than starting from those in the product market, which were politically more difficult. This strategy eventually backfired. The second political constraint is that the sequence of economic reforms must minimise, and imply a 'fair' distribution of, the adjustment costs.

In Greece, fiscal consolidation and labour market reforms took precedence over product market reforms and privatisations. As a result, the fall in aggregate demand was aggravated by the drop in nominal and real wages (Manasse 2015). Workers and credit-squeezed small enterprises born the entire cost of the adjustment, and then revolted by electing reform-averse parties. Similarly, reforms aimed at raising total factor productivity, for example by fostering lower barriers in the product market or by improving wage bargaining, are found to be very effective in improving current account imbalances, although their effects take time to manifest. Hence, they should be given priority.

Concluding remarks

In summary, the contributions in the book show that many of the design issues and political economy preoccupations that accompany structural reform programmes, particularly during a crisis, need to be calibrated

for the distinct features of the individual countries' economic, social, and political systems. Still, such issues and preoccupations are not unique to individual countries, but tend to manifest repeatedly across countries and time. They mainly involve different combinations of a small set of crucial ingredients, whose case-by-case importance is ultimately crucial for determining the reforms' success or failure. ■

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References

Baldwin, RE and F Giavazzi, eds, (2015), *"The Eurozone Crisis: A Consensus View of the Causes and a Few Possible Solutions"*, VoxEU.

Manasse, P (2015), *"What went wrong in Greece and how to fix it"*, VoxEU, 12 June.

Manasse, P and D Katsikas (eds) (2018), *"Economic Crisis and Structural Reforms in Southern Europe: Policy Lessons"*, Routledge

Rodrik, D (2016), *"The elusive promise of structural reform: The trillion-euro misunderstanding"*, Milken Institute Review 18(2): 26-35.

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Breaking the stalemate on European Deposit Insurance

EDIS is a necessary component of banking union, but no option has met sufficient consensus. Isabel Schnabel and Nicolas Véron propose an EDIS design that is institutionally integrated but financed in a way that is differentiated across countries

In the wake of the European financial and sovereign debt crisis, the euro area embarked in 2012 on establishing a banking union. Its aim was to elevate parts of banking sector policy from the national to the European level, particularly bank supervision and resolution. Successive EU-level reports, including the *Four Presidents' Report* of 2012 and the *Five Presidents' Report* of 2015, have highlighted a European Deposit Insurance Scheme (EDIS) as a necessary component of banking union. In 2015, the European Commission published a [legislative proposal](#) (hereinafter EC 2015) to set up a fully integrated, country-blind deposit insurance system by 2024.

A number of different proposals have arisen in this area. A [recommendation](#) by Daniel Gros (Gros 2015), director of the Centre for European Policy Studies, would retain a permanent autonomous role for the existing national deposit insurance schemes in a re-insurance system. Meanwhile, none of these options has met sufficient consensus among euro area countries, producing a deadlock in the policy discussion, with no apparent progress in the legislative discussion of the EC 2015 proposal¹.

In a [Franco-German report](#) in January, we proposed, jointly with our coauthors, to end the deadlock with an EDIS design that is institutionally integrated but financed in a way that is differentiated across countries. Our recommendations are outlined here and compared with EC 2015 and Gros 2015².

EDIS as part of a broader policy package

Our EDIS proposal is tied to the introduction of [sovereign concentration charges](#) and tighter treatment of nonperforming loans (NPLs). It calls for *“the coordinated introduction of sovereign concentration charges for banks and a common deposit insurance”* (nb. all quotes in this blog post are from the Franco-German report). This connection is necessary to prevent the system from being *“abused by governments that can force or nudge domestic banks to grant them preferential credit conditions by using their access to deposit funding.”* By contrast, EC 2015 does not include any proposals on the regulatory treatment of sovereign exposures. In his own proposal, Daniel Gros

observes that he *“has not addressed the issue of the large holdings of banks of the debt of their own government” while hinting at “strict diversification limits,”* which echo our recommendation of sovereign concentration charges. As for NPLs, our proposal calls for the European Central Bank (ECB) to foster better accounting for these loans on banks’ balance sheets and reduce their aggregate volume, including for smaller banks principally supervised by national authorities. The report calls for *“full implementation of a uniform regime for NPL provisioning covering both legacy and new NPLs.”*

The combination of country-blindness for the insured depositors but not for the contributing banks has not previously been proposed... it would effectively serve to reconcile the twin objectives of risk-sharing and market discipline

A fully integrated institutional setting

A major difference between our proposal and Gros 2015 is that in our proposal, national deposit insurance schemes disappear after a transition period, replaced by a system with *“a single authority at the European level,”* which we suggest should be the Single Resolution Board (SRB) with due adjustments, and the existing *“separate national deposit insurance institutions would be phased out.”*

In the event that the EDIS scheme would need to make direct payouts to individuals, it would rely on national authorities, eg. the national resolution authority, but this arrangement would be purely for implementation purposes and the European authority would make all the significant decisions.

As a complement to our EDIS proposal, new EU legislation should eliminate the widespread practice of geographical ring-fencing of capital and liquidity by national authorities, which hinders the emergence of cross-border banking groups in the euro area. Since the protection of national deposit insurance schemes is the main reason cited to justify such practices, their phasing-out would make this reform possible and increase the potential for cross-border banking acquisitions, contributing to breaking the bank-sovereign vicious circle.

Our proposal envisions country-blind protection of insured deposits. After the end of the transition period, Cypriot or Greek insured deposits would be protected identically to German or Finnish ones, without any qualification or conditionality. This is essential to establish trust. We fear that the deposit re-insurance concept in Gros 2015, which perpetuates autonomous policy decision-making on deposit insurance by national authorities, could lead to uncertainty as to the automaticity of payouts, especially in cases where a country’s politics or policies are controversial in the rest of the euro area—a possibility that was illustrated in March 2013 in Cyprus. Thus, the operation of the system from the insured depositor’s perspective must be fully insulated from national political vagaries, as it is in our proposal (and in EC 2015).

A funding framework that recognizes national differences

The system would not be country-blind in terms of its funding mechanism, a key difference with EC 2015 but a similarity to Gros 2015. Our analysis is that despite the progress towards the completion of banking union, differences in national environments that affect banks' business models will persist in terms of taxation, corporate and individual insolvency frameworks, housing finance, pension finance, and macroprudential policies. (All such policies are comparatively harmonized in the United States, in which there is correspondingly no need for state-level differentiation within the federal deposit insurance system.) This justifies differentiated assessments of bank risks and, correspondingly, deposit insurance fees across euro area countries. As in most existing deposit insurance schemes and in EC 2015, there would also be fee differentiation at the level of individual banks to account for diverse risk profiles.

We have received objections that this would make EDIS different from its sibling, the Single Resolution Fund (SRF), which is already in place and will be fully mutualized by 2024. But since the European Union has chosen to distinguish resolution funding from deposit insurance (a distinction that does not exist in some other jurisdictions, eg. the United States), and political sensitivities are evidently different about the two areas, there is no need for identical policy responses to the challenges tackled by EDIS and the SRF respectively. We do suggest, however, that both be managed by the same EU authority, namely the SRB.

Our proposal calls for two separate modalities for such country-level differentiation:

- First, a fee component depending on country-specific risks, such as the quality of the country's legal framework for creditor protection, *"based on structural indicators of creditor rights, such as the effectiveness of insolvency and foreclosure processes."* With harmonization of legal frameworks, fees would also converge.

These indicators would have to be designed and measured at the European level, possibly by the SRB itself, or by an ad hoc independent advisory body reporting to the SRB. The aim is to establish good structural credit policies in foreclosure and other areas, underlined by developments in Greece and Cyprus.

- Second, a structure requiring the cost of payouts associated with a bank failure to fall on banks in the same country in case of limited idiosyncratic shocks but to be mutualized in case of a larger crisis. The EDIS system would contain national compartments, akin to the ones that exist in the SRF during the current transition but which (unlike at the SRF) would be kept in the longer run.

Two possible designs are a mutualized compartment alongside the national ones, similar to the transition-state SRF ('option 1'), or a joint payout by all compartments in case one of them is depleted ('option 2'). In option 1, the ex-ante deposit insurance fee (ie. in the absence of any bank failure triggering the insurance) would be split between the national and mutualized compartments, with a fixed allocation key set in the EDIS legislation that would apply identically to all member states.

In both options, if a national compartment is depleted by payouts, there will be an ex-post fee paid only by banks domiciled in the corresponding country, until it is replenished. If the European compartment is itself depleted (option 1), or the joint capacity of all compartments to step in is extinguished (option 2), the ESM would step in as a backstop (as with the SRF)—which would not be a loss to the ESM, as it would be reimbursed by banks thanks to appropriate ex-post fees.

The economics of this system are similar to those in Gros 2015, even though the institutional arrangements are fundamentally different. This difference is why we refer in the report to *"the spirit of a re-insurance system,"* with a first loss at the country level. The legal arrangement would be one of direct insurance, not re-insurance. Thus,

unlike in Gros 2015, the national compartments we propose would be very different from the existing national deposit insurance schemes, which would no longer exist in the steady state as explained above.

Country-level differentiation would create sound incentives. Banks could choose to operate in a given member state either through a locally capitalized subsidiary or through a branch of an entity established in another (home) country. If it is a subsidiary, the deposit insurance (or in our proposal, the national compartment) would be that of the host country; if a branch, that of the home country.

If a country has frequent bank failures that trigger deposit insurance payouts, or if its structural credit policies are unsound, the higher resulting deposit insurance fees may encourage banks to serve clients in that country through branches rather than subsidiaries. Such a country's national compartment would correspondingly decrease in size, due to the reduction in the country's total covered deposits, while other countries' compartments would grow. This is how it should be.

Importantly, our proposal of country-level differentiation would have nothing to do with a country's sovereign credit, and would therefore not contribute to the bank-sovereign vicious circle. The proposal would also create incentives for countries to reduce competitive distortions, such as those resulting from national housing finance and pension finance frameworks, insolvency law, or bank taxation.

Our EDIS proposal can accommodate the present diversity of banking structures in the euro area. In 14 of the area's 19 countries representing together more than half of total covered deposits³, there is currently one single national deposit insurance scheme. But in five other countries, there are two or more schemes serving different segments of the national banking sector⁴. We suggest that these *"could be treated as separate compartments, on a case-by-case basis under general criteria to be set to deter abuses."*

These criteria could also create incentives to merge such schemes on a cross-border basis, eg. to protect deposits in all the cooperative banks of several euro area countries. Voluntary top-up regimes could also continue to exist, either on a national or a cross-border basis, with the understanding that our EDIS proposal (including any separate compartments for specific banking structures) only covers insured deposits up to the common limit currently set at €100,000.

Conversely, we advise against carving out small banks from the scope of EDIS (as is currently the case with the SRF), even those that participate in institutional protection schemes. Such small banks, or Less Significant Institutions (LSIs) as they are called in the jargon of the banking union, contribute at least as much as SIs to the bank-sovereign vicious circle, because their activities are typically less diversified across borders.

We recommend that *“an asset quality review of all LSIs, directly involving both the ECB and the European authority entrusted with EDIS [ie. the SRB], would be performed as part of the implementation of the EDIS legislation, as was the case for SIs in 2014.”* This step is important to ensure that the risk-sharing involved in EDIS is not abused to rescue banks that would be unsound from the start.

A winning option for all euro area member states

The combination of country-blindness for the insured depositors but not for the contributing banks has not previously been proposed, as far as we know. But it would effectively serve to reconcile the twin objectives of risk-sharing and market discipline, the leitmotif of the entire report.

Our proposal is realistic and ready to be adopted in 2018. It would make retail bank runs much less likely in sovereign stress scenarios, and would thus reduce the redenomination risk exposed during the euro area crisis. All euro area countries would benefit, especially those with high debt or perceptions of credit risk, vastly offsetting any

perceived downsides of introducing the sovereign concentration charges that are an indispensable complement to EDIS.

There is of course a need for further technical elaboration, not least on the transitional arrangements. The transition should not be too short. Somewhere between five and ten years is probably apt. For practical reasons, the legislative process probably has to wait until after the European Parliament election of 2019, but the Council could give a firm mandate, including a set duration for the transition, after a negotiation that need not last more than a few months. As our report puts it, *“the key decisions in this area can and should all be taken in 2018.”* ■

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Endnotes

1. A more recent [Communication](http://bruegel.org/2018/03/breaking-the-stalemate-on-european-deposit-insurance/#_ftn1) of the European Commission on banking union (October 2017) attempted to break this deadlock, but proposes only transitional arrangements. [http://bruegel.org/2018/03/breaking-the-stalemate-on-european-deposit-insurance/#_ftn1]
2. While this blog post was jointly written by the two of us in personal capacity, it was reviewed by the entire group of the report's coauthors and there were no disagreements within that group about its content. [http://bruegel.org/2018/03/breaking-the-stalemate-on-european-deposit-insurance/#_ftn2]
3. Based on European Banking Authority (EBA) [data](#) as of end-2016. The 14 countries are Belgium, Estonia, Finland, France, Greece, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Slovakia, Slovenia, and Spain. [http://bruegel.org/2018/03/breaking-the-stalemate-on-european-deposit-insurance/#_ftn3]

4. Specifically, and based on the same EBA data as of end-2016 as in the previous footnote, there are five separate deposit insurance schemes in Austria (respectively for savings banks, Raiffeisen banks, Volksbanks, regional mortgage banks, and commercial banks; there is an ongoing process to merge the mandatory components of these into one single national system); two in Cyprus (for cooperative banks and other banks); four in Germany (for cooperative banks, savings banks, public-sector banks, and commercial banks); two in Italy (for credit cooperative banks and other banks); and two in Portugal (for mutual agricultural banks and other banks). As per the EBA dataset, every single one of these dedicated insurance schemes has more covered deposits than the national deposit insurance scheme of Estonia. [http://bruegel.org/2018/03/breaking-the-stalemate-on-european-deposit-insurance/#_ftn4]

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Enhancing the ESM lending toolkit through a precautionary credit line

Strengthening the ESM can help to prevent crises and enhance deeper financial integration in the euro area. Jochen Andritzky says mislabelling the ESM as 'European Monetary Fund' will not do the trick

Introduction

Transforming the European Stability Mechanism (ESM) into a 'European Monetary Fund' has come to dominate the debate on euro area reforms, albeit no one has actually proposed it to become 'monetary'. Instead, in a recent interview, Germany's chancellor Angela Merkel raised the idea of a short-term credit facility for member states hit by external shocks. Countries satisfying certain conditions could receive an ESM loan for maybe five years, with the loan size capped and repayable in full.

While hardly a leap forward for euro reform in the eyes of most, this augmentation of the ESM's lending toolkit could be quite meaningful – if it is done right. By providing a stronger backstop against coordination failures in financial markets, it better guards against crisis. And by rewarding compliance with European rules and sound economic policies, it sets the right incentives.

Needless to say, an ill-designed instrument can be dangerous. If conditions for access to the credit line are watered down, the ESM may have to lend to member states that pursue inappropriate policies or pose a credit risk. At the same time, the ESM may find itself between a rock and a hard place if it has to fear that cutting the credit line may trigger a crisis. Too-easy terms may lead to overuse of the facility, so that the ESM becomes a regular source to satisfy member states' financing needs. But also the opposite may occur – that no member state ever signs up for the facility, a fate that has already befallen some existing precautionary instruments.

This blog post outlines some principles for incentive-compliant lending instruments before delving into some of the details of the design of a precautionary credit line. This may serve to inform the debate that is likely to unfold in anticipation of the euro summit at the end of this month. However, fleshing out the details of a new instrument's design will take much longer. Hence, this blog post can only provide a starting point for a deeper debate.

The power of ex-ante conditionality

The ESM is a crisis mechanism to prevent and resolve coordination failures in financial markets that can lead to a financial crisis. Sovereign debt crises typically start with a loss of access to market financing. Such losses of market access may arise from a sometimes irrational financial panic unrelated to a country's long-run solvency or policies. For example, a country may be hit by contagion from crises elsewhere. In these cases, crisis lending by the ESM is clearly welfare-enhancing (Mussa *et al.* 2000; Jeanne *et al.* 2004).

... a revamp of its precautionary credit line could create a meaningful instrument, built on the existing policy framework, by incentivising strong economic policies and guarding against financial market turbulence. The design of such a facility has to be well thought through, to navigate difficult trade-offs

In practice, crises are hardly ever unrelated to policies. Hence, it is important to consider the incentive effects of a financial safety net. Just as airbags in a car might induce less-careful driving, so a crisis mechanism may induce politicians to adopt unsound policies, or financial markets to continue to finance misconceived policies. Avoiding adverse incentives is even more important in the euro area, where member states retain substantial sovereignty in economic and fiscal policymaking.

Policy conditionality describes the set of fiscal and structural policies which are agreed with the member state and monitored by the crisis lender as a condition for providing a safety net. Conditionality can be applied ex ante, in the form of preventive policies, and ex post. Lending facilities using ex-ante conditionality are often referred to as precautionary credit lines.

While much attention is paid to ex-post conditionality – the policies agreed upon for crisis programmes – ex-ante conditionality offers a way to provide positive incentives for strong policies: Only member states continuously following sound economic policies receive access to a precautionary credit line on which they can draw when a (not self-inflicted) shock hits and financial markets go awry.

Rather than correcting policies, the aim of ex-ante conditionality is to incentivise good policymaking. Since it is aimed at preventing crises, the ex-ante approach can improve welfare compared to a purely ex-post approach (Jeanne *et al.* 2001).

Generally, the situation of the euro area is well suited for a wider use of ex-ante conditionality. In many areas, common policies such as fiscal rules already bind national policymaking. Ex-ante conditionality can be fitted to common policies and provide an additional incentive for compliance. The ESM could build on this.

Getting the design right

Currently, the ESM offers two types of precautionary credit lines, the Precautionary Conditioned Credit Line (PCCL) and the Enhanced Conditions Credit Line (ECCL). To date, no member state has yet requested a credit line.

This mirrors the experience of the IMF, for which two key reasons have been identified. First, signing up to a precautionary facility is seen as sending a negative signal that a country believes it may become a victim of crisis. Second, while the idea is that a subscribing country is prequalified for emergency lending, access may be limited or additional conditionality may apply. This may induce policymakers to remain unconstrained by ex-ante conditionality, and negotiate conditionality only once in need of emergency lending (Enderlein and Haas, 2015).

These lessons highlight two important trade-offs to consider in the design of the credit line's conditionality: between overuse and underuse, and between automatic access and case-specific access.

On one hand, member states should not rely on the credit line for normal funding needs or draw on it too frequently. This would transform the ESM from a crisis lender to a common financing instrument, which is not the idea of the proposal. Hence, strong institutional safeguards are needed to ensure the credit line is only drawn on under exceptional and unintended circumstances.

On the other hand, member states should not apply for the credit line only once they are at the verge of a crisis, as this would signal vulnerability and stigmatise the instrument. Instead of signalling a vulnerability, signing up for a credit line should be perceived as a stamp of approval for strong policies. As part of this, the analysis provided by the ESM in monitoring ex-ante conditionality adds to transparency and bolsters confidence of markets.

Moreover, member states satisfying the credit line's ex-ante conditionality could be granted higher access, longer maturities, or lower interest rates under other ESM facilities. In other words, if more crisis funds are needed and the country decides to apply for other facilities (with ex-post conditionality), a more comprehensive backstop and more gradual adjustment could be offered given the country's track record of strong policies. If markets reflect this more robust backstop in the pricing of government bonds, in particular at times of elevated risk, governments may be convinced of the credit line's benefits and sign up in advance.

With regard to the second trade-off, the question is to what extent ex-ante conditionality follows an explicit 'check list' or remains case-specific, and whether conditions can be adapted over time. The choice of criteria should be limited to those relevant for preventing economic crises, limiting their scope, and ensuring debt sustainability. Overloading the criteria with too many issues should be avoided, much like conditionality for crisis programmes (Tumpel-Gugerell, 2017; Wyplosz, 2017).

While there must remain scope to adjust the set of policy conditions, the credit line must remain credible in the sense that both member states and financial markets can trust the backstop. Otherwise, there is no advantage vis-à-vis the existing instruments with ex-post conditionality. However, compliance with a clearly defined set of rules – as in the proposal of a 'discount window' by Enderlein and Haas (2015) – may be too automatic and too weak to protect the ESM from credit risk. Finding the right balance is an important detail that needs to be worked out.

Conditions of the credit line

The idea of a credit line is to offer bridge financing if a member state's market access to issue sovereign bonds is inhibited for a short period. The facility does not replace other ESM facilities, in particular macroeconomic adjustment programmes to overcome deeper-rooted problems. If the credit line is drawn down and market access remains lost, the member state can still choose a macroeconomic adjustment programme.

Maximum access under the credit line should therefore be limited, for instance to one year's gross financing needs. The total gross public funding need for all euro area member states amounts to about €1 trillion during one year. This exceeds the ESM's current lending capacity of €500 billion. However, not all member states would draw at the same time, and not all countries would qualify for the credit line.

The Bagehot principle postulates that crisis lending is temporary and should take place at high lending rates to reduce reliance on crisis lending. Over the course of the euro-area crisis, the Bagehot approach for macroeconomic adjustment programmes was replaced by one in which solvency support through lower lending rates and management of debt-related cash flows dominated (Wyplosz, 2017).

However, for a precautionary credit line, there is no reason not to apply Bagehot's principle, at least in a tiered manner. Given its nature as bridge financing, interest for larger amounts drawn under the credit line could include a sizeable margin over the ESM's cost of funding to discourage overuse. In the short run, the solvency implications for member states would be manageable. There is no doubt that the loan would need to be repaid in full, as the facility is not a transfer mechanism.

Precautionary credit lines are usually granted for a limited time, such as one year, and can sometimes be renewed. As opposed to the current ESM precautionary instruments, a facility as described here should be repeatedly renewable. A requirement to reapply for the facility annually (rather than an automatic extension) could reduce political pressure to soften ex-ante conditionality and overcome the challenge of withdrawing access to the credit line during difficult times. Besides the annual check-up before the ESM's top decision-making body takes a decision on approving the credit line, continuous monitoring would ascertain whether any policies are being implemented that could severely alter the qualification assessment.

Conclusion

A precautionary credit line could be a small but meaningful addition to the ESM's lending toolkit which looks fairly easy to implement. Such an instrument enhances the ESM's credibility as a backstop in a sovereign debt crisis and delivers a more substantial contribution to euro area financial stability than changing the ESM's legal statute, a questionable focus of the ongoing discussion.

However, the devil is in the details that can make or break the credit line's success. A facility subject to ex-ante conditionality suits the current framework of common policies well, and could strengthen incentives to comply with good policies. However, a clever design needs to be found to navigate the difficult trade-off between overuse and underuse. While sufficient assurance for crisis assistance must be provided to member states signing up to the credit line, the ESM must be protected from pressure to water down ex-ante conditionality, and must be enabled to curtail or suspend access when policies deteriorate. ■

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References

Enderlein, H and J Haas (2015), "What would a European finance minister do?", Policy paper 139, Jacques Delors Institut, Berlin.

IMF (2016), "Adequacy of the Global Financial Safety Net", Policy Paper, Washington, DC

IMF (2015), Crisis Program Review.

Jeanne, O, J Zettelmeyer, P Bacchetta and A Scott (2001), "International Bailouts, Moral Hazard and Conditionality", *Economic Policy* 16, 407–432.

Jeanne, O, J Zettelmeyer and IMFR Department (2004), "The Mussa Theorem (and Other Results on IMF-induced Moral Hazard)", IMF working paper, International Monetary Fund.

Mussa, M, A Swoboda, J Zettelmeyer and O Jeanne (2000), "Moderating fluctuations in capital flows to emerging market economies", Reforming the International Monetary and Financial System, 75–142.

Tumpel-Gugerell, G (2017), EFSF/ESM Financial Assistance – Evaluation Report.

Weder, B and J Zettelmeyer (2017), "The New Global Financial Safety Net: Struggling for Coherent Governance in a Multipolar System", Essays on International Finance 4, Centre for International Governance Innovation, Ontario.

Wyplosz, C (2017), "A European Monetary Fund?", Scrutiny paper provided in the context of Economic Dialogues with the President of the Eurogroup in the Economic and Monetary Affairs Committee, May.

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Winds of change: the case for new digital currency

The case for digital currency is not universal. Christine Lagarde says we should investigate it further, seriously, carefully, and creatively

In Singapore it is often windy. Winds here bring change, and opportunity. Historically, they blew ships to its port. These resupplied while waiting for the Monsoon to pass, for the seasons to change. *“Change is the only constant,”* wrote the ancient Greek philosopher, Heraclitus of Ephesus.

And yet change can appear daunting, destabilizing, even threatening. This is especially true for technological change, which disrupts our habits, jobs, and social interactions. The key is to harness the benefits while managing the risks.

When it comes to fintech, Singapore has shown exceptional vision—think of its regulatory sandbox where new ideas can be tested. Think of its Fintech Innovation Lab, and its collaboration with major central banks on cross-border payments. In this context, I would like to do three things:

- First, frame the issue in terms of the changing nature of money and the fintech revolution.
- Second, evaluate the role for central banks in this new financial landscape—especially in providing digital currency.
- Third, look at some downsides, and consider how they can be minimized.

The changing nature of money and the fintech revolution

Let me begin with the big issue on the table today—the changing nature of money. When commerce was local, centered around the town square, money in the form of tokens—metal coins—was sufficient. And it was efficient.

The exchange of coins from one hand to another settled transactions. So long as the coins were valid—determined by glancing, scratching, or even biting into them—it did not matter which hands held them.

But as commerce moved to ships, like those that passed through Singapore, and covered increasingly greater distances, carrying coins became expensive, risky, and cumbersome.

Technology will change, and so must we. Lest we remain the last leaf on a dead branch, the others having decided to fly with the wind. In the world of fintech, we need to harness change so it is fair, safe, efficient, and dynamic

Chinese paper money—introduced in the 9th century—helped, but not enough. Innovation produced bills of exchange—pieces of paper allowing merchants with a bank account in their home city to draw money from a bank at their destination.

The Arabs called these Sakks, the origin of our word ‘check’ today. These checks, and the banks that went along with them, spread around the world, spearheaded by the Italian bankers and merchants of the Renaissance. Other examples are the Chinese Shansi and Indian Hundi bills.

Suddenly, it mattered whom you dealt with. Was this Persian merchant the rightful owner of that bill? Was the bill trustworthy? Was that Shanxi bank going to accept it? Trust became essential—and the state became the guarantor of that trust, by offering liquidity backstops, and supervision.

Why is this brief tour of history relevant? Because the fintech revolution questions the two forms of money we just discussed—coins and commercial bank deposits. And it questions the role of the state in providing money.

We are at a historic turning point. You are not just inventing services; you are potentially reinventing history. And we are all in the process of adapting. A new wind is blowing, that of digitalization. In this new world, we meet anywhere, any time. The town square is back—virtually, on our smartphones. We exchange information, services, even emojis, instantly... peer to peer, person to person.

We float through a world of information, where data is the ‘new gold’—despite growing concerns over privacy, and cyber-security. A world in which millennials are reinventing how our economy works, phone in hand.

And this is key: money itself is changing. We expect it to become more convenient and user-friendly, perhaps even less serious-looking. We expect it to be integrated with social media, readily available for online and person-to-person use, including micro-payments. And of course, we expect it to be cheap and safe, protected against criminals and prying eyes.

What role will remain for cash in this digital world? Already signs in store windows read 'cash not accepted.' Not just in Scandinavia, the poster child of a cashless world. In various other countries too, demand for cash is decreasing—as shown in recent IMF work. And in ten, twenty, thirty years, who will still be exchanging pieces of paper? Bank deposits too are feeling pressure from new forms of money.

Think of the new specialized payment providers that offer e-money—from AliPay and WeChat in China, to PayTM in India, to M-Pesa in Kenya. These forms of money are designed with the digital economy in mind. They respond to what people demand, and what the economy requires.

Even cryptocurrencies such as Bitcoin, Ethereum, and Ripple are vying for a spot in the cashless world, constantly reinventing themselves in the hope of offering more stable value, and quicker, cheaper settlement.

A case for central bank digital currencies

Let me now turn to my second issue: the role of the state—of central banks—in this new monetary landscape. Some suggest the state should back down.

Providers of e-money argue that they are less risky than banks, because they do not lend money. Instead, they hold client funds in custodian accounts, and simply settle payments within their networks.

For their part, cryptocurrencies seek to anchor trust in technology. So long as they are transparent—and if you are tech savvy—you might trust their services. Still, I am not entirely convinced. Proper regulation of these entities will remain a pillar of trust.

Should we go further? Beyond regulation, should the state remain an active player in the market for money? Should it fill the void left by the retreat of cash? Let me be more specific: should central banks issue a new digital form of money? A state-backed token, or perhaps an account held directly at the central bank, available to people and firms



for retail payments? True, your deposits in commercial banks are already digital. But a digital currency would be a liability of the state, like cash today, not of a private firm.

This is not science fiction. Various central banks around the world are seriously considering these ideas, including Canada, China, Sweden, and Uruguay. They are embracing change and new thinking—as indeed is the IMF.

We are releasing a [new paper](#)¹ on the pros and cons of central bank digital currency—or ‘digital currency’ for short. It focuses on domestic, not cross-border effects of digital currency. The paper is available on the IMF website.

I believe we should consider the possibility to issue digital currency. There may be a role for the state to supply money to the digital economy. This currency could satisfy public policy goals, such as (i) financial inclusion, and (ii) security and consumer protection; and to provide what the private sector cannot: (iii) privacy in payments.

i) Financial inclusion

Let me start with financial inclusion, where digital currency offers great promise, through its ability to reach people and businesses in remote and marginalized regions. We know that banks are not exactly rushing to serve poor and rural populations.

This is critical, because cash might no longer be an option here. If the majority of people adopt digital forms of money, the infrastructure for cash would degrade, leaving those in the periphery behind.

What about subsidizing cash usage in those areas? But that means that economic life in the periphery would become disconnected from the centre.

Of course, offering a digital currency is not necessarily the only answer. There may be scope for governments to encourage private sector solutions, by providing funding, or improving infrastructure.

ii) Security and consumer protection

The second benefit of digital currency relates to security and consumer protection. This is really a David versus Goliath argument. In the old days, coins and paper notes may have checked the dominant positions of the large, global payment firms—banks, clearinghouses, and network operators. Simply by offering a low cost and widely available alternative.

Without cash, too much power could fall into the hands of a small number of outsized private payment providers. Payments, after all, naturally lean toward monopolies—the more people you serve, the cheaper and more useful the service.

For a start, private firms may under-invest in security to the extent they do not measure the full cost to society of a payment failure. Resilience may also suffer—with only a few links in the payment chain, the system may stop working if one of these links breaks. Think about a cyber-attack, a glitch, bankruptcy, or a firm's withdrawal from the local market.

Regulation may not be able to fully redress these downsides. A digital currency could offer advantages, as a backup means of payment. And it could boost competition by offering a low-cost and efficient alternative—as did its grandfather, the old reliable paper note.

iii) Privacy

The third benefit of digital currency I would like to highlight lies in the privacy domain. Cash, of course, allows

for anonymous payments. We reach for cash to protect our privacy for legitimate reasons: to avoid exposure to hacking and customer profiling, for instance.

Consider a simple example. Imagine that people purchasing beer and frozen pizza have higher mortgage defaults than citizens purchasing organic broccoli and spring water. What can you do if you have a craving for beer and pizza but do not want your credit score to drop? Today, you pull out cash. And tomorrow? Would a privately-owned payment system push you to the broccoli aisle?

Would central banks jump to the rescue and offer a fully anonymous digital currency? Certainly not. Doing so would be a bonanza for criminals.

Downsides of bank digital currencies

This brings me to my third area—the potential downsides of digital currency. The obvious ones are risks to financial integrity and financial stability. But I would also like to highlight risks of stifling innovation—the last thing you want.

My main point will be that we should face these risks creatively. How might we attenuate them by designing digital currency in new and innovative ways? Technology offers a very wide canvas to do so.

a) Risks to financial integrity

Let's return to the tradeoff between privacy and financial integrity. Could we find a middle ground?

Central banks might design digital currency so that users' identities would be authenticated through customer due diligence procedures and transactions recorded. But identities would not be disclosed to third parties or

governments unless required by law. So when I purchase my pizza and beer, the supermarket, its bank, and marketers would not know who I am. The state might not either, at least by default.

Anti-money laundering and terrorist financing controls would nevertheless run in the background. If a suspicion arose it would be possible to lift the veil of anonymity and investigate.

This setup would be good for users, bad for criminals, and better for the state, relative to cash. Of course, challenges remain. My goal, at this point, is to encourage exploration.

b) Risks to financial stability

The second risk relates to financial stability. Digital currencies could exacerbate the pressure on bank deposits we discussed earlier. If digital currencies are sufficiently similar to commercial bank deposits—because they are very safe, can be held without limit, allow for payments of any amount, perhaps even offer interest—then why hold a bank account at all?

But banks are not passive bystanders. They can compete with higher interest rates and better services.

What about the risk of bank runs? It exists. But consider that people run when they believe that cash withdrawals are honored on a first-come-first-serve basis—the early bird gets the worm. Digital currency, instead, because it can be distributed much more easily than cash, could reassure even the person left lying on the couch!

In addition, if depositors are running to foreign assets, they will also shun the digital currency. And in many countries, there are already liquid and safe assets to run toward—think of mutual funds that only hold government bonds. So, the jury is still out on whether digital currencies would really upset financial stability.

c) Risks to innovation

If digital currency became too popular, it might ironically stifle innovation. Where is your role if the central bank offers a full-service solution, from digital wallet, to token, to back-end settlement services?

What if, instead, central banks entered a partnership with the private sector—banks and other financial institutions—and said: you interface with the customer, you store their wealth, you offer interest, advice, loans. But when it comes time to transact, we take over.

This partnership could take various forms. Banks and other financial firms, including startups, could manage the digital currency. Much like banks which currently distribute cash. Or, individuals could hold regular deposits with financial firms, but transactions would ultimately get settled in digital currency between firms. Similar to what happens today, but in a split second. All nearly for free. And anytime.

The advantage is clear. Your payment would be immediate, safe, cheap, and potentially semi-anonymous. As you wanted. And central banks would retain a sure footing in payments. In addition, they would offer a more level playing field for competition, and a platform for innovation. Meanwhile your bank, or fellow entrepreneurs, would have ensured a friendly user experience based on the latest technologies.

Putting it another way: the central bank focuses on its comparative advantage—back-end settlement—and financial institutions and start-ups are free to focus on what they do best—client interface and innovation. This is public-private partnership at its best.

Conclusion

I have tried to evaluate the case for digital currency. The case is based on new and evolving requirements for

money, as well as essential public policy objectives. My message is that while the case for digital currency is not universal, we should investigate it further, seriously, carefully, and creatively. More fundamentally, the case is about change—being open to change, embracing change, shaping change.

Technology will change, and so must we. Lest we remain the last leaf on a dead branch, the others having decided to fly with the wind. In the world of fintech, we need to harness change so it is fair, safe, efficient, and dynamic. That was the goal of the Bali Fintech Agenda launched by the IMF and World Bank last October.

When the winds of change pick up, what will guide us in our journey? The captains sailing through the Straits of Singapore followed the North Star. And today? Tomorrow?

I suggest we follow a girl. A young girl. A fearless girl. If you are lucky, you might be able to meet her in person in New York's financial district. She is bold. She is brave. She is confident. She faces forward, toward the future, with grit and determination—a future she herself is going to shape, with eyes wide open, eagerly, steadily.

I hear her say: Let us sail ahead. I am not afraid. (pause) I, am not afraid. ■

Christine Lagarde is IMF Managing Director

Endnotes

1. IMF Staff Discussion Note entitled "[Casting Light on Central Bank Digital Currency](#)," published on our website.

This article is based on a [speech](#) delivered at the Singapore Fintech Festival, November 14, 2018

Cryptocurrencies, digital currencies, and DLT: what are we learning?

Lael Brainard considers developments in digital technologies for payments, clearing, and settlement, and warns about the serious challenges that remain

What better place to discuss digital currencies than in San Francisco, home to so many technology innovators working on new ways to disrupt various aspects of our daily lives?¹ Because of the transformative potential of digital currency and distributed ledger technologies, the Federal Reserve is actively monitoring digital innovations in the financial system.

We have been keenly evaluating developments in fintech and digital currencies through a multidisciplinary lens, combining information technology and policy analysis to study their potential implications for payments policy, supervision and regulation, financial stability, monetary policy, and the provision of financial services. This work draws from expertise throughout the Federal Reserve System and benefits from engagement with our colleagues internationally.

Cryptocurrencies

The past decade has seen a wave of important new developments in digital technologies for payments, clearing, and settlement. Cryptocurrencies represent the leading edge of this digital wave. And it was the advent a decade ago of Bitcoin, the first cryptocurrency, that first gave shape to the vision of a decentralized digital currency.

At the heart of any cryptocurrency is the creation of a new type of asset - the unit of the cryptocurrency itself - that is distinct from any traditional form of money used in routine transactions, such as US currency or checking accounts in commercial banks. A typical cryptocurrency would not be a liability of any individual or institution. There is no trusted institution standing behind it.

This is in stark contrast to US currency and reserve balances, which are liabilities of the Federal Reserve Banks, and deposit accounts, which are liabilities of a bank or another regulated depository institution backed by federal

insurance up to a specific level. And while a typical cryptocurrency may be used in payments, it is not legal tender, in contrast to US currency.

A typical cryptocurrency relies on the use of distributed ledger technology, which provides a new way to keep ownership records and transfer ownership from one user to another, often with little to no information about the identity of the owner. For instance, Bitcoin relies on the blockchain, which is run by anonymous computers all over the world linked together through a ledger of anonymized transactions. Digital currencies use automation via computer processing power, networking via the internet, and cryptography to transfer value from one person to another.

I remain optimistic that the financial sector will find valuable ways to employ distributed ledger technology in the area of payments, clearing, and settlement in coming years

What is innovative is that the computer code behind these transactions uses automated checks and balances to validate the sender and receiver, and whether there is enough value in the sender's account to make the payment. Traditionally, this validation would be done by banks and payment networks.

Instead, with a cryptocurrency, this validation could be done by anyone with enough computing power and resources to participate. Importantly, this technology is not owned or managed by any entity - regulated or not - that would be responsible for its maintenance, security, and reliability. Rather, its maintenance, security, and reliability are handled by a decentralized developer community, which often lacks strong governance.

This combination of a new asset, which is not a liability of any individual or institution, and a new recordkeeping and transfer technology, which is not maintained by any single individual or institution, illustrates the powerful capabilities of today's technologies. But there are also serious challenges. For instance, cryptocurrencies have exhibited periods of extreme volatility.

If you purchased Bitcoin in December 2017 at a value of over \$19,000, your electronic claims would be worth close to half that today². Indeed, Bitcoin's value has been known to fluctuate by one-quarter in one day alone. Such extreme fluctuations limit an asset's ability to fulfill two of the classic functions of money: to act as a stable store of value that people can hold and use predictably in the future, and to serve as a meaningful unit of account that can be used to assign a comparable value of goods and services.

In addition to losses, individual investors should be careful to understand the potential for other risks³. Cryptocurrencies may raise important investor and consumer protection issues. The lack of strong governance and questions about the applicable legal framework for some cryptocurrencies may make consumers vulnerable to mistakes, thefts, and security breaches without much, or any, recourse.

Although the cryptographic technology may be robust to some events, such as the fraudulent double spending of the same units of the cryptocurrency for more than one transaction, the large number of breaches at some cryptocurrency exchanges and wallet providers suggest that significant vulnerabilities may remain with respect to security protections around customers' accounts⁴. These breaches remind us that relying solely on cryptography within the transfer technology is not enough.

Ultimately, a more holistic approach to the security of the broader cryptocurrency ecosystem, along with added layers of security on top of cryptography, are likely to be necessary for cryptocurrencies to be widely adopted.

Some cryptocurrencies also appear quite vulnerable to money-laundering (BSA/AML, or Bank Secrecy Act/anti-money-laundering) concerns. Since many cryptocurrencies store in their ledger little to no information about the identity of owners of the cryptocurrency, this essentially mimics a bearer instrument-that is, an instrument whereby the holder of the instrument is presumed to be its owner.

Further, cryptocurrencies are easy to transfer across borders. Indeed, a cryptocurrency that mimics a bearer instrument and provides significant anonymity in transactions, including across borders, could raise significant concerns regarding the potential to facilitate illicit activities and associated money laundering. For example, electronic instruments can be easily transferred and stored in large amounts, and peer-to-peer transactions outside of the United States could be very hard to prevent and detect. Such instruments appear to have proven susceptible for use to convey payments to illicit actors - for example, to pay ransoms.

Overall, however, the still relatively small scale of cryptocurrencies in relation to our broader financial system and relatively limited connections to our banking sector suggest that they do not currently pose a threat to financial

stability⁵. Of course, if cryptocurrencies were to achieve wide-scale use, or their impact were greatly magnified through leverage, the effects could be broader.

In particular, adverse developments and shifts in sentiment could cause a global rush to exit this market. As we have seen in other speculative activity in the past, rush-for-the-exits behaviour can aggravate price fluctuations, create trading difficulties, and even induce market breakdowns. Thus, we will continue to monitor cryptocurrencies as they evolve, with particular vigilance for any signs of growing materiality to the broader financial system.

Central bank digital currencies

Given some of the inherent issues and challenges that cryptocurrencies pose for investor and consumer protection and the prevention of money laundering, some have advocated that central banks should create their own digital forms of currency as more stable and reliable alternatives to cryptocurrencies.

After all, a central bank digital currency could overcome the volatility risks associated with an unbacked asset with no intrinsic value by substituting a digital instrument that is the direct liability of the central bank. Moreover, advocates suggest a central bank would be able to develop a transfer mechanism that has robust governance.

Even though central bank digital currencies may at first glance appear to address a number of challenges associated with the current crop of cryptocurrencies, this appeal may not withstand closer scrutiny⁶. First, there are serious technical and operational challenges that would need to be overcome, such as the risk of creating a global target for cyber attacks or a ready means of money laundering.

For starters, with regard to money laundering risks, unless there is the technological capability for effective identity authentication, a central bank digital currency would provide no improvement over physical notes and could be

worse than current non-cash funds transfer systems, especially for a digital currency that could circulate worldwide. In addition, putting a central bank currency in digital form could make it a very attractive target for cyber attacks by giving threat actors a prominent platform on which to focus their efforts. Any implementation would need to adequately deal with a variety of cyber threats - especially for a reserve currency like the US dollar.

Second, the issuance of central bank digital currency could have implications for retail banking beyond payments. If a successful central bank digital currency were to become widely used, it could become a substitute for retail banking deposits. This could restrict banks' ability to make loans for productive economic activities and have broader macroeconomic consequences. Moreover, the parallel coexistence of central bank digital currency with retail banking deposits could raise the risk of runs on the banking system in times of stress and so have adverse implications for financial stability.

Finally, there is no compelling demonstrated need for a Fed-issued digital currency. Most consumers and businesses in the US already make retail payments electronically using debit and credit cards, payment applications, and the automated clearinghouse network. Moreover, people are finding easy ways to make digital payments directly to other people through a variety of mobile apps. New private-sector real-time payments solutions are beginning to gain acceptance in the United States.

And the Faster Payments Task Force has laid out a roadmap embraced by a variety of stakeholders for a fast, ubiquitous, and secure payments system to be in place in the United States in the next few years⁷. In short, a multiplicity of mechanisms are likely to be available for American consumers to make payments electronically in real time. As such, it is not obvious what additional value a Fed-issued digital currency would provide over and above these options.

Wholesale digital settlement tokens

It is important for the Fed and other central banks to continue to research these issues as technology evolves, exploring the technical and economic possibilities and limitations of central-bank-issued digital currencies. Even though the case for a digital currency for general use may not be compelling, opportunities for more targeted and restricted use may nonetheless prove to have value.

The private sector has been exploring a variety of ways of deploying the underlying technologies of digital assets that are native to a particular wholesale platform, to help to facilitate finality of settlement. Such wholesale digital settlement tokens could potentially reduce the time and costs required for wholesale financial transactions. This is being discussed, for instance, for the use cases of interbank payments, securities settlements, and cross-border transactions, where the introduction of a digital token native to a platform may facilitate certain types of settlement.

Likewise, it is possible at some point in the future that a limited central bank digital instrument that serves as a settlement asset for wholesale payment and settlement activity may hold some promise. Several central banks have been studying this issue, and we have been actively watching these developments⁸. We are also interested in work that decouples the underlying distributed ledger technology from cryptocurrencies and attempts to build on the benefits of the technology, a topic to which I now turn.

Distributed ledger technology

Even if cryptocurrencies prove to have a very limited role in the future, the technology behind them is likely to live on and offer improvements in the way we transfer and record more traditional financial assets. Distributed ledger technology could also facilitate other applications that could improve the way we share information, validate possessions, and handle logistics.

Recall that distributed ledger technology is the mechanism for recordkeeping and transfer of ownership that underpins cryptocurrencies. Over the past few years, the financial industry has conducted a great deal of research and development on how to adapt the more promising aspects of distributed ledger technology for use with more traditional financial assets. The industry has moved a number of these projects through a series of phases, often developing more incremental changes at first in order to gain confidence in the technology before tackling large projects with significant operational impacts. The industry is making steady progress and some projects could be live in some form this year.

Many of the use cases focus on the areas of post-trade clearing and settlement of securities transactions, cross-border payments solutions, and trade finance. The common thread running through these use cases is the presence of operational 'pain points' that generate inefficiencies and delays for users.

For example, post-trade reconciliation of securities transactions can be a time-consuming and resource-intensive process that involves numerous parties, operational steps, and message flows across the counterparties and their various agents involved in the transactions. Distributed ledger technology has the potential to provide synchronized, real-time views for those counterparties and agents that can speed up the process and reduce errors.

For cross-border transactions, the process for sending payments via the existing correspondent banking network can add time and money. Distributed ledger technology could potentially lower the costs and time it takes funds to reach the recipient through more direct connections, reducing the number of intermediaries required to effect the transaction.

The financial industry has been working on versions of distributed ledger technology that help address a number of concerns, including the loose governance around the maintenance, security, and reliability of the technology

for cryptocurrencies. Most projects are organized either as partnerships between technology and financial services firms or through consortia of technology firms, financial firms, and other interested parties. To some degree, these alliances may provide prototype governance arrangements for future technology deployments in financial services.

In addition, there are exchanges and clearinghouses that are actively exploring the use of distributed ledger technology, which represent the more traditional model of multilateral organization in the financial markets. Although the governance arrangements may need to evolve over time, one thing that is clear is that strong governance arrangements will be required to provide the coordinated operational and financial risk management for the critical clearing and settlement operations that underpin our financial markets.

In addition, the industry continues to make progress on the ability of distributed ledger technology to handle the very large volumes of transactions that take place both in financial markets and in retail payments every day. As I highlighted in 2016, this technical challenge of achieving the necessary scale and throughput is an important hurdle⁹.

Much of this challenge has been tied to the time it takes to achieve 'consensus' on a distributed ledger. Consensus is the process by which new transactions are broadcast to all the participants, or nodes, in the network and each node accepts those new transactions as valid additions to the ledger. The initial consensus method used by Bitcoin, called 'proof of work,' is designed to deal with the lack of information and trust among the users of the network by providing tools and incentives to overcome this problem.

But it is a highly resource-intensive process that limits the number of transactions that can be processed each second. The proof of work consensus model represents a trade-off between operational efficiency and scalability,

on the one hand, and the ability to operate without sufficient trust or information about the entities in the network, on the other hand.

Fundamentally, however, the financial industry does not operate as a trustless network. Rather, the industry has long specialized in the collection and analysis of information about customers and counterparties as a core part of banking operations. Even allowing for the inevitable imperfect information that may result, it would seem natural for the financial industry to be able to leverage institutional information and trust in ways that allow for more efficient methods to achieve consensus than proof of work.

Consequently, the industry and the academic community have focused a great deal of attention on various consensus methods that can provide greater scalability either by leveraging trust, which relaxes some operational and incentive constraints, or possibly by devising methods without trust that are much less resource intensive. Some of the technology firms working with the financial industry are taking different approaches in this fast-moving arena.

Another important challenge for the industry has been leveraging distributed ledger technology while preserving the confidentiality of transactional information. At its core, distributed ledger technology is a shared ledger across multiple nodes in a network, likely representing multiple firms and legal entities. Ownership records and transactions flows from accounts on such a ledger are typically copied and stored on all the nodes in the network.

The financial industry, however, must develop distributed ledgers that adhere to laws, regulations, and policies that protect important information of the parties and their customers. Clearly, a model where every entity on the network can see everyone else's account holdings and transactions history will not satisfy broad industry confidentiality requirements. In addition, stored data that may be protected cryptographically today may not be

protected as the technology continues to advance, which adds even more difficulty and urgency to the work on confidentiality.

The industry has been working to develop approaches to preserve confidentiality so that only the authorized parties relevant to a transaction can see the details recorded on the ledger. Some of these approaches involve encrypting data on the ledger so that the ledgers can still be copied across all the nodes in the network, but an entity cannot look at any element of that ledger except for transactions in which it has been involved.

Other approaches include so-called zero-knowledge proofs or ring signatures that allow entities to validate transactions without seeing confidential information. Still others are looking at platforms that connect multiple ledgers rather than having one single ledger that is copied across all nodes in the network. While questions remain about the usefulness and viability of each of these approaches, it is important to underscore that preserving confidentiality is an important area of research.

Finally, perhaps the biggest potential benefit for payments, clearing, and settlement of distributed ledger technology may be resiliency. Distributed ledger technology may enable a network to continue to operate even if some of the nodes on the network are compromised because of the ability of the other nodes in the network to pick up the slack and continue processing transactions.

One challenge going forward will be to understand the implications that the confidentiality tools and different approaches to consensus under consideration may have on the resilience of the distributed ledger. Given that resiliency is a key potential benefit of distributed ledger technology over existing platforms, it is critical to understand the trade-offs between resiliency and a consensus method that focuses on operational speed, or between resilience and confidentiality.

Conclusion

It is an exciting time for the financial sector as digital innovations are challenging conventional thinking about currency, money, and payments. Cryptocurrencies are strikingly innovative but also pose challenges associated with speculative dynamics, investor and consumer protections, and money-laundering risks.

Although central bank digital currencies may be able to overcome some of the particular vulnerabilities that cryptocurrencies face, they too have significant challenges related to cybersecurity, money laundering, and the retail financial system.

Even so, digital tokens for wholesale payments and some aspects of distributed ledger technology - the key technologies underlying cryptocurrencies - may hold promise for strengthening traditional financial instruments and markets. I have highlighted a few key areas where the technology is advancing to deal with some important policy, business, and operational challenges.

The Federal Reserve is dedicated to continuing to monitor industry developments and conduct research in these vital areas. I remain optimistic that the financial sector will find valuable ways to employ distributed ledger technology in the area of payments, clearing, and settlement in coming years. ■

Lael Brainard is a Federal Reserve Board Governor

Endnotes

1. I am grateful to David Mills of the Federal Reserve Board for his assistance in preparing this text. The remarks represent

my own views, which do not necessarily represent those of the Federal Reserve Board or the Federal Open Market Committee.

2. See, for example, <https://www.coinbase.com/charts>.

3. Lael Brainard, *"An Update on the Federal Reserve's Financial Stability Agenda"* (speech delivered at the Center for Global Economy and Business, Stern School of Business, New York University, New York, NY, April 3, 2018).

4. For example, Coincheck, a Tokyo-based cryptocurrency exchange was hacked in 2018. See

<https://www.wsj.com/articles/cryptocurrency-worth-530-million-missing-from-japanese-exchange-1516988190>. A

similar attack occurred back in 2014 to another Tokyo-based cryptocurrency exchange, Mt. Gox. See

<https://www.wsj.com/articles/mt-gox-to-hold-news-conference-1393579356>.

5. See https://g20.org/sites/default/files/media/communique_-_fmcbg_march_2018.pdf.

6. See, for example, the recent joint Committee on Payments and Market Infrastructures and Markets Committee report *"Central Bank Digital Currencies (PDF)"*, March 2018. A Fed-issued digital currency might have implications for the rates and terms of funding for US financial institutions and even the US government as well as the transmission of monetary policy that I will not discuss here.

7. See <https://fedpaymentsimprovement.org/faster-payments/path-to-faster-payments/>

8. For example, see Bank of Canada's Project Jasper,

<https://www.bankofcanada.ca/research/digital-currencies-and-fintech/fintech-experiments-and-projects/>

9. Lael Brainard, *"The Use of Distributed Ledger Technologies in Payment, Clearing, and Settlement"* (speech delivered at the Institute of International Finance Blockchain Roundtable, Washington, DC, April 14, 2016); and Lael Brainard,

"Distributed Ledger Technology: Implications for Payments, Clearing, and Settlement" (speech delivered at the Institute of International Finance Annual Meeting Panel on Blockchain, Washington, DC, October 7, 2016).

This article is based on a [speech](#) delivered at the Decoding Digital Currency Conference 15 May 2018, sponsored by the Federal Reserve Bank of San Francisco

Cryptocurrencies: financial stability and fairness

Jon Danielsson argues that if private cryptocurrencies were to find widespread economic use the result would be increased financial instability, inequality, and social instability

Cryptocurrencies are primarily held today for speculative reasons and see little economic use outside of that. This column argues that if private cryptocurrencies were to find widespread economic use, either coexisting with or fully displacing fiat money, the result would be increased financial instability, inequality, and social instability.

Cryptocurrencies are controversial. Advocates see them as a better form of money that imparts freedom, useful economic functions, fabulous riches and hedges against bad government policies. The sceptics worry about investor protection and environmental impact.

Cryptocurrencies today do not pose much threat to financial stability, as noted by den Haan *et al.* (2017) and a recent Financial Stability Board report (Financial Stability Board 2018).

That will change if cryptocurrencies find widespread economic use, either coexisting with or fully displacing fiat money. They will then have a strong and negative impact on financial stability, equality and social cohesion, as I discuss in Danielsson (2018c).

Financial stability

Some cryptocurrencies promise to replace fiat money with private money whose integrity is underpinned by algorithms, not government guarantees. This includes the most prominent, Bitcoin, and many of the cryptocurrencies aiming to improve on Bitcoin.

Do such cryptocurrencies pose financial stability threats? Most observers do not think so. After all, an asset class that amounts to less than \$200 billion is quite small compared to the overall asset markets, especially

since cryptocurrencies are primarily held for speculative reasons and see trivial economic use outside of that. Cryptocurrencies do not threaten financial stability today.

However, supposing that cryptocurrencies like Bitcoin were to succeed in the marketplace for money and see widespread use in day-to-day economic activities. Would there be financial stability consequences?

If we are to transit from a fiat monetary system to a crypto-based one, the only right way is for all created coins to be under public ownership from the outset

Yes. A cryptocurrency-based monetary system ('cryptosystem') is subject to the same forces of financial instability as the current fiat system, while further adding new forms of instability.

The same fundamental forces are behind almost every financial crisis, regardless of the underlying monetary system (gold, fiat, or cryptos) – excessive amounts of endogenous risk (Danielsson *et al.* 2012) that is hidden until it is too late, only to manifest itself once a crisis is underway when it is too late to do anything except react.

All serious financial risk is endogenous, caused by the interaction of the human beings that make up the financial system. They are prone to act as a procyclical herd and are subject to a variety of constraints and biases affecting decisions, and hence outcomes. In boom times, behaviour is more idiosyncratic than during crisis when the self-preservation instincts kick in. This is why booms build up slowly and deflate rapidly – prices go up the escalator and down the elevator.

Fundamental to financial instability is the creation of money. In the current fiat system, the central bank creates base money and the financial system creates higher forms of money such as M1 and M2. The primary damage from financial crises is when the process goes in reverse due to rapid deleveraging.

The same applies to cryptosystems. The mining process only controls the creation of base money (the number of coins), while the supply of money is crypto M1 and M2, and just like with fiat, the creation of such money is under nobody's control. While some crypto-advocates argue this would not happen because a cryptosystem would be a full reserve system, that is unlikely. Some people will want to lend out coins and others to borrow, and if such claims get traded, crypto M1 and M2 is created. Similarly, some crypto banks will find it more profitable to operate as the fractional reserve institutions of today.

At the same time, a cryptosystem has additional forms of systemic risk not present in fiat systems. Most of the money in a cryptosystem, crypto M1 and M2, is only claims on coins. In times of crisis when confidence evaporates, that can by itself lead to a panic since if economic agents start to worry their money is not equivalent to coins, they will run their financial institutions.

We can't resolve such cryptosystem crises because we can't create new base money (coins), at least if money is like Bitcoin with a fixed mining schedule. While we can certainly conceive of a cryptocurrency with an algorithm that creates new coins during a crisis, such a currency would be an anathema to the crypto-advocates of today who explicitly do not want the supply of money to be adjusted based on economic conditions.

While fiat systems are affected by the same endogenous risk, they have a safety valve. Because the fiat system can create infinite amounts of liquidity when needed, the central bank can guarantee shock and awe. It can tell the financial markets that no matter what the demand for liquidity, it can meet it, minimising deleveraging, keeping the economy going, and preventing the disastrous failures of the financial institutions without whom the economy cannot function.

Such credible demonstration is stabilising by itself. Once the markets know the central bank will do what it takes, a crisis can be mitigated; we saw that in action with the ECB's "*we will do whatever it takes*" announcement in 2012. The failure of the Federal Reserve to do the same during the Great Depression was the reason a financial crisis and economic recession became a depression. The globally coordinated liquidity creation in the autumn of 2008 is the reason why that crisis did not become a depression.

Ultimately, this means that a monetary system based on the private cryptocurrencies of today would suffer from higher systemic risk than a well-managed fiat system.

Fairness

If privately issued cryptocurrencies become real competitors to fiat money, someone is going to make a profit.

The current market value of all cryptocurrencies is around \$200 billion; the total value of M1 in the G20 economies is \$31 trillion. If we fully replace fiat money with cryptocurrencies, a \$31 trillion profit will be transferred to a handful of crypto-speculators, equivalent almost to the annual GDP of the US and China combined (at \$34.5 trillion). That is the upper bound; private cryptocurrencies may end up coexisting with fiat money, so the market value of cryptocurrencies may end up being somewhere between \$200 billion and \$31 trillion.

The success of privately issued cryptocurrencies implies a substantial transfer of a public good to private speculators. It would dwarf the largest historical expropriations of public goods, including the Inclosure Acts in England and Wales when 2,800,000 hectares of common land were transferred to private ownership, the Highland Clearances in Scotland, the confiscation of Native American land in the US and Aboriginal land in Australia, and the more recent Russian and Chinese privatisations.

Would the \$31 trillion (or any amount significantly higher than the current \$200 billion) switchover from M1 to cryptocurrencies be of the same nature? The wealth transfers in the examples above happen at the instigation of the sovereign, which deliberately enriched some citizens and impoverished others. By contrast, current transfers to crypto-speculators are entirely voluntary. I buy Bitcoin at my own volition.

However, for cryptocurrencies to displace fiat money, the sovereign has to acquiesce, to make the deliberate decision that Bitcoin is to be used alongside, or instead of, dollars. The reason is that fiat money is legal tender, and the sovereign needs to permit the displacement of fiat.

Consequently, the transfer of up to \$31 trillion to a handful of private speculators would dwarf any historical antecedents to become the largest expropriation of a public good in human history.

This is strongly disputed by crypto-advocates, who find such notions Marxist and that it does not recognise the just return to an entrepreneur taking risk. Such counterarguments miss the point. There is widespread support for the idea that the entrepreneur should benefit from the fruits of their labour, accomplished in a competitive marketplace, not by expropriation.

Unlike entrepreneurial wealth, the crypto-fortunes would be created by inclosing a public good and it would be fundamentally unfair to transfer the public money supply to crypto-speculators.

Conclusion

While I think that cryptocurrencies do not make much sense and are destined to end up worthless, (Danielsson 2018a, 2018b), suppose I am wrong. The success of privately issued cryptocurrencies like Bitcoin would come at a considerable cost. It would increase financial instability and wealth inequality, while bringing no discernible benefits.

If we are to transit from a fiat monetary system to a crypto-based one, the only right way is for all created coins to be under public ownership from the outset. ■

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References

Danielsson, J (2018a), [“Cryptocurrencies don’t make sense”](#), VoxEU.org, 13 February.

Danielsson, J (2018b), [“Cryptocurrencies are lousy investments”](#), VoxEU.org, 15 June.

Danielsson, J (2018c), [“Cryptocurrencies: Policy, economics and fairness”](#), LSE Systemic Risk Centre Discussion Paper 86.

Danielsson, J, HS Shin and J-P Zigrand (2009), [“Modelling financial turmoil through endogenous risk”](#), VoxEU.org, 11 March.

den Haan, W, M Ellison, E Ilzetzki, M McMahon and R Reis (2017), [“Economists relaxed about bitcoin: New CFM-CEPR expert survey on cryptocurrencies, the financial system, and economic policy”](#), VoxEU.org, 21 December.

Financial Stability Board (2018), [Crypto asset markets. Potential channels for future financial stability implications](#), technical report.

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The future of money



Cryptocurrencies such as Bitcoin should be regulated to crack down on illegal activities and protect the financial system, Mark Carney warns

“Everyone can create money; the problem is to get it accepted” – Hyman Minsky¹



Figure 1. A £20 banknote

This £20 note is significant. Significant because it honours Adam Smith, the great moral philosopher and hero of the Scottish Enlightenment. Significant because it is a significant amount of money, enough to buy you a burger and a few pints, or if you fancy a quieter but highly stimulating night in, copies of Smith’s *Wealth of Nations* and *The Theory of Moral Sentiments*. Significant because without money the decentralised exchange of Smith’s invisible hand could not operate. Money unlocks the specialism of labour in the pin factory and

“the great increase in the quantity of work that results.”² And only money can solve the coincidence of wants between the butcher, the brewer, the baker and the student on a Friday evening³.

Many of you probably don't see Adam Smith notes too often, because you use electronic forms of money such as debit cards and mobile phones for your everyday purchases and go online for your larger ones.

A number of you may hold other forms of electronic money – crypto or virtual currencies such as Bitcoin, Ether or Scotcoin. And a few may view paper money – even the Bank of England itself – as archaic vestiges of an old centralised order of payments that will soon be swept aside by a digital, distributed future.

And that's my topic: the future of money. Specifically, how developments in money and payments technologies could transform our economy in ways good and bad. And how, for the good of the people of the United Kingdom, the Bank of England is helping to manage the potential risks and to realise the promise of the future of money.

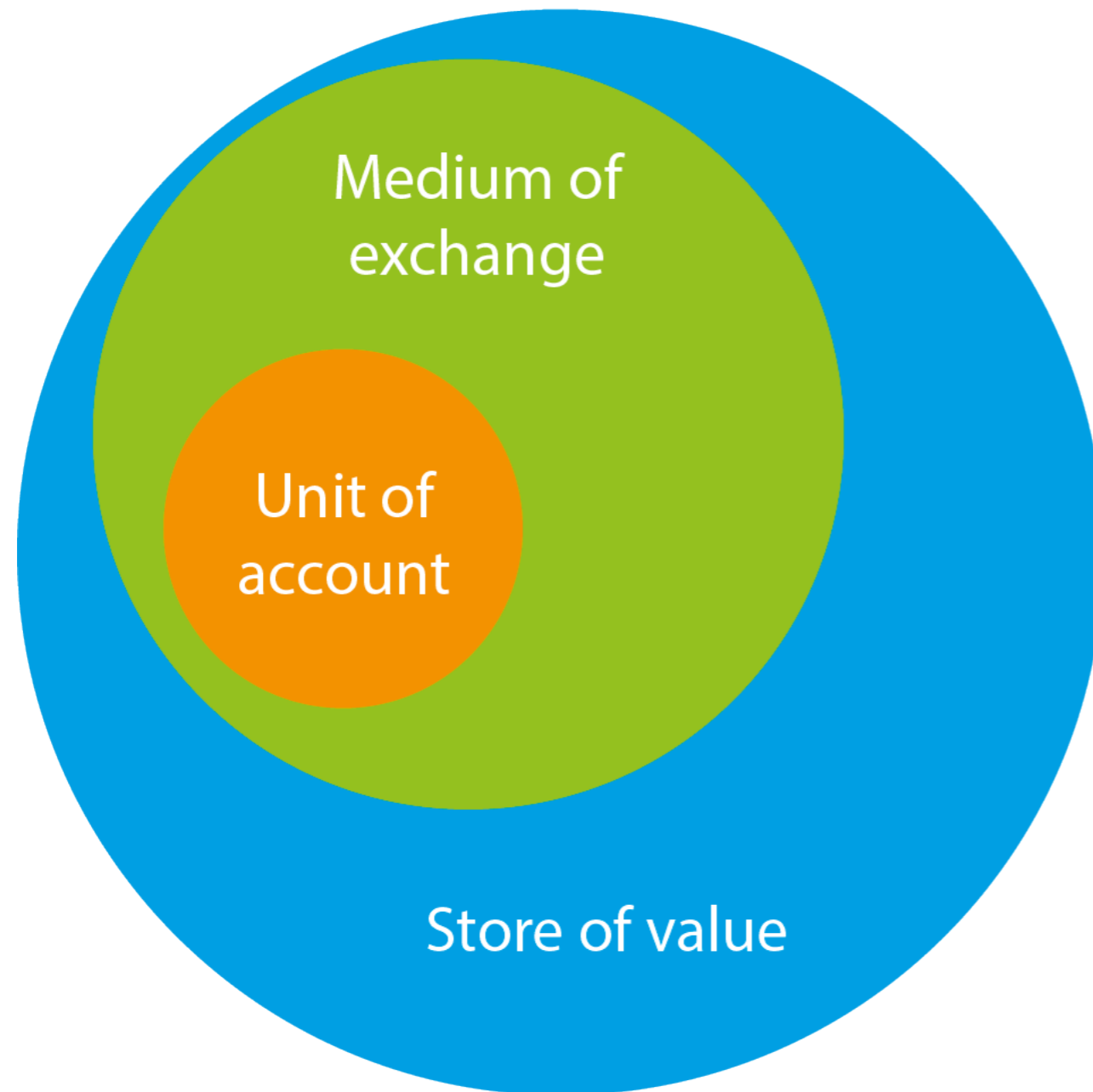
What is money?

In *The Wealth of Nations*, Adam Smith defines money by the roles it plays in society, in particular, how well it serves as:

- A store of value with which to transfer purchasing power from today to some future time;
- A medium of exchange with which to make payments for goods and services; and
- A unit of account with which to measure the value of a particular good, service, saving or loan.

These functions of money operate in a hierarchy (see Figure 2). There are many assets that people view as stores of value — houses, for instance — that are not used as media of exchange. By comparison, an asset can only act as a

Figure 2. The three functions of money



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medium of exchange if at least two people are prepared to treat it as a store of value, at least temporarily. And for an asset to be considered a unit of account, it must be able to be used as a medium of exchange across a variety of transactions over time between several people⁴.

The hierarchy points to the reality that money is a social convention. We accept that a token has value whether made of metal, polymer or code because we expect that others will also do so readily and easily.

The tokens representing money have taken many forms over the millennia from cowry shells in ancient times to cigarettes during the Second World War and mobile phone minutes in modern Kenya.

Bringing crypto-assets onto a level regulatory playing field could also catalyse private innovation to create a more resilient, effective payments system

And so it was when the Bank of England was founded in 1694 by a Scot, William Paterson. Originally its mission (*“to promote the good of the people”*) was fulfilled by issuing hand-written banknotes, backed by and exchangeable into gold, to help finance King William III’s war with France.

By the late eighteenth century, fears of renewed Anglo-French conflict contributed to runs on the Bank which drained its gold reserves and led to the suspension of convertibility of its notes into gold. This prompted an MP to describe the Bank as *“an elderly lady in the City who had...unfortunately fallen into bad company”*. To this day, the Bank of England is known as the Old Lady of Threadneedle Street.

It was not until the 1844 Bank Charter Act that the Bank of England’s note issuance responsibilities were formalised and the rights of others to issue notes in England and Wales began to be phased out⁵. Today the Bank is the sole issuer of banknotes in England and Wales, while a number of Scottish and Northern Irish banks can issue notes provided that they are backed by Bank of England notes or funds on deposit at the Bank of England⁶.

Most forms of money, past and present, have nominal values that far exceed their intrinsic ones. And this gap has meant that money has a long and sorry history of debasement. Over the centuries, forms of private money, such as the notes issued by American banks during the free banking of the 19th century, have inevitably succumbed to oversupply and eventual collapse.

Adam Smith worried about the potential debasement of public money and for good reason. Throughout history, governments would often betray the trust of their citizens be it Henry VIII reducing the precious metal content of his coins during the Tudor era, Pitt the Younger depleting the gold vaults of the Old Lady during the Regency period, or a pliant Reichsbank financing the government in Weimar Germany.

With the wisdom borne from such sad experience, most countries have now settled on centralised, public fiat money backed by robust institutions in order to provide the public with money that is both highly trusted and easy to use.

To understand the breadth of institutions needed for good money, it is important to recognise that modern money takes three forms that are linked by retail and wholesale payments systems. Each link in the chain is critical to the resilience of money. The first form of money is the banknotes issued by central banks, such as the Adam Smith £20s. These account for just 3% of the stock but 40% of all consumer transactions⁷.

Next is electronic central bank money in the form of the reserves that commercial banks hold with us, including to settle transactions with one another. Finally, and most significantly, the electronic deposits that commercial banks create when they extend loans to borrowers, accounting for fully 80% of money in the system⁸.

The private financial sector cannot create money without limit, but is disciplined by competition, constrained by prudential regulation, and limited by decisions of households and companies that can reduce the stock of money (by, for example, repaying existing debt).

Monetary policy is the ultimate limit on money creation because it directly influences the price of money and other financial assets and therefore the demand for the money created by the private sector⁹. Most of the institutions that underpin sterling's effectiveness as money are now housed in the Bank of England¹⁰. In particular:

- Our commitment to the highest quality banknotes that you and the publican can use with confidence. That paper £20 note contains sophisticated counterfeit protections ranging from holographic images to ultraviolet features, which will be further enhanced when we switch to a polymer £20 in 2020¹¹;

- The foundation of the payments system, RTGS, which processes over £600 billion of bank-to-bank payments per day to the highest standards of efficiency and resilience¹²;
- The Monetary Policy Committee which conducts monetary policy independently to achieve price stability defined by the 2% inflation target;
- The Prudential Regulation Committee which is charged with ensuring the safety and soundness of the banks and building societies that hold your money;
- The Financial Policy Committee with its wide powers to maintain the resilience of the financial system as a whole; and
- The Bank's powers and facilities that provide a wide range of liquidity to banks and other financial institutions in order to promote the continuous functioning of the financial system during shocks.

The Bank has been given clear remits by Parliament for these responsibilities and has operational independence to use its powers to achieve them. We are accountable to Parliament and the people for our performance.

The combination of this robust institutional framework and the fact that only sterling is legal tender in the UK sets a very high bar for competing forms of money to dislodge sterling.

But at present, more than a thousand virtual or 'crypto' currencies are trying to do just that.

The advent of cryptocurrencies

In the depths of the global financial crisis, the coincidence of technological developments and collapsing confidence in some banking systems sparked the cryptocurrency revolution. Its advocates claim that a decentralised cryptocurrency, such as Bitcoin, is more trustworthy than centralised fiat money because:

- Its supply is fixed and therefore immune from the age-old temptations of debasement;
- Its use is free from risky private banks; and
- Those who hold it can remain anonymous and therefore free from the ravenous eyes of tax authorities or worse still law enforcement.

Some also argue that cryptocurrencies could be more efficient than centralised fiat money because the underlying distributed ledger technology cuts out intermediaries like central banks and financial institutions and allows payments to be made directly between payer and payee^{13, 14}.

In this spirit of dystopian fear and libertarian optimism, the message accompanying the first or genesis Bitcoin block read: *"The Times 3 Jan 2009 Chancellor on brink of second bailout for banks."*

How well do cryptocurrencies fulfil the roles of money?

The answer has to be judged against the functioning of the entire cryptocurrency ecosystem (which extends beyond the currencies themselves to the exchanges on which cryptocurrencies can be bought and sold, the miners who create new coins and verify transactions and update the ledger, and the wallet providers who offer custodian services).

The long, charitable answer is that cryptocurrencies act as money, at best, only for some people and to a limited extent, and even then only in parallel with the traditional currencies of the users. The short answer is they are failing.

Poor stores of value

Cryptocurrencies are proving poor short-term stores of value. Over the past five years, the daily standard deviation of Bitcoin was ten times that of sterling. Consider that if you had taken out a £1,000 loan in Bitcoin last December you'd be short about £500 right now. If you'd done the same last September, you'd be ahead by £2,000. That's quite a lottery. And Bitcoin is one of the more stable cryptocurrencies. Indeed, the average volatility of the top ten cryptocurrencies by market capitalisation was more than 25 times that of the US equities market in 2017.

This extreme volatility reflects in part that cryptocurrencies have neither intrinsic value nor *any external backing*. Their worth rests on beliefs regarding their future supply and demand—ultimately whether they will be successful as money.

Thus far, however, rather than such a sober assessment of future prospects, the prices of many cryptocurrencies have exhibited the classic hallmarks of bubbles including new paradigm justifications, broadening retail enthusiasm and extrapolative price expectations reliant in part on finding the greater fool.

Far from being strengths, the fixed supply rules of cryptocurrencies such as Bitcoin are serious deficiencies. Fundamentally, they would impart a deflationary bias on the economy if such currencies were to be widely adopted¹⁵. If *“those who cannot remember the past are condemned to repeat it”*¹⁶, recreating a virtual global gold standard would be a criminal act of monetary amnesia.

In the short run, the fixed supply of Bitcoin has fed a global speculative mania that has encouraged a proliferation of new cryptocurrencies. As my colleague Agustin Carstens has argued, this surge of competitors and the 'forking' of Bitcoin echoes the debasement of private monies in the past¹⁷.

Inefficient media of exchange

The most fundamental reason to be sceptical about the longer-term value of cryptocurrencies is that it is not clear the extent to which they will ever become effective media of exchange.

Currently, no major high street or online retailer accepts Bitcoin as payment in the UK, and only a handful of the top 500 US online retailers do.

For those who can find someone willing to accept payment for goods and services in cryptocurrencies, the speed and cost of the transaction varies but it is generally slower and more expensive than payments in sterling. That's because the more heavily used cryptocurrencies face severe capacity constraints compared with other payment systems. For example, Visa can process up to 65,000 transactions per second globally against just 7 per second for Bitcoin.

And if you use a debit or credit card in the UK, the transaction is completed in seconds and without exchange rate risk. In contrast, Bitcoin users can face queues of hours. Those wanting to get to the front to make time-pressing payments – for last orders, for example – need to offer up a transaction fee sufficiently large to persuade Bitcoin 'miners', who verify and process transactions, to do so quickly. The fees paid vary through time, but reached £40 in late 2017. Fees are currently around £2, but even that is expensive relative to cash, cards or online payments which cost the retailer around 1.5 pence, 8 pence and 19 pence respectively¹⁸.

Over time, Bitcoin transaction fees could rise further because the subsidy miners enjoy by being partly paid with rewards of new units of currency, will decline given the total supply of Bitcoin cannot exceed 21 million¹⁹. Furthermore, the costs of Bitcoin mining are enormous. Its current annual electricity consumption is estimated by some to be up to 52 terawatt hours, double the electricity consumption of Scotland²⁰. In comparison, the global Visa credit card network's energy use is less than ½ of 1% of that of Bitcoin, despite processing 9,000 times more transactions²¹.

Virtually non-existent units of account

Given that they are poor stores of value and inefficient and unreliable media of exchange, it is not surprising that there is little evidence of cryptocurrencies being used as units of account. Retailers that quote in Bitcoin usually update at very high frequency so as to maintain stable prices in traditional currencies such as US dollars or sterling. The Bank is not aware of any business that accepts Bitcoins in payments that also maintains its accounts in Bitcoin.

The policy response

Even though their prospects of replacing fiat money are tenuous at best, cryptocurrencies are of growing interest to policymakers, many of whom prefer to term them crypto-assets expressly because they are not true currencies—a convention I will adopt for the balance of my remarks.

On the upside, as I will come onto in a moment, some of the underlying technologies are exciting. Whatever the merits of cryptocurrencies as money, authorities should be careful not to stifle innovations which could in the future improve financial stability; support more innovative, efficient and reliable payment services as well as have wider applications²².

On the downside, at present, crypto-assets raise a host of issues around consumer and investor protection, market integrity, money laundering, terrorism financing, tax evasion, and the circumvention of capital controls and international sanctions.

The Bank of England's FPC is currently considering the risks posed to UK financial stability. And internationally the Financial Stability Board (FSB) will report to the G20 in Argentina later this month on the financial stability implications of crypto-assets. At present, in my view, crypto-assets do not appear to pose material risks to financial stability.

This is in part because they are small relative to the financial system. Even at their recent peak, their combined global market capitalisation was less than 1% of global GDP. In comparison, at the height of the dotcom mania, the valuations of technology stocks were closer to about a third of global GDP. And just prior to the global financial crisis, the notional value of credit derivative swaps was 100%. In addition, major UK financial institutions have minimal exposures to the crypto-asset ecosystem.

Looking ahead, financial stability risks could rise if retail participation significantly increased or linkages with the formal financial sector grew without material improvements in market integrity, anti-money laundering standards and cyber defences.

Authorities are rightly concerned that given their inefficiency and anonymity, one of the main reasons for their use is to shield illicit activities²³. This cannot be condoned. Anarchy may reign on the dark web, but in the UK it's just a song that your parents used to listen to.

Moreover, structural vulnerabilities in cryptocurrencies mean that they are inherently risky compared with traditional financial assets. The risks include extreme price volatility and poor market liquidity due to fragmented markets and highly concentrated holdings, which in turn facilitate manipulation and misconduct. These vulnerabilities are compounded by operational and technological weaknesses, as evidenced by a series of major crypto-asset heists²⁴.

In addition, there is unease that the combination of these vulnerabilities and widening retail participation could damage the reputations of those financial intermediaries connected to crypto-asset markets. In extreme circumstances, it could even undermine confidence in the broader financial system itself, particularly if people held an unfounded belief that authorities had legitimised these activities.

To isolate, regulate or integrate?

Authorities need to decide whether to isolate, regulate or integrate crypto-assets and their associated activities. A few jurisdictions have banned crypto-assets outright²⁵. And some regulators have sealed off crypto-assets from the core of the financial system in order to curtail risk of contagion. Most prominently, China—which had been one of the most active crypto-asset markets—recently banned exchanges, financial institutions and payment processors from handling them.

If widely adopted, however, isolation risks foregoing potentially major opportunities from the development of the underlying payments technologies.

A better path would be to regulate elements of the crypto-asset ecosystem to combat illicit activities, promote market integrity, and protect the safety and soundness of the financial system. The time has come to hold the

crypto-asset ecosystem to the same standards as the rest of the financial system. Being part of the financial system brings enormous privileges, but with them great responsibilities.

In this spirit, the EU and the US are requiring crypto exchanges to meet the same anti-money laundering and counter the financing of terrorism standards as other financial institutions²⁶.

Conduct and market regulators are considering how to classify crypto-assets, in order to secure market integrity and determine the appropriate type and level of investor protections. In my view, holding crypto-asset exchanges to the same rigorous standards as those that trade securities would address a major underlap in the regulatory approach. And as the SEC and FCA have argued forcefully, so-called initial coin offerings will not be allowed to use semantics to avoid securities laws designed to protect retail investors in particular.

Prudential regulators, like the Bank's PRC, are in the process of clarifying how the existing regulatory requirements – including for capital – which institutions at the core of the financial system must meet, apply to any future crypto-asset activity undertaken and exposures acquired. Recently in the US, the regulated exchanges CME and CBOE have started to offer Bitcoin futures. Having derivatives traded and cleared on exchanges could, in time, raise standards in them and mean that regulators have better information about how the underlying markets function.

The discussions at the FSB and the G20 will be valuable given the diversity of possible approaches and the decentralised and cross-border nature of crypto-assets.

Pointing to the future

I trust you have gathered by now that for many reasons the crypto-assets in your digital wallets are unlikely to be the future of money. But that is not meant to dismiss them. Their core technology is already having an impact.

Bringing crypto- assets into the regulatory tent could potentially catalyse innovations to serve the public better. Indeed, crypto-assets help point the way to the future of money in three respects:

- By suggesting how money and payments will need to adjust to meet societies' changing preferences, particularly for decentralised peer-to-peer interactions;
- Through the possibilities their underlying technologies offer to transform the efficiency, reliability and flexibility of payments; and
- By the questions they raise about whether central banks should provide a central bank digital currency (CBDC) accessible to all.

Let me take these in turn. First, crypto-assets are part of a broader reorganisation of the economy and society into a series of distributed peer-to-peer connections across powerful networks²⁷. People are increasingly forming connections directly, instantaneously and openly, and this is revolutionising how they consume, work, and communicate.

Yet the financial system continues to be arranged around a series of hubs and spokes like banks and payments, clearing and settlement systems. Crypto-assets are an attempt to create the financial architecture for peer-to-peer transactions. Even if the current generation is not the answer, it is throwing down the gauntlet to the existing payment systems. These must now evolve to meet the demands of fully reliable, real-time, distributed transactions.

Second, the technologies underlying crypto-assets, particularly distributed ledger, can:

- Increase the efficiency of managing data;
- Improve resilience by eliminating central points of failure, as multiple parties will share replicated data and functionality;
- Enhance transparency (and auditability) through the creation of instant, permanent and immutable records of transactions; and
- Expand the use of straight-through processes, including with 'smart contracts' that on receipt of new information, automatically update and if appropriate, pay.

These properties mean distributed ledger technology could transform everything from how people manage of their interactions with public agencies, including their tax and medical records, through to how businesses manage their supply chains.

Third, crypto-assets raise the obvious question about whether their infrastructure could be combined with the trust inherent in existing fiat currencies to create a central bank digital currency (CBDC). Currently only banks can hold central bank money electronically in the form of a settlement account at the Bank of England. To be truly transformative a general purpose CBDC would open access to individuals and firms.

The Bank has an open mind about the eventual development of a CBDC and an active research programme dedicated to it. That said, given current technological shortcomings in distributed ledger technologies and the risks with offering central bank accounts for all, a true, widely available reliable CBDC does not appear to be a near-term prospect.

Moreover, whether it is desirable depends on the answers to a series of big policy questions. While these are largely for another day, I will note that a general purpose CBDC could mean a much greater role for central banks in the financial system. Central banks may find themselves disintermediating commercial banks in normal times and running the risk of destabilising flights to quality in times of stress²⁸.

There are also broader societal questions (that others would need to answer) such as how society balances privacy rights with the extent to which the information in a CBDC could be used to fight terrorism and economic crime. A CBDC shouldn't be a solution in search of a problem or an effort of central bankers to be down with the kids. Especially because there are more immediate ways to give you what you want.

The foundation of better payments

So while our research on a possible future CBDC will continue, we're more excited by the opportunities to transform digital payments now. In particular, the combination of the Bank's overhaul of RTGS and new technologies promises a world where payment systems can better meet societal demands for fully reliable, real-time, distributed peer-to-peer transactions.

RTGS is already pretty awesome, settling over £600 billion of payments in real time each day, while eliminating settlement risk and with an extremely high degree of resilience, all at a cost – to direct participants – of less than one ten millionth of the value of the average payment.

But RTGS are getting on and we are renewing it²⁹. What could this rather technical sounding development mean? More than you might think.

Currently when you pay for your everyday expenses, you probably use a debit card, a credit card or digital wallet on your phone. These need to be routed through the card provider's network. Over the past four years, the payment-related costs that your retailer or service provider pay (and ultimately pass on to you) have come down by 40% to around 8 pence per transaction.

While these are small – and much better than Bitcoin – they remain non-negligible. That's partly because there is limited scope for them to be competed away by innovators offering lower costs, faster speeds and more convenience, due to rigidities in the existing payments landscape, including restricted access to the UK's major bank-to-bank payment system, Faster Payments (FPS). To put a number on it, indirect members of FPS face relatively high fees of around 37 pence per transaction³⁰.

In 2016, the Bank announced arrangements under which non-bank payment service providers (PSPs) could access RTGS, and therefore FPS directly, and we expect the first will join this spring. PSPs that make the most of this development and reach critical mass could see their per transaction costs fall below those of debit and credit card providers. And the competition provided by the PSPs should incentivise existing providers to innovate as well.

Moreover, innovative PSPs could deliver a world where you can split a round in the pub electronically and instantaneously, needing nothing more from your friends than a QR code on their phone or their phone number. By so doing, electronic money will become more like its physical relative, allowing genuine, immediate peer-to-peer transactions, without the need for a middleman.

Our overhaul of RTGS is helping to reduce complexity and costs in other areas as well.

Take cross-border payments, where the Bank is leading by the adoption of emerging global standards for payments messaging and by working with other central banks and the private sector to explore the scope for cross-border payments in central bank money through synchronised national RTGS systems. This all could increase the speed and safety, as well as lower the costs, associated with cross-border transactions to support purchases and travel overseas.

When coupled with the capture of richer payments data made possible by its renewal, RTGS will help support innovative services for the more effective management of personal and company finances. These benefits will be amplified by the UK's ambition in implementing the Open Banking standard– under which the largest banks will be required to make customer data available to other existing firms and innovators, if the customer demands. In turn, this will help improve aggregator, comparison and switching services.

Taken together, these advances will support innovation that allows you to manage your finances seamlessly, from tracking how much you spend, to managing your future savings and current loans.

Finally, at the wholesale payments end, we've already explored whether the core of the new RTGS system could run on distributed ledger to discover that the technology is not yet sufficiently mature or reliable to run a system that settles the equivalent of a third of the UK's annual GDP each day and requires 5-sigma performance.

Nonetheless, the Bank believes that distributed ledger technology could over time significantly improve the accuracy, efficiency and security of processes across payments, clearing and settlement.

Securities settlement in particular is ripe for innovation. Transactions that take nanoseconds to execute, currently take days to settle along a chain involving many intermediaries. At stake, are the tens of billions of pounds of capital

that are tied up while settlement completes³¹. The best in the private sector are working hard unlocking this value. That's why the Bank is building the new RTGS so that new forms of securities settlement that meet our standards of resilience (including those using distributed ledger) will be able to plug in directly.

Ultimately this combination of new technology and direct access to RTGS could be applied to other assets such as helping make the payment, registration and Stamp Duty processes involved in house purchases quicker and more efficient.

The future of money

While Adam Smith was cautious about the role of the state, he recognised it should furnish the rules and conditions within which private innovation can flourish. In the monetary sphere, this means providing money which citizens can use with confidence and ease.

The Bank of England delivers just that through the quality of our banknotes, the stability of UK inflation, the resilience of our financial system, and efficiency and reliability of our core payment systems. We are overhauling our system, RTGS, so that private innovation can flourish. Bringing crypto-assets onto a level regulatory playing field could also catalyse private innovation to create a more resilient, effective payments system.

With these foundations in place, the scene is set for better payments and a better economy. ■

Mark Carney is Governor of the Bank of England

Endnotes

1. *'Stabilising an unstable economy'* Hyman Minsky, 1986
2. This is the quote as abbreviated on the £20. The full quote is "this great increase in the quantity of work which, in consequence of the division of labour, the same number of people are capable of performing", Book 1, Chapter 1, Smith, A., (1776) *'An inquiry into the nature and causes of the wealth of nations'*
3. "It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest". Book 1, Chapter 2, *ibid.*
4. For this reason, some economists consider the operation as a unit of account to be the most important characteristic of money. Indeed, it is commonly argued that a defining feature of monetary policy lies in central banks' control of the unit of account. See Ali, R, Barrdear, J, Clews, R and Southgate, J, (2014) *'The economics of digital currencies'*, Bank of England Quarterly Bulletin, 2014 Q3.
5. The last private bank to issue its own banknotes in England and Wales was Fox, Fowler and Company in 1921.
6. Seven banks in Scotland and Northern Ireland can issue banknotes. The Regulations specify that at least 60% of an authorised bank's notes in circulation must be backed by Bank of England notes and UK coin and that the remainder, plus all notes with the potential to enter circulation, must be backed either by such notes and coin or by funds placed on deposit in an interest-bearing account at the Bank of England.
7. The data are for 2016. To note, banknotes accounted for 45% of transactions in 2015, and as such there was a 5 percentage point fall year-on-year which may be related to increased use of cards and online payments.
8. See McLeay, M, Radia, A, and Thomas, R, (2014), *Money Creation in the Modern Economy*, Bank of England Quarterly Bulletin 2014 Q1, which notes that the reality of how money is created often differs from that found in standard textbooks, and rather than banks receiving deposits when households save and then lending them out, bank lending creates deposits.
9. Although it does not target monetary aggregates per se, the Bank of England conducts monetary policy to ensure the amount of money creation in the economy is consistent with low and stable inflation. In normal times, the Bank of

England implements monetary policy by setting the interest rate on central bank reserves. In exceptional times when interest rates cannot be lowered further, the Bank implements monetary policy by purchasing assets, which has the by-product of increasing the central bank reserve holdings of private banks.

10. Other institutions include legal tender status (meaning that you cannot be sued for non-payment of debts if you offer sterling to meet them) and the insurance of deposits of up to £85,000 at banks and building societies backed by the Government.

11. This will feature JMW Turner. For further information see

<https://www.bankofengland.co.uk/banknotes/polymer-20-pound-note>

12. The Bank operates the Real-Time Gross Settlement (RTGS) service and infrastructure that holds accounts for banks, building societies and other institutions. The balances in these accounts can be used to move money in real time between these account holders. This delivers final and risk-free settlement.

13. Whereas banks hold records of most fiat money and are entrusted to ensure its validity, with digital currencies, the ledger containing all transactions by all users is publicly available. Rather than placing trust in central institutions – such as banks (and by extension the centralised authorities like the Bank of England that supervise them) – reliance is placed on the network and the rules to update the ledger reliably.

14. Satoshi Nakamoto (2008), 'Bitcoin: A Peer-to-Peer Electronic Cash System' bitcoin.org, October 2008.

15. For example, the supply of Bitcoin is limited to 21 million units by 2040. In the long run, a fixed money supply may harm the macroeconomy by contributing to deflation in the prices of goods and services, and in wages. And the inability of the money supply to vary in response to demand would likely cause greater volatility in prices and real activity.

16. As the Italian philosopher George Santayana famously observed.

17. Carstens, A, (2018), "Money in the Digital Age: What Role Central Banks?" See

<https://www.bis.org/speeches/sp180206.htm>

18. Based on the British Retail Consortium's Payment Survey 2016, which surveys the costs that retailers incur for accepting payments, including bank charges, handling charges, infrastructure costs and write-offs (losses). Link to survey:

https://brc.org.uk/media/179489/payment-survey-2016_final.pdf

19. The reward for each new block halves every 210,000 blocks (approximately every 4 years) and currently stands at 12.5 bitcoin per block. This regular halving of the block reward results in an exponential slow-down in the growth rate of Bitcoin supply. It is estimated that by 2040 99.8% of total maximum Bitcoin supply will have been generated.

20. For Bitcoin energy usage, see: <https://digiconomist.net/bitcoin-energy-consumption>. For Scottish energy usage, see <http://www.gov.scot/Topics/Statistics/Browse/Business/Energy/EIS2018>

21. For Visa's energy usage, see their Corporate Social Responsibility Report (2016).

22. Innovations are reducing computational efforts to prove a transaction, such as Litecoin and Ethereum's proposed moves to "proof of stake" from "proof of work".

23. The proportion of crypto-assets used for illicit activity remains hard to quantify. One academic study suggests that about a quarter of Bitcoin users and one-half of all Bitcoin transactions are associated with illegal activity. Sean Foley, Jonathan R Karlsen, and Tālis J Putniņš (2018), 'Sex, Drugs, and Bitcoin: How Much Illegal Activity Is Financed Through Cryptocurrencies?' available at <http://dx.doi.org/10.2139/ssrn.3102645>.

24. In February 2014, MtGox, the largest Bitcoin exchange at the time, revealed that around 850,000 of customers' Bitcoins, then valued at around \$450 million, were missing and had likely been stolen. In 2016, 120,000 units of Bitcoin valued at \$72 million were stolen from Bitfinex's customer accounts. In January 2018, \$530 million of cryptocurrency "XEM" was stolen from Japanese exchange CoinCheck. In all cases, funds were stolen from "hot wallets", where the private key is stored on a computer or device that is connected, directly or indirectly, to the internet.

25. Cryptocurrencies have been banned in Bangladesh, Bolivia, Ecuador and Morocco.

26. In the EU, the revision of the 4th AML Directive will bring exchanges and wallet providers in the scope of the anti-money laundering and combatting the financing of terrorism rules. In the US, virtual currency exchanges are regulated as money transmitters and required to abide by Bank Secrecy Act obligations.

27. See Fergusson, N, (2017), 'The Square and the Tower: Networks, Hierarchies and the Struggle for Global Power'.

28. See Broadbent, B, (2016), "Central Banks and Digital Currencies", a speech given at the LSE

<https://www.bankofengland.co.uk/speech/2016/central-banks-and-digital-currencies>

29. See "A Blueprint for a new RTGS service for the United Kingdom", May 2017.

30. PSR indirect access market review,

<https://www.psr.org.uk/sites/default/files/media/PDF/MR1512-indirect-access-market-review-interim-report.pdf>

31. Oliver Wyman and Santander estimated that distributed ledger technology could reduce banks' infrastructure costs attributable to cross-border payments, securities trading and regulatory compliance by \$15-20bn per annum by 2022.

See: <https://santanderinnovations.com/fintech2/>

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Regulation within cryptocurrency markets

Alex Larsen examines the different ways to regulate
cryptocurrencies to ensure both protection and
innovation

According to Reuters: *“Japan’s financial regulator said on Friday it had ordered all cryptocurrency exchanges to submit a report on their system risk management, following the hacking of over half a billion dollars of digital money from Coincheck.”*

Whilst the whole premise of blockchain technology and cryptocurrencies revolves around it being essentially unhackable, the exchanges that trade these currencies are vulnerable. The introduction of system risk management (which we assume to be risk management of the software/operating systems and servers) checks is a step forward for the cryptocurrency space although it only covers one area of exposure linked to the cryptocurrency market.

History of incidents

Crypto currency has been a booming market with increases in some major coins in the high 1000’s of percent over the last year. This rise, coupled with a lack of regulation, has seen the cryptocurrency world being hit with a number of negative incidents from Ponzi schemes to fraud, scams and hacking incidents.

Bitconnect, which as of writing of this article, is trading at roughly \$8.60, a huge fall from its height of over \$300 a month ago, is an example of a potential major Ponzi scheme which has lost \$2.4 billion worth of value over 10 days.

The subpoena by US regulators of crypto exchange Bitfinex and its relationship with Tether is another concern to the crypto currency market with many claiming Tether to be a scam. Tethers are tokens backed by US dollar deposits, with each tether always worth one dollar. These tokens should be backed by dollars but thus far the company has yet to provide evidence of its holdings to the public and has not had any successful audits as of yet.

There have also been a large number of Initial Coin Offerings (ICO’s), used to raise money for startups by issuing tokens/coins, which have raised vast sums of money only for the owners to disappear with all the money, whilst

others have been less deliberate but have been just as devastating to investors. A cryptocurrency called Tezos, raised \$232 million last year, but suffered internal power struggles which has left the project in disarray.

This brings us to the current concern in Japan of cyber attacks of exchange platforms. Cyber attacks and hacking attempts of exchanges have been frequent with Bitfinex, coinbase and kraken amongst others having been closed down for days at a time during 2017 due to a number of hacking attempts. It is the successful hacking incidents which are the most worrying however, with successful hacks such as MT Gox, which cost almost 350 million and two

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attacks on Youbit which led to its bankruptcy. The most recent coincheck hacking was worth 500 million, a record, and it is this which has caused Japan to act.

Regulation

Last year, China took a definitive stand on regulation on crypto currencies which sent shockwaves through the market. Some feel it was perhaps heavy handed with ICO's being banned, bank accounts being frozen, bitcoin miners being kicked out and nationwide banning on the internet of cryptocurrency trading related sites. Others however believe that it has been a positive step, and has encouraged other governments to take regulation seriously and hopefully take a more balanced approach. It certainly isn't in the interest of governments to stop ICO's, which provide many positives including innovation, but they should certainly regulate them from a consumer protection, taxation and organised crime standpoint.

Implementing regulation also removes uncertainty for investors as well as the companies who are involved in ICO's. Uncertainty is the source of many risks and often a negative certainty is better than uncertainty as it allows a focus within set parameters.

It's important to remember that too little regulation doesn't offer protection and too much stifles innovation.

How to regulate

There are a number of ways to regulate cryptocurrencies and the following are just some examples:

- Framework for ICOs

New ICO's are currently not subject to much in terms of regulation globally. One of the problems is determining how they should be treated with some being considered securities. As a fund raising vehicle, there could

certainly be a framework that lays out key requirements of an ICO such as a company needing to be registered in order to issue a token, transparency in terms of individual members of the registered company as well as perhaps introducing a few requirements that regular IPO's require such as implementing risk management. Currently in USA, ICOs are expected to adhere to Anti Money Laundering (AML)/Know Your Customer (KYC) practices.

- Regulate exchanges

Exchanges, which is where much of the transactions take place in terms of trading coins, is a logical area of focus when it comes to regulations. South Korea's financial services commission for example, has stated that trading of cryptocurrencies can only occur from real-name bank accounts. This ensures KYC and AML compliance. According to the FSC, the measures outlined were intended to *"reduce room for cryptocurrency transactions to be exploited for illegal activities, such as crimes, money laundering and tax evasion."*

Regulators should focus on regulation that encourages transparency and minimises anonymity.

- Tax laws

Clarity needs to be brought into the tax laws in terms of when investors should pay capital gains. The USA has been quite quick to ensure that crypto-to-crypto transactions are now taxable and not just crypto to Fiat currency transactions. This is not the case in the UK however, where things are less clear and will become even more so, once cryptocurrencies start to introduce dividend like behaviour.

- Reserve requirements of exchanges

Most banks and stock exchanges are required to hold a certain amount in reserves in order to survive any major downturn or crash. This should most certainly be the case for cryptocurrency exchanges too especially considering the volatility which sees crashes of 60% several times a year with some crypto currencies falling

90% before recovering. This is also known in part as systemic risk which could be what the Japanese financial regulator defines as system risk.

- System risk management

As we have seen from this Japan story, one way of ensuring more protection and reliability is by ensuring there is regulation around system risk management on exchanges. There should be minimum requirements protecting against hacking, phishing and other cyber related attacks. The requirements could be scaled against value of the exchange, number of users or number of daily transactions.

It's important to note that much is being done to reduce the risks of hacking incidents such as the concept of a decentralised exchange. This would essentially be a cryptocurrency exchange on the blockchain, much like the cryptocurrencies themselves. This would reduce hacking significantly and whilst it is not currently practical, it could be the standard of the future.

Self-regulation

The cryptocurrency market gets a lot of negative publicity and much of this could be rectified if there was more self-regulation. It would also reduce volatility within the market and bring about positive change. This refers to both exchanges and ICO's alike.

The Japan Blockchain Association (JBA) for example has established self-regulation standards which includes the use of cold wallets amongst its 15 cryptoexchange members (of which Coincheck was one of them) and are now looking to strengthen the standards further following this recent incident.

Risk management in the cryptocurrency space

Risk management, as with all organisations, plays a vital role in meeting and exceeding objectives whilst providing resilience and stakeholder confidence. Exchanges and companies that are raising/have raised ICO's should ensure that risk management is part of their business. Identifying risks and opportunities, assessing them and implementing response plans should be standard. Cyber risks, reputational risks, operational risks, system risks and strategic risks should all be considered and prepared for, which would minimise market disruption and reduce the likelihood of financial ruin. At the very least they owe it to the investors who have funded them.

For investors, with volatility so high, the rewards are great but so are the risks. Investors should ensure that they only invest what they can afford to lose, do their due diligence on their investments which includes understanding the technology, the team and look for a prototype rather than a wild concept. Additionally, investors should always be on the lookout for phishing scams and suspicious emails.

Finally, even the most optimistic investor should at least consider that cryptocurrencies are a speculative bubble that could burst. ■

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addressing climate-related financial risks since the Paris
Agreement of late 2015

In my remarks I will take stock of the progress made in addressing climate-related financial risks since the Paris Agreement of late 2015. In particular, I will consider how far there has been *a transition in thinking and action*. As we've heard, the thinking has coalesced around three channels through which climate risk affects financial stability:

- the physical risks that arise from the increased frequency and severity of climate- and weather- related events that damage property and disrupt trade;
- the liability risks stemming from parties who have suffered loss from the effects of climate change seeking compensation from those they hold responsible; and
- the transition risks that can arise through a sudden and disorderly adjustment to a low carbon economy.

The last risk is the most challenging. When I first spoke about the financial stability risks from climate change, at Lloyd's of London in 2015, I highlighted two paradoxes relating to transition risk in particular¹.

First, the future will be past. That is, climate change is a tragedy of the horizon which imposes a cost on future generations that the current one has no direct incentive to fix. The catastrophic impacts of climate change will be felt beyond the traditional horizons of most actors. Once climate change becomes a clear and present danger to financial stability it may already be too late to stabilise the atmosphere at two degrees.

The second paradox is that success is failure. That is, too rapid a movement towards a low-carbon economy could materially damage financial stability. A wholesale reassessment of prospects, as climate-related risks are re-evaluated, could destabilise markets, spark a pro-cyclical crystallisation of losses and lead to a persistent tightening of financial conditions: a climate Minsky moment.

The tragedy of the horizon can be resolved in an orderly, effective and productive manner, however, with early transitions in thinking and action.

A transition in thinking

Since 2015, a transition in *thinking* has taken place. At the One Planet Summit in Paris in 2017, financial institutions responsible for managing US\$80 trillion of assets – equivalent to annual global GDP – publicly supported the Task Force for Climate-related Disclosures (TCFD)².

... it is encouraging that central banks and supervisors have come together to found the Network for Greening the Financial System (NGFS) to take forward coordination

The supporters included 20 globally-systemic banks, 8 of the top 10 global asset managers, the world's leading pension funds and insurers, the largest sovereign wealth fund and the two dominant shareholder advisory service companies.

Established by the Financial Stability Board (FSB) in response to a call from G20 Leaders, the TCFD delivered recommendations for voluntary disclosures of material, decision-useful climate-related financial risks for the G20 Summit in Hamburg. Suitable for use by all companies that raise capital, the recommendations:

- include disclosure of governance and risk management arrangements;
- establish consistent and comparable metrics applicable across all sectors, as well as specific metrics for the most carbon-intense sectors; and
- encourage use of scenario analysis so as to consider dynamically the potential impact of the risks and opportunities of the transition to a low carbon economy on strategy and financial planning.

That financial institutions have come out so strongly in support of enhanced disclosure reflects their recognition that there is a correlation between managing climate risk and long-term value creation as well as their belief in the power of markets. They know that for markets to do what they do best – allocate capital effectively and dynamically – they need the right information. When risks are unknown or ill-defined, the market cannot allocate resources in an efficient and profitable manner.

Until recently, reliable information on how companies were anticipating, responding or failing to respond to climate-related risks and opportunities has been hard to find, inconsistent and fragmented. The information needed

goes beyond the static to the strategic. Markets need information to assess which companies are well positioned to seize the opportunities the transition to a low carbon economy brings.

Which car manufacturers are leading the way on fuel efficiency and electrification? How are energy companies adapting their mix of energy sources? This needs to be considered against investors' views of possible transition paths – the International Energy Agency's Sustainable Development Scenario, for example, sees the consumption of natural gas rise by nearly 20% by 2030 to become the largest single fuel in the global mix³.

Given the uncertainties around climate, not everyone will agree on the timing or scale of the adjustments required. And different people will have different views about the effectiveness of timelines of government climate policies. The right information allows sceptics and evangelists alike to back their convictions with their capital.

At the same time as this increased investor focus, there have been signs that global companies are becoming increasingly aware of the risks climate change can pose. Whereas in previous years it barely registered as a risk, now close to a third of global CEOs are 'extremely concerned' about the threat climate change poses to their organisation's growth prospects⁴.

A transition in action

So how far is this transition in thinking translating into action? First, governments. In reaching agreement in Paris, global leaders took *political action* to mitigate the catastrophic impact of climate change.

They committed to curbing carbon emissions to limit the rise in global average temperatures relative to those in the pre-industrial world to 2°C, and to pursue additional efforts to limit the temperature increase to 1.5°C.

Governments are taking some of the necessary policy actions. For example, in the UK, the Government published its Clean Growth Strategy last year, including policies to make homes, businesses and transport more energy efficient, and to lower the carbon intensity of the UK's energy supply. EU Emissions Trading Scheme (ETS) reforms agreed last year, and due to come into effect from 2021, have driven carbon prices above €10 per tonne for the first time in six years.

Even so, the national determined contributions towards meeting the Paris goals, summed to no more than 2.7°C, making it clear climate policy will need to tighten further if the Paris commitments are to be achieved.

Second, climate disclosures. There has been a series of actions to transform climate disclosures. 2017 was a record year for climate-related shareholder resolutions, with a threefold increase in motions (184 vs 63) and with investment managers controlling over 45% of global assets under management backing shareholder actions on carbon disclosure.

Several of the world's largest asset managers – including the two largest, Blackrock and Vanguard – have written to a number of public companies calling for such disclosures. Other long-term investors have joined forces to press for disclosure through groups such as Climate Action 100+ and the International Investors Group for Climate Change (IIGCC). Meanwhile ISS and Glass Lewis, who account for over 90% of the shareholder advisory services market, have updated their 2018 proxy voting policies to make clear that they will assess the adequacy of climate disclosure⁵.

With the providers of capital demanding enhanced disclosure, and the TCFD recommendations providing a framework for doing so, a number of public companies have begun disclosing their climate-related financial risks for the 2017/18 year end. Reporters drawing on the TCFD include energy giants and extractors through to financials and consumer goods companies.

The Task Force is delivering two initiatives to support this process. First, in time for the Argentine G20 Summit, drawing on the work of the Big Four accounting firms, the Task Force will report on implementation experience, focusing on examples of good practice to foster wider adoption. Second, the Task Force is launching a Resource Hub to provide technical support, data, and collaborative partnerships – all aimed at helping companies implement the recommendations in as effective and efficient a manner as possible.

As preparers, financials and investors ‘learn by doing’, a virtuous cycle will be created where more and better information creates the imperatives for others to adopt the TCFD and for everyone to up their game on the quality of information they provide.

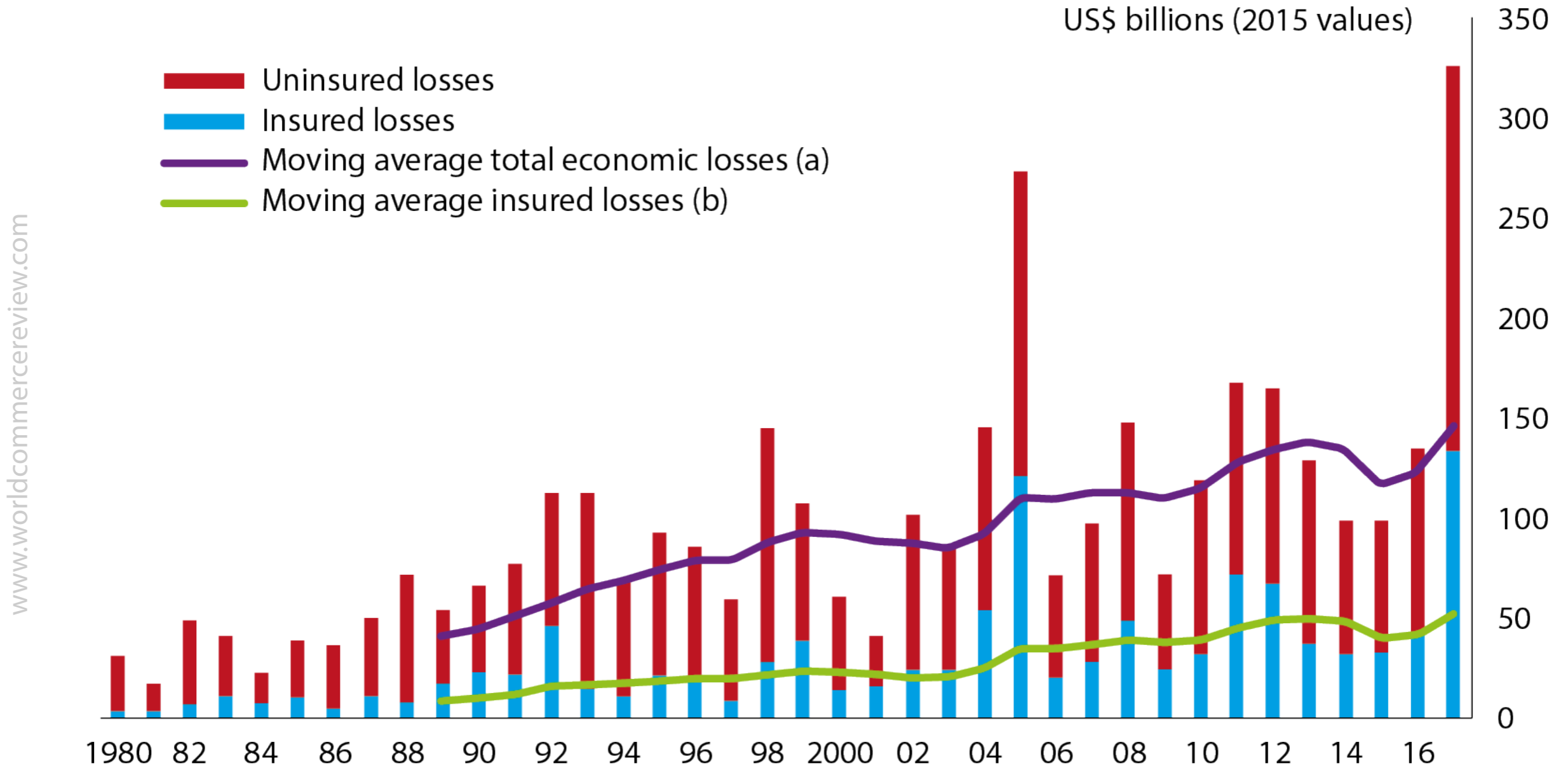
This iterative process is a reason why there is likely cause for the Task Force to continue beyond the Argentine Summit in late 2018 and into the Japanese presidency. In particular, it will be important to get feedback from investors on which disclosures are truly decision useful so that this process is as efficient and effective as possible.

Third, insurers and banks. Insurers have long been on the front line of the physical risks posed by climate change such as extreme weather events.

Since the 1980s, the number of registered weather-related loss events has tripled. Inflation- adjusted insurance losses have increased from an annual average of around US\$10 billion in the 1980s, to around US\$55 billion over the past decade (Chart 1).

General and reinsurers insurers have long deployed sophisticated modelling of climate and weather-related physical risks, and have adjusted their cover and business models accordingly. Lloyd’s of London underwriters, for example, are required to consider climate change explicitly in their business plans and underwriting models. Their

Chart 1. Weather-related losses worldwide (1980-2017)



(a) Total Economic Losses = Insured + Uninsured losses. (b) 10-year moving average Source: Munich Reinsurance Company, Geo Risks Research, NatCatSERVICE

genius has been to recognise that the past is not prologue and that the catastrophic norms of the future are in the tail risks of today.

For example, by holding capital at a one-in-200 year risk appetite, under a forward-looking capital regime, UK insurers were able to withstand the events of 2017, the worst year on record for weather-related insurance losses at around US\$130 billion.

Given evidence that suggests increasing levels of physical risk, insurers will need to consider the potential impact of more intense and clustered weather-related events. Work by Bank colleagues finds that intense hurricanes, of the type most likely to cause large insurance losses, seem to be getting more frequent and the chance of two or more intense hurricanes occurring close together may be higher than previously thought⁶. So improvements in insurers' risk modelling must be unrelenting.

While the ability to re-price annually or to withdraw cover can mitigate risks to general insurers in the short-term, as climate change progresses, they will need to consider the longer-term impacts on their business models.

And as the PRA found a few years ago in its review of the sector, insurers need to be wary of cognitive dissonance within their organisations whereby risks that are managed prudently by their underwriters are ignored by the firm's asset managers, such as in their real estate exposures⁷.

Consistent with the tragedy of the horizon, the risks posed to banks from climate change have tended to be beyond their planning horizons. A recent survey by the PRA of banks accounting for around 90% of the UK banking system, found that these horizons averaged four years – before physical and litigation risks would be expected to manifest, and prior to stringent climate policies likely taking effect.

There are signs, however, that banks are beginning to treat climate-related risks like other financial risks. The PRA survey finds that a majority of banks now see them as financial risks – rather than just a reputational or corporate social responsibility issues. As such, oversight of climate-related risks and overall responsibility for setting the climate risk strategy, targets and risk appetite has been elevated to Board level.

Banks have begun considering the most immediate physical risks relevant to their business models – from the exposure of mortgage books to flood risk or, for globally active banks, the impact of extreme weather events on country risk. And they have begun to assess exposures to transition risks where government policy is already pulling forward the adjustment. This includes exposures to carbon-intensive sectors, consumer loans secured on diesel vehicles and buy-to-let lending given new efficiency requirements.

But many banks have indicated that there is some way to go to identify and measure climate-related risks more comprehensively, including given the need to improve data and expertise. This includes developing their approaches to stress testing for climate-risks as well as, over longer horizons, more dynamic scenario analysis. It is clear, however, that the TCFD framework is helping, including to identify metrics and promote use of climate-related scenario analysis.

Fourth, financial policymakers. At the Bank of England, the risks posed by climate change are currently most directly relevant to our micro prudential responsibilities for the safety and soundness of the banking and insurance sectors.

Assessing how well general insurers and reinsurers are identifying, measuring and mitigating weather-related risks, has long been part of supervising insurers. We published a stocktake of insurers' progress in adapting to climate change in late 2015, and are working to update and deepen our assessment with a second stocktake in 2018. More

recently, we have extended our focus to the financial risks faced by the UK banking system, and will publish the full results of the survey I referred to in the coming months.

The aim for both pieces of work is to consider whether insurers and banks have adequate governance arrangements to develop strategies for identifying and mitigating climate risk across their entire businesses, both their liabilities and assets, and over sufficiently long-time horizons. We aim to highlight examples of good practice and to articulate our supervisory expectations later this year.

We are also considering our approach to assessing risks across the system as a whole.

The Bank has routinely included weather-related shocks in the scenarios for its biennial general insurance stress test, including three North American hurricanes in 2017. This meant we had a good sense of the likely resilience of the market and individual firms when Harvey, Irma and Maria hit – both in terms of exposures and mitigating actions⁸.

On climate, remember, past is not prologue. In the depressing spirit of Bayesian updating that the current climate change trajectory demands, when considering scenarios for 2019, that we include weather-related events that are more severe and clustered.

To help firms improve their own testing, the Bank has been encouraging knowledge sharing on the types of scenario analysis envisaged under the TCFD⁹. This will allow firms to explore how 2°C and other transition scenarios might impact their strategy and financials.

More broadly, and like the other financial authorities represented here today, we recognise the value in sharing expertise and best practice to increase the rate at which firms, and indeed ourselves as regulators, move to embed more thoroughly climate-related financial risks into our risk assessment and mitigation.

Conclusion

Given this heavy agenda, it is encouraging that central banks and supervisors – from eight countries that together account for over a third of both global financial assets and carbon emissions – have come together to found the Network for Greening the Financial System (NGFS) to take forward coordination.

There are, however, limits to our roles. Financial policymakers will not drive the transition to a low- carbon economy. Our efforts cannot substitute for those of governments who have direct responsibilities to deliver the policies to achieve their Paris commitments.

The good news is that governments are now establishing the policy frameworks, and the private sector is beginning to allocate capital accordingly.

Our efforts will help smooth the transition prompted by these actions. With better information and risk management as the foundations, a virtuous circle is being built with better understanding of tomorrow's risks, better pricing for investors, better decisions by policymakers and a smooth transition to a low carbon economy.

Financing the transition to a low carbon economy is a major opportunity for investors and creditors. It implies a sweeping technological revolution, including investments in long-term infrastructure at roughly quadruple the current rate.

As the International Climate Risk Conference testifies, climate finance and risk management is moving into the mainstream. There has been a transition in thinking. And this is now beginning to be translated into action, and the NGFS will play an important role in this. ■

Mark Carney is Governor of the Bank of England

Endnotes

1. See Carney (2015), "Breaking the Tragedy of the Horizon – climate change and financial stability", speech given at Lloyd's of London, September 2015.
2. For a full list of current supporters see: <https://www.fsb-tcf.org/tcf-supporters-april-2018/> and supporters at the Paris Summit see: https://www.fsb-tcf.org/wp-content/uploads/2017/12/TCFD-Press-Release-One-Planet-Summit-12-Dec-2017_FINAL.pdf
3. It also sees US\$69 trillion of investment in clean energy technologies and energy efficiency – and the share of oil and coal in power generation falls to 6%, which is burned with accompanying carbon capture and storage technology.
4. See PWC (2018), 21st CEO Survey, The Anxious Optimist in the Corner Office, <https://www.pwc.com/gx/en/ceo-survey/2018/pwc-ceo-survey-report-2018.pdf>
5. See ISS, (2018), United States Proxy Voting Guidelines, Benchmark Policy Recommendations, and Glass Lewis, (2018), Guidelines: An Overview of the Glass Lewis Approach to Proxy Advice.
6. Bank Underground post, forthcoming.
7. See PRA (2015), The Impact of Climate Change on the UK Insurance Sector, <https://www.bankofengland.co.uk/prudential-regulation/publication/2015/the-impact-of-climate-change-on-the-uk-insurance-sector>

8. <https://www.bankofengland.co.uk/prudential-regulation/letter/2017/general-insurance-stress-test-2017-feedback>
9. This included co-hosting a conference with TCFD in late 2017. For further details see: <https://www.fsb-tcfd.org/event/tcfd-boe-conference-climate-scenarios-financial-risk-strategic-planning/>

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Global repercussions of MiFID II

Jan Hanika and Tim Sundberg look at MiFID II, how the European financial services ecosystem will be redefined, and argue that companies will need a clear and proactive strategy to deal with the challenges ahead

The landscape in which financial institutions are operating is changing significantly. Technology-led transformation and cross-sector regulations are the leading drivers of that change, bringing major strategic challenges to the industry. Firms that cannot adapt to this digitalised and regulated world will face shrinking margins as a result of growing costs and decreasing relative revenue pools.

MiFID II, which came into force this January, will pose a significant challenge. The regulation promotes market integrity, increased transparency and investor protection, and will redefine the European financial services ecosystem. If it follows the same pattern as MiFID I, which brought changes in transparency and market structure to the equities market, then MiFID II will have a similar effect on OTC products and radically change the conditions for the funds markets.

It is now ten years since MiFID I came into force, and in that time equity trading has moved from a closed community and traditional exchanges to more accessible trading on regulated exchanges and multilateral trading facilities (MTFs). At the same time, we are seeing a more fragmented market and lower revenues due to increased competition and globalisation. One example of those changes can be seen in the Nasdaq statistics for the Stockholm Stock Exchange, comparing figures pre- and post-MiFID I. Recent figures show that almost 50% of trading volume today is made off the regulated market, and international participants now represent two thirds of the turnover in the Nasdaq market.

MiFID II covers a much broader scope of financial instruments than MiFID I, and may bring significant changes to the OTC market structure and the value chain of fund markets, leading to margin pressure for these products.

In the same way that MiFID I caused changes in equity trading, MiFID II, in combination with a higher level of digitalisation, will alter the trading landscape for fixed income products and derivatives. One possible scenario is

a shift from OTC trading to accessible market places, and market structure moving to the same fragmented model as we have seen in equities, where firms will choose to transact on MTFs, OTFs and SIs. The best execution rules will most likely lead to the introduction of sales trader functions. These must verify prices from several sources and route the instructions for execution in the most beneficial way, similar to an equity smart order router.

Other impacts from MiFID II will come from market transparency requirements to publish quotes and disclose costs and charges. This will increase the cost awareness for clients and reduce the industry revenue pool.

We are entering a brave new world and companies need a clear and proactive strategy to deal with the changes ahead

The increased standardisation and harmonisation will drive accessibility and support further globalisation, leading to a shift in trading to market places rather than over the counter (OTC) trading. We are already seeing the impact of digitalisation and the demand for low cost global execution from clients on equity markets, and the same can be expected in the near future from institutional clients with investments in fixed income and derivatives. These drivers will also open up the local markets to international competition.

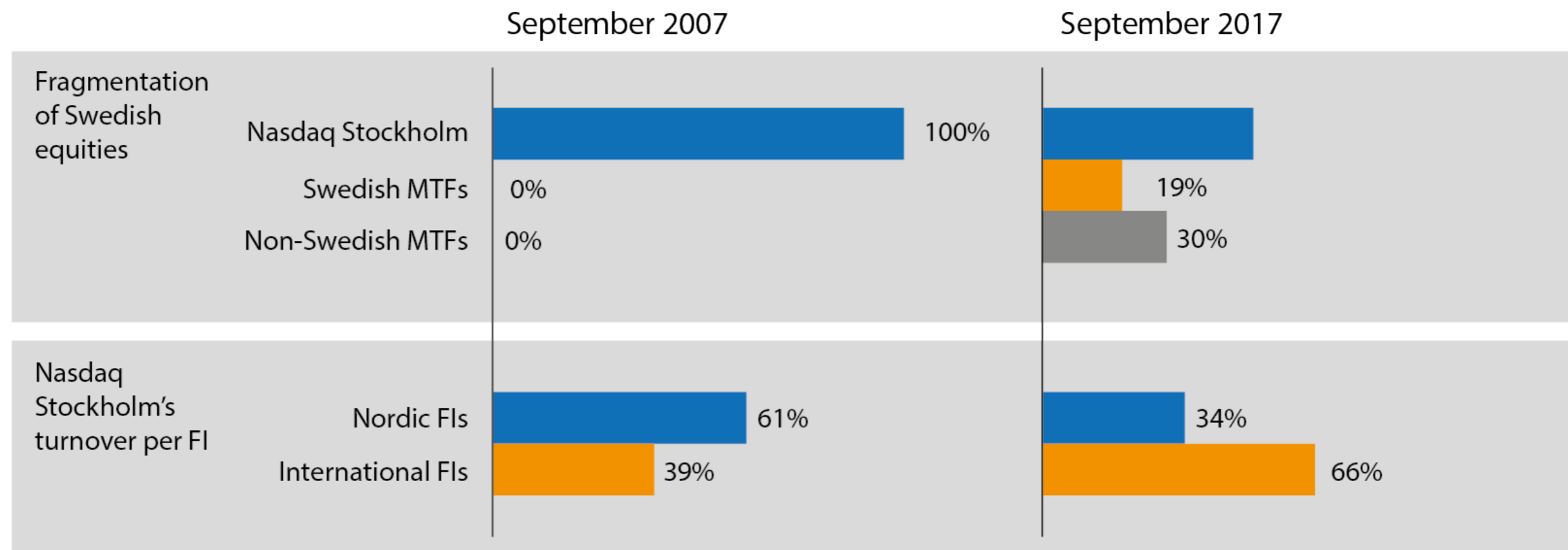
It is clear that MiFID II will create new pressures on margins and affect the whole value chain in the funds markets. The transparency rules will increase cost awareness among clients, which will have a negative effect on revenue pools for fund managers. At the same time, digitalisation will enable capital to move from actively-managed to passively-managed funds, which will also reduce revenues further. The decoupling of charges for research, which must be accounted for separately, will have consequences for pricing models for sell side and execution fees.

All this adds up to a world where firms will have to deal with revenue pressure, the increased threat of new entrants, buyers with more bargaining power and higher technology costs due to the need to meet multiple regulatory requirements and provide a bigger range of tactical solutions.

In response, players who want to retain their margins must become more effective, and that may mean making painful decisions about the future scale and scope of their company's operations. To do this well requires a detailed analysis, an extensive re-design of the business and a clear understanding of the strategic decisions needed.

Firms should also look for new opportunities. For large companies, those opportunities will come from expanding into new markets and competing on large volumes and lower cost with smaller local players. They will be able to draw on their global experience and operational excellence across delivery channels and efficient management of

The ten-year internationalization and fragmentation of the Swedish/Nordic equity market



www.worldcommercereview.com

Source: Nasdaq statistics, Fidessa Fragmentation Index, PA Consulting Group analysis

MiFID2MiFIR requirement areas



resources. Equally, companies that are already using technology to reduce cost and achieve efficiency will have a competitive advantage.

Therefore, local players will need to prepare for the arrival of new entrants. Even profitable medium-sized players should be exploring the impact of increased competition as their traditional approach of offering a full range of services will make them vulnerable in this new world. They will have to take a hard look at where they are truly competitive, where they offer high quality service and, more crucially, where they can differentiate themselves from their competitors. Where they can't do this, they will have to divest or outsource non-profitable businesses.

This requires action now. Sitting back, resting on the laurels and just hoping to react to developments as they happen is a recipe for failure. We are entering a brave new world and companies need a clear and proactive strategy to deal with the changes ahead. Further iteration is surely around the corner. Those companies that took short cuts on MiFID I had greater challenges implementing MiFID II. After a short respite, we should all be ready for taking on the challenges of MiFID III. ■

To read more insights about MiFID II from PA Consulting Group, please click [here](#)

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Glossary

MiFID

Markets in Financial Instruments Directive is the European initiative to promote competition and enhance choice for investors across Europe. Mifid looks at so-called 'passporting' for financial products so that they can be traded across borders. It considers transparency and best execution. MiFIR Markets in Financial Instruments Regulation

FI

Financial institution, an organization such as a bank where people, companies, or governments put their money, which it invests to produce a profit.

OTC

Over-the-counter (OTC) is a security traded in some context other than on a formal exchange. The phrase 'over-the-counter' can be used to refer to stocks that trade via a dealer network as opposed to on a centralized exchange. It also refers to debt securities and other financial instruments, such as derivatives, which are traded through a dealer network.

MTF

A multilateral trading facility (MTF) is a European term for a trading system that facilitates the exchange of financial instruments between multiple parties. Multilateral trading facilities allow eligible contract participants to gather and transfer a variety of securities, especially instruments that may not have an official market. These facilities are often electronic systems controlled by approved market operators or larger investment banks. Traders will usually submit orders electronically, where a matching software engine is used to pair buyers with sellers.

OTF

MiFID II introduces a new category of trading venue called Organised Trading Facilities (OTF). Within an OTF, multiple third-party buying and selling interests in bonds, structured finance products, emission allowances or derivatives are able to interact in a way that results in a contract. Equities are not permitted to be traded through an OTF.

SI

Systematic internalisers (SIs), traditionally called market makers, are investment firms who could match 'buy' and 'sell' orders from clients in-house, provided that they conform to certain criteria. Instead of sending orders to a central exchange such as the London Stock Exchange, banks can match them with other orders on its own book.

Source: FCA and Financial Times Lexicon