SUMMER 2026

FINANCE 21

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LAURENCE B MUSSIO AND PAUL SAMSON EXPLORE HOW THE LEDGER HAS PROVEN MORE SOVEREIGN AND POWERFUL THAN THE SWORD

MONEY IN TRANSITION. DIGITALISATION IS RESHAPING HOW FINANCIAL MARKETS OPERATE, SAYS CHRISTINE LAGARDE

SCOTT BESSENT SAYS THE US IS ON THE CUSP OF A FUNDAMENTAL RESET IN HOW ITS FINANCIAL SYSTEM IS REGULATED

21ST CENTURY FINANCE

Foreword

Welcome to the Summer edition of **FINANCE**2**I**. 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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How the ledger controls monetary sovereignty and global power

Laurence B Mussio and Paul Samson explore how the ledger has proven more sovereign and powerful than the sword. In today's era of digital currencies and evolving geopolitics around payment systems, they illuminate how global power will continue to rest with those who control the ledger

Earlier this year representatives of America's largest banks sat across from their crypto counterparts at a White House summit convened to break the impasse over the stalled CLARITY Act. The banks demanded a blanket prohibition on paying yield to stablecoin holders. The crypto firms pushed back. No deal was struck, and the bill languished in the Senate. The meeting laid bare a question far older than blockchain: who controls the ledger - and therefore, who controls power?

The disruptions of the evolving global economy reach well beyond supply chains and currency hedging - to the ledger itself, the substrate upon which the financial architecture rests. With new technology and geopolitical reconfiguration underway, the next phase of the world's payment and settlement order is in play.

Stablecoins, tokenized assets, and central bank digital currencies now consume the waking hours of central bankers on every continent. The questions may appear technical. The stakes are existential. History has shown, again and again, that it is the ledger, not the sword, that has proven most sovereign.

Ledgers are old. They are older than banking, older than coinage, older than the alphabet itself. Sumerian merchants pressed reeds into wet clay to record obligations four millennia before Christ; the marks dried in the Mesopotamian sun and became, in that drying, the first permanent claims on the future. Parchment succeeded clay. Leather-bound codices succeeded parchment.

And in Florence, in 1397, Giovanni di Bicci de' Medici founded the bank whose mastery of double-entry bookkeeping - the systematic inscription of debits and credits, assets and liabilities - made it indispensable to popes, princes, and the papacy's wars. The Medici ledger was mnemonic capital in its purest form: accumulated records that compounded trust and projected authority across time. But Florence was not alone.

Neighbouring Siena established the Monte dei Paschi - the state as banker, deploying public capital for public ends. Two models, born a day's ride apart, prefiguring a contest now waged in code.

SWIFT's establishment in 1973 appeared to render the contest moot. Here was a network cooperative, technical, and serenely apolitical. Until it was not. When the United States severed Iranian banks from SWIFT in 2012 and imposed the same exile on Russia after the invasion of Ukraine - no trade settlements, no correspondent banking, no participation in the machinery of global commerce - the lesson landed with force. Payment systems are instruments of coercion. Power belongs to those who control the ledger.

A nation that does not command its own digital payment architecture will discover, too late, that it has surrendered its monetary sovereignty. And sovereignty, once ceded, is seldom recovered

Today, virtually all countries are exploring digital currency. The contest that matters is triangular: the United States, China, and the European Union.

Washington moved first, and with characteristic audacity. President Trump banned a retail digital dollar by executive order, then signed the GENIUS Act in July 2025, bringing the stablecoin industry under federal regulation. Why build a government currency when you can conscript an existing one?

The Act requires issuers to hold massive reserves in US cash and short-duration Treasuries - quietly transforming the sector into a top-fifteen holder of government debt. It compels them to freeze or 'burn' tokens at law enforcement's direction: the sanctions weapon, now privatized, now woven into every digital wallet on earth.

Yet that clash reveals a fissure within the strategy. The CLARITY Act - meant to complete the architecture - has stalled because banks and crypto firms cannot agree on whether stablecoins may bear interest. Banks fear deposit flight. Crypto firms call it protectionism. Having conscripted private money, Washington discovers its conscripts have interests of their own.

Beijing drew the opposite conclusion. If the dollar system can be turned against you, build parallel rails. The digital yuan subordinates the private platforms that had dominated Chinese retail payments, returning them to state oversight. Abroad, it anchors wholesale settlement networks beyond SWIFT's reach. By late 2025, cumulative e-CNY transactions had reached 2.3 trillion dollars. Saudi Arabia is settling oil on these rails. On January 1, 2026, Beijing began paying interest on e-CNY balances - the very instrument Washington's banks are fighting to deny their own stablecoin sector.

And the rest? The European Central Bank agonises over whether citizens may be trusted with a few thousand digital euros. The Bank of England proposes capping holdings at twenty thousand pounds per person. The architecture is defensive - designed not for projection but for the prevention of deposit flight. The heirs of the Florentine bankers have concluded the ledger is too dangerous to open.

From Sumerian clay to Californian blockchain, whoever controls the inscription of value controls power. The ledger is mnemonic capital - a reservoir of recorded obligation that compounds authority across time. Washington has conscripted the stablecoin sector but cannot yet govern its creation. Beijing is building a monetary architecture that owes nothing to the dollar. Brussels and London, capping holdings to shield their banks, have hobbled their creations before birth.

The arithmetic is merciless. Stablecoin transfers settle in seconds for fractions of a cent. Senders will take the faster, cheaper rail - every time, without sentiment, without ceremony. Sovereignty bleeds out through a thousand daily transactions. These are strategic choices with generational consequences.

A nation that does not command its own digital payment architecture will discover, too late, that it has surrendered its monetary sovereignty. And sovereignty, once ceded, is seldom recovered. ■

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Money in transition

Digitalisation is reshaping how financial markets operate, says Christine Lagarde. For Europe, this is above all an opportunity to deepen integration, strengthen autonomy and anchor innovation in trusted public money across markets and payments

Eight centuries ago, the fairs of Champagne were where Europe settled its accounts. Held throughout the year, they drew merchants from the cloth towns of Flanders to the banking city-states of Italy who came to clear their debts against one another on paper rather than carting silver across the continent. Bills written all over Europe were timed to come due at these fairs, to be reckoned together, so that great sums changed hands with barely a coin in sight. For a time, a divided Europe settled its accounts as one.

Since then, Europe has advanced enormously towards integrated settlement, above all with the euro and the systems that underpin it. But the challenges never stop, and Champagne shows what is at stake if they go unanswered. As tolls rose and new sea routes opened the merchants drifted away, and Europe's first common market faded into memory.

Today, we face two new challenges at once. Technology is rewriting how money is exchanged and trades can be settled, most of all through tokenisation. And geopolitics has turned the ownership of financial infrastructure into an instrument of power, so that sovereignty now matters where once it did not.

Real as these challenges are, for Europe they are above all an opportunity. In our capital markets, they offer the chance to tackle the fragmentation that has held us back for decades, and in our retail payments, the chance to open the field to operators working right across Europe, and to more competition.

In the Eurosystem, we are pursuing a comprehensive strategy to seize this opportunity. It starts with wholesale markets. Today, a single crossborder transaction passes through a chain of separate record-keepers, each holding its own ledger, creating high transaction costs and reinforcing home bias. 32 central securities depositories keep these records across our Union. The United States has two.

Tokenisation offers a way past this. On a shared ledger, ownership is recorded once and payment changes hands in the same instant as securities do, with the terms of settlement written into the instrument itself. We have been trying for decades to weave our national systems into one. Now we can build a new layer that is complete from the start.

Technology is rewriting how money is exchanged and trades can be settled, most of all through tokenisation. And geopolitics has turned the ownership of financial infrastructure into an instrument of power, so that sovereignty now matters where once it did not

But the technology settles nothing on its own. Without a credible, risk-free asset to settle in, tokenised finance will splinter into private islands and fail to reach escape velocity from its current sandbox status.

The market has told us as much. We brought together more than 60 participants from across the industry, and their message was clear: they will not commit to issuing digital assets at scale until they can settle in central bank money.

Nothing else is trusted and accepted by all, and nothing else can expand and contract with the market's needs so that liquidity is there when the system most needs it. A token that is backed euro-for-euro can never do that.

So we are answering the call. Already in the course of this year, our Pontes project will settle tokenised transactions in central bank money. And our Appia project reaches further still. With the market, it is drawing the blueprint for a single European market in tokenised finance and putting Europe at the frontier of this new technology.

The next dimension is retail payments, and the role of central bank money within them. The only public money we can hold today is cash, our ultimate claim on the central bank, and our connection to it. The Eurosystem is committed to preserving cash, with a new series of euro banknotes on the way. But as more of daily life moves online, Europeans risk losing that connection altogether. The digital euro carries it forward, a euro issued by the ECB and available to all.

The digital euro does more than preserve what we have. It is also a chance to end a dependence we have lived with for too long. Europe has no pan-European card scheme of its own, and most of what people tap and swipe runs on networks we do not own. International schemes account for more than 60% of card payments, and 13 out of 21 euro area countries have no national card scheme.

European schemes have never reached pan-European scale because they are caught in a vicious circle: no merchant adopts what few customers use, and no customer uses what few merchants accept.

The digital euro breaks that circle. Because of its legal tender status, it must be accepted everywhere. This would give Europe, at last, a payment instrument that works across the whole Union. And because its technical standards are open, any provider can build on them and reach across Europe from the start. For the first time, European players could compete on equal terms.

The final dimension is crossborder payments. Sending money abroad is still slow and costly, routed through long chains of correspondent banks. US dollar-denominated stablecoins are positioning themselves to move into that gap, promising to be faster and often cheaper than the current system.

It remains to be seen whether the promise will be kept once end-to-end costs are factored in and compliance standards are brought up to those of regulated providers. But the gap is there and the case for action is clear. The G20 has recognised as much, putting crossborder payments at the centre of its own reform roadmap.

The Eurosystem is acting here, too. By interlinking our instant payment system, TIPS, with others, we are letting European payments reach across the world. A link to India's UPI, the largest instant payment system in the world, is now being built, while connections to the Nexus Global Payments network in South-East Asia, and to Switzerland's SIC IP system, are in advanced stages of analysis. The aim is simple: that Europeans can transfer money to a growing list of countries around the world in seconds, on rails of their own.

Which brings me to the largest prize of all. The euro's international role has long been held back by the same fragmentation that limits us at home: markets that are too shallow, infrastructure that is too divided. Put our own

house in order, and that begins to change. A deep and integrated market, anchored in trusted public money, is the path to a currency the world will want to use.

The Eurosystem is doing its part. But we cannot deliver this vision for Europe alone. We need the market to invest in the technology and to agree on shared standards. With Appia, we are building them together so that tokenised networks connect to each other, rather than remaining siloed.

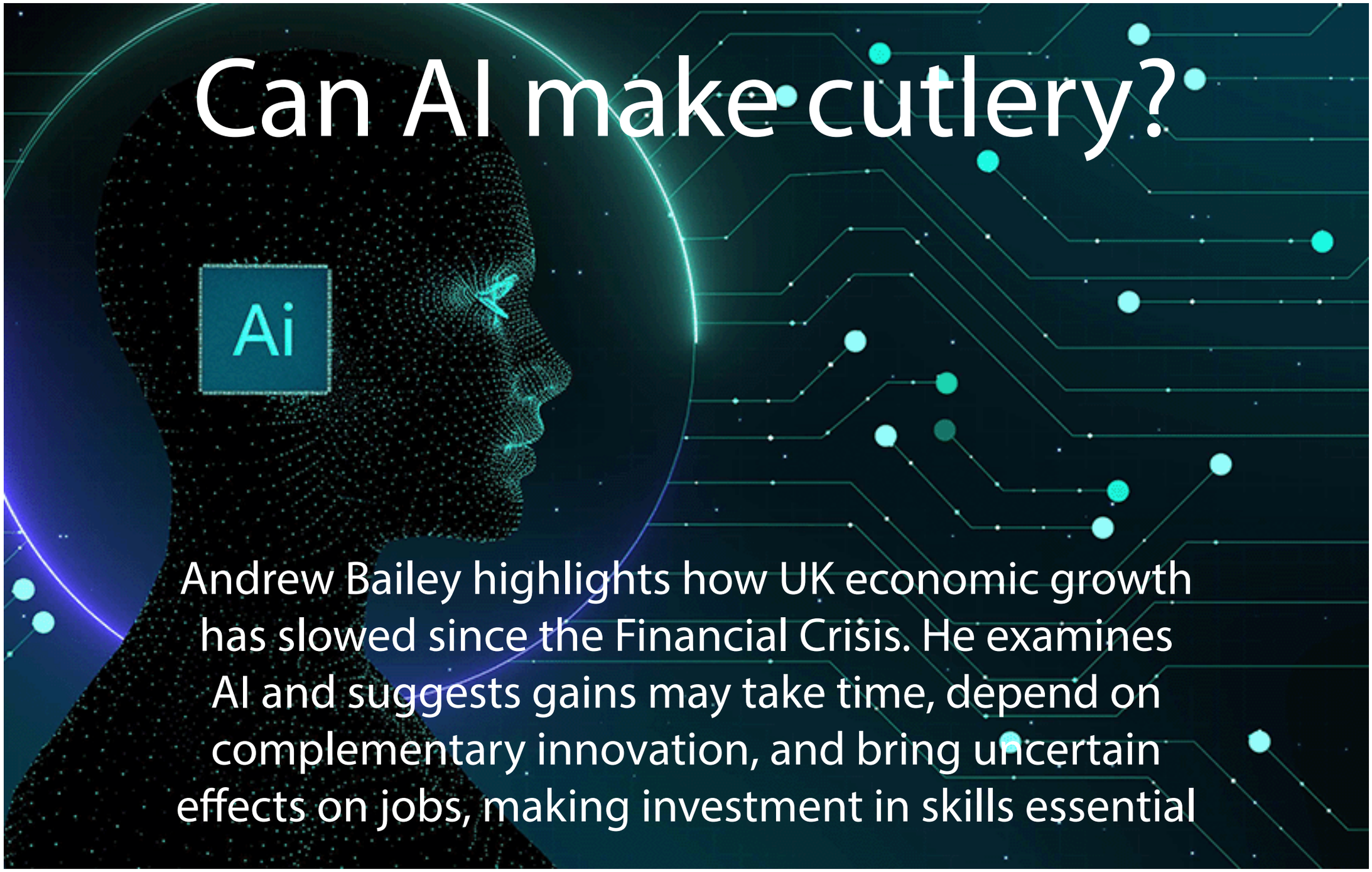
And we need governments to provide legal certainty through a common framework for digital assets. National regimes are already multiplying, and unless we establish that framework first, we will rebuild in law the fragmentation that technology is currently dissolving.

Eight centuries ago, a divided Europe settled its accounts as one. But this did not last. What we have built since then – a single currency settled on shared rails – is extraordinary. The challenge is to carry it into the tokenised age, so that the new technology extends our single settlement rather than fragmenting it. This time, we can keep it. ■

Christine Lagarde is President of the European Central Bank

This article is based on the opening speech at the ECB conference on 'Money in transition: digitalisation and innovation in payments', Frankfurt am Main, 15 June 2026.

Can AI make cutlery?



Andrew Bailey highlights how UK economic growth has slowed since the Financial Crisis. He examines AI and suggests gains may take time, depend on complementary innovation, and bring uncertain effects on jobs, making investment in skills essential

Let me start with a few key facts on growth. For around fifteen years before the Financial Crisis (1990-2006), the average annual rate of growth of potential supply in the UK economy was around 2.8%. Productivity contributed 2.4pp and labour supply 0.4pp. For the roughly fifteen years since the Financial Crisis, the potential growth rate has fallen to 1.3% pa, of which productivity contributed 0.4pp and labour supply 0.8pp. The comparable figures for actual growth – the growth of demand – are 2.4% and 1.3%.

This has had a direct effect on living standards. In the UK, between 1990 and the Financial Crisis, the average annual growth rate of national income per head was 2.0%, whereas post-Crisis it has been 0.6%.

What are the longer-run causes of growth in an economy? The list is quite long: physical capital accumulation; technological progress; human capital, including education and skills; trade; financial development; markets and competition; infrastructure; and institutional development, both public and private.

Theories of growth are often associated with two famous economists of the past, Adam Smith and Joseph Schumpeter. The terms Smithian and Schumpeterian growth are used, with a focus on trade and technology respectively. Adam Smith used the pin factory to show that specialisation in production (the division of labour) leads to higher levels of productivity and hence growth. This was shaped by the size of the market served – the bigger the better. Trade expands markets, which enables productivity and the economy to grow by more.

Joseph Schumpeter wrote during the first half of the 20th century. He is known as the father of creative destruction, namely that capitalism is defined by waves of innovation, where new innovations and technologies replace older ones, and create new sources of growth in doing so[1]. Smithian and Schumpeterian growth are sometimes set up as competing explanations. This is not at all the case. They are complements[2].

Before coming to an example of innovation, let me say something about institutions, as a cause of economic growth. Institutions are important for economies and for growth, for instance because they define and operate property rights. But, they differ a lot across economies.

History shows that there is no single story on the relationship between major technology changes, economic growth, employment and living standards. However, shifts in the structure of the economy and employment are inherent to a technology-driven system of economic growth

One of the very big questions in the story of economic growth is why did Europe, and particularly Britain, industrialise first – how come we won the race? One view is that European institutions developed in a way that broke down family and clan-based societies (something the authors argue did not happen for a long time in China). There was an important contribution here from trade organisations and corporations.

It was from this institutional development that laws evolved, political stability was enhanced, and economic innovation and trade flourished. These overlapping social networks helped the sharing of ideas and knowledge. Master, today the Cutler's Company is still doing this[3].

Creative destruction involves innovation and obsolescence. Let me give an example close to the history of Sheffield. Henry Bessemer's convertor made cheap molten steel a reality. Schumpeter had a flourishing turn of phrase. He described Bessemer as a real genius of the entrepreneurial kind, with a vision of the possibilities for cheap steel.

Bessemer came to metallurgy, which by his own account at the start he did not understand at all, due to his interest in developing artillery shells[4]. His original experiment succeeded, but using a non-phosphoric iron ore. Subsequently, he had to solve why it didn't work with phosphoric ones. Then, he had to confront the reality that hardly anyone wanted to buy a licence from him to use the idea.

On this point, Schumpeter raised himself to full rhetorical flourish. I will quote:

> *"Bessemer now took the line, much more consciously and according to reasoned plan than entrepreneurs do as a rule, of going straight into the citadel of the enemy, to Sheffield, in order to produce and undersell.*

> *There, steel that was good, though not as yet very cheap (and here Schumpeter adds a footnote that it was not very cheap especially for other producers who had to pay for the licence from Bessemer, and it wasn't very cheap anyway because his productive apparatus was not the ideal of rationality), but eventually it saw the light of the market (from 1858) and was a financial success from the first"*[5].

Creative destruction had its way. Now, I don't want to rain on Bessemer's parade. It was a very important technological advance because the product – steel – was used across the economy. But it was not what is now known as General Purpose Technology, or GPT for short.

A GPT is a technology (as distinct from a product like steel) with broad, economy-wide applicability that improves over time and enables complementary innovations across many sectors of the economy. To be clear, this use of GPT is not the same as Chat-GPT, where GPT stands for Generative Pre-trained Transformer.

GPTs have driven the cycles of technology-led growth, the heart of creative destruction. How many such cycles have we had? I would say the following qualify: the steam engine; the internal combustion engine; chemistry and the transformation of substances; electricity; and information processing and the internet.

I am going to go back now to the question, what has caused the slowdown in growth over the last fifteen years or so? There are quite a few candidates, and they are not mutually exclusive. Three possibilities are: the legacy of the financial crisis; the coincidence of bad shocks (COVID, the war in Ukraine caused by Russia; the latest outbreak in the Gulf); and the growing effect of declining population growth.

All of these are candidates and may have a role. But we should go back to Schumpeter, and to technology as a cause of growth. Three questions are relevant here. What is it about GPTs that causes growth cycles to end? Are

there gaps between the cycles? And is this a reasonable explanation of what has gone over the last fifteen years or so?

What causes GPTs to end? We are talking here about their contribution to growth, not their prevalence. The internet is everywhere, but as it has become so, it is natural that its contribution to growth will diminish. You can only get so much of it – honestly.

Are there gaps between cycles? Yes. We have seen this in the past, and they have been perceived as challenging periods. Economic historians have debated whether late Victorian Britain failed because other countries caught up with faster growth. I agree with those who say that it didn't fail, but it did need to reinvent itself[6]. One reason for such gaps is that it takes time to cook up the next technology.

Is this a reasonable explanation of the last fifteen years or so? Yes, I would argue. One clue is the declining contribution of productivity growth. The obvious next question is what is the next General Purpose Technology? It's most likely to be Artificial Intelligence, though I would add AI operating with robotics.

This brings me to what may be the hardest question – how do we define AI? Bear with me – I do not claim to be an expert in this field[7]. As humans we are intelligent to the extent that our actions are expected to achieve our objectives. Machines are assumed not to have objectives of their own – they are a means of us furthering our objectives.

But we are often uncertain how to achieve our objectives. The critical feature of the human brain is that it can adapt to uncertainty. This is inductive thinking. It is distinct from deductive thinking, where we follow a pre-set rule. Where does AI fit into this?

One step forward is to create machines that are able to process vastly more information more quickly than we can (eg. process the whole of the internet). This is not doing anything we cannot do in principle, but in practice it is doing things we cannot do. But this is still fixed learning – fixed in the sense of the stock of information.

As humans we learn from experience – it's part of our inductive processing. This is where so-called Reinforcement Learning comes into AI. Here the machine learns through experience using trial and error. It takes actions, receives feedback, and adjusts its behaviour based on what worked and what did not. It is still applying general principles, but in doing so it is applying judgement based on its own learning. This creates a form of tacit knowledge.

It applies general principles, while it also incorporates knowledge and judgement from its own learning. The model is thus growing. You can see now that this is where the questions start to arise – is it really still set up to achieve our objectives or is it moving on itself and, in ways that may or may not be consistent with our intentions?

But what is relevant is how it operationalises all of this. Let's imagine we are Henry Bessemer. He had a finding – the initial experiment in London. He had to think through the constraints and opportunities of using it. Then, construct a plan to put it to work. Then he had to validate the steps in that plan (if only because his annoying banker may have asked for this). And then, he could get going and put the plan to work.

AI with Reinforcement Learning could get us much further through that sequence of steps with much less time spent, cost and human intervention, hence the productivity gains and its would-be status as a particularly potent GPT.

Can AI make cutlery? I did not take the question literally because I am of the generation that grew up watching Blue Peter in its early days. You may remember one of their familiar comments – *"Don't try this at home"*. Instead, I asked

four different AI programmes the question – *"Can AI make cutlery?"* They came back with basically the same answer[8]. Here's one; which is representative:

> *"Yes, AI can help make cutlery, but usually as part of a manufacturing system, not by itself. It can assist with design, automate production, inspect quality, and optimise packing and maintenance."*

So, AI can improve the productivity of cutlery production and is probably already doing so.

This brings me to the last part of my remarks. When are we going to get the growth from AI? I am going to take this in two parts. First, what are the characteristics of GPT innovation which can guide us to an answer? And second, what can go wrong, - well, I'm a central banker, so we have to do this bit.

GPTs are enabling technologies – they spread across economies and make other things happen. The first invention often triggers a sequence of secondary innovations which spread its reach[9]. But, in most GPTs to date it has taken time for the main effects to come through.

It took eight decades from James Watt's first steam engine to the major growth contribution of steam power showing up in the mid-nineteenth century. Likewise, while Thomas Edison opened his first power station in New York in 1882, it was a further four decades before there was a meaningful boost to productivity growth. More recently, the economist Robert Solow made a famous comment in 1987 that: *"You can see the computer age everywhere but in the productivity statistics"* which became known as the Solow Paradox[10].

But this may not be such a paradox, for several reasons. First, the initial invention typically doesn't get there on its own – complementary changes need to come along, and this takes time. Second, it is arguable that productivity

may slow down in the early phases, because it is the experimenting phase. We may well be there on AI – I certainly am. Third, there may well be more measurement error in the early phases.

We are not very good at measuring new things – recently the national statisticians have been working on how to value and measure data – which have a utility that has grown rapidly. And, we have to calculate to what extent GPT innovation increases the obsolescence of the old stuff that we used and how we should measure that.

One more point on why change can take time. An initial intervention which is not followed immediately by complementary further innovation can actually lead to the expansion of the old ways of doing things. In Sheffield, the early stages of nineteenth innovation actually led to the growth of the traditional craft-based domestic industry.

We can try to map all of this into what might happen with AI. The invention – innovation cycle may well have shortened, and maybe drastically so. Today, the life expectancy of a new model release is around three to four months. But, even so, that does not tell us how rapidly AI will shift the productivity numbers.

AI may well ride to the rescue, but how quickly it will arrive in the productivity numbers is an open question. Really meaningful gains to productivity tend to come from wholly new products and activities, not so much from automating our existing tasks, and that tends to require further complementary innovations.

There is a saying which is probably misattributed to the science fiction writer Arthur C Clarke, that innovation is overrated in the short run and underrated in the long run. With AI, I think the innovation cycle is much shorter, but it may well still be somewhat longer before it contributes substantially to growth.

So, what can possibly go wrong? Schumpeter's view of industrialisation and living standards was, rather simply, that in the end everyone came out ahead. Niccolo Machiavelli never exactly wrote that the end justifies the means, but Schumpeter's argument heads in that direction[11].

A major issue here is what GPT innovation does for employment? The answer from history is not clear-cut. It depends on the form of the innovation and its impact. On one view, there are four main channels for the impact on employment[12].

- A displacement effect, where AI will replace people in tasks it can do more cheaply or efficiently. Chatbots replacing customer service agents would be an example (whatever you think of them).

- A reinstatement effect – it creates new tasks where people are still needed. An example of this would be data scientists.

- A productivity effect – AI makes firms more productive, costs fall, output expands, and as the automation is partial, this increases the demand for labour. As with the reinstatement effect, the productivity effect expands the use of labour. An example of this would be AI helping doctors to analyse scans faster, more patients get treated and more doctors are needed.

- AI mostly replaces labour, and the share of profits increases relative to wages, employment can fall, but wages for certain skills can rise. This can increase demand for some highly skilled workers who manage AI systems.

The outcome in terms of employment therefore depends on which of these forces dominates, and the sequence by which they take effect. History isn't a great help here. The first Industrial Revolution is usually dated from around the 1780s. While productivity growth did increase, real wages stagnated until the 1840s.

In this period, the wages of traditional skilled labour fell, and there was an increase in unskilled labour in factories, including child labour. The Luddites – machine destroyers - were a reaction to that and were active at times in this area. This period is also known as the Engels Pause. Friedrich Engels was closely associated with Karl Marx, and it was from this that Marx formulated much of his view on the dynamics of industrialisation and the eventual dictatorship of the proletariat. He was wrong, but it took time for that to become clear[14].

In contrast, mass factory production following electrification led to a more rapid increase in the demand for skilled labour and real wages and a fall in income inequality. The pattern of growth and income distribution was different.

The ICT and internet cycle coincided with a period of relatively low unemployment by historical standards. In the UK, the wage share of national income was relatively constant, while in the US it declined. The mix of skills in demand changed, and there was a growth of industrial production more broadly around the world. Offshoring rose, and there was strong growth in productivity in most parts of the world.

I would pull a few key points out here. First, history shows that there is no single story on the relationship between major technology changes, economic growth, employment and living standards. However, shifts in the structure of the economy and employment are inherent to a technology-driven system of economic growth.

Second, the four-part framework is a good way to think about the employment effects of AI. The answer is not pre-determined, and it depends on choices we make – there is a dynamic element to the spread of GPTs. It is though a

critical issue in the future of our economy. The impact of AI may well also be on different types of jobs from previous waves of GPT change. It may well impact more skilled jobs, and so-called entry level jobs.

I will end with one point – if there is one thing we can do which unambiguously will help on the employment question it is to invest in education and skills in AI. ■

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Endnotes

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I would like to thank Sarah Batten, Sarah Breeden, Karen Jude, Georgis Kyriaopoulous, Ben Martin, Dawn Plummer, Martin Seneca and Sam Woods for their comments and help in the preparation of these remarks. This article is based on a speech given at the 389th Cutlers' Feast, Cutlers' Hall, Sheffield, 21 May 2026.

Strengthening operational resilience for the age of AI

Europe faces unprecedented geopolitical and economic challenges, including high dependencies on external providers for energy, technology, security, and financial infrastructure. Frank Elderson argues reducing these dependencies is essential for safeguarding the European way of life

Europe is facing a set of unprecedented challenges. The geopolitical environment is becoming increasingly fragmented. Europe remains overly dependent on external providers for energy, technology, security and key financial infrastructures such as payment systems and capital markets. Reducing these dependencies is no longer a choice, but a necessity to safeguard the European way of life.

Ensuring that our future is not determined elsewhere demands investment on an unprecedented scale. Consider that the green, digital and defence transitions will require an additional €1.2 trillion of spending per year between now and 2031[1]. No single actor, no single sector and no single country can meet these challenges alone.

As fiscal space tightens, much of Europe's investment needs will have to come from private investment, with capital markets playing a pivotal role. In a bank-based financial system like Europe's, strong, competitive and resilient banks are even more indispensable than they are elsewhere. They sustain the flow of finance to businesses, households and the broader real economy. It is therefore no surprise that the competitiveness of European banks has moved to the heart of the policy debate[2].

Yet the competitiveness of the banking sector is not solely determined by capital, market integration, scale or regulation. It also hinges on whether banks can continue to serve their clients and provide critical services when disruption strikes. That is why today I will focus on operational resilience.

Resilience goes far beyond capital

When some people hear supervisors speak about resilience, they immediately think of financial resilience. However, in a world of more frequent, sophisticated and disruptive cyber incidents, technology failures and growing dependencies on third parties, a bank can be well capitalised and highly liquid and yet still unable to operate.

A striking example of the importance of non-financial resilience is the ransomware attack that hit the New York branch of the Industrial and Commercial Bank of China in 2023 – the largest bank in the world by assets. Despite the bank's financial strength, the incident disrupted the settlement of trades in the US Treasury market, one of the most systemically important markets globally. The bank had to rely on manual workarounds – including reportedly dispatching a courier with a USB stick across downtown Manhattan – to meet its obligations.

Europe is facing enormous financing needs to boost its autonomy. We must finance the transition to a cleaner economy, strengthen our collective defence, build the industries of the digital age and support societies that are growing older. To do so, we need strong and competitive banks

Another example is the CrowdStrike incident in 2024, when systems using a major operating platform crashed and displayed the 'blue screen of death'. The disruption affected firms across sectors, including financial services.

At the same time, the threat environment is evolving rapidly with the rise of AI. One telling example involved criminals using AI-generated identities to create thousands of fake customers in order to obtain loans, causing millions in losses for the bank concerned.

We have also seen an increase in the number of cyberattacks reported by banks under our supervision in recent years[3]. All these examples illustrate a fundamental point: a bank can have ample capital and liquidity but still face severe operational issues, or even fail, if it lacks preparedness and robust contingency planning for operational shocks. Today, resilience is not only about absorbing losses, but also about maintaining critical services – even under severe operational stress[4].

This imperative to maintain operational resilience is all the more critical in banking – a sector built on trust in which cybersecurity failures can have profoundly damaging consequences.

Operational resilience firmly on the agenda of banks and supervisors

The good news is that banks and supervisors are not starting from scratch. Over the past decade, cyberattacks on critical infrastructure – including energy and telecommunications providers, as well as banks – have become more frequent, more targeted and more sophisticated[5].

Although cyberattacks are occurring everywhere, every day and at any time, and while notable incidents have affected financial services, we have not yet seen such events escalate into widespread disruption or threaten the viability of a major bank[6]. This is not a coincidence.

The fact that financial services are among the sectors best prepared to deal with cyberattacks reflects years of capacity building in banks: in defence, detection and incident response and reporting. Moreover, governance arrangements have improved and there is a greater awareness of cyber risks, particularly among banks' management bodies[7].

Importantly, banks' efforts have evolved in tandem with a stronger and sustained supervisory focus. Operational resilience and cyber risk have been a priority for European banking supervision for several years[8], during which we have worked closely with banks in both ongoing and on-site supervision. For example, in 2024 we conducted a cyber resilience stress test on 109 banks, 28 of which underwent a more thorough assessment of their ability to respond to, and recover from, a severe but plausible cybersecurity incident.

While the exercise confirmed that banks have frameworks in place to respond to and recover from severe cyber incidents, it also highlighted areas for improvement for certain banks. Since then, almost three-quarters of our findings identified by the stress test have been addressed, with banks notably strengthening their cyber resilience.

The Digital Operational Resilience Act (DORA), which entered into force last year, provides a regulatory framework that requires banks to foster a culture of continuous improvement in IT and cyber risk management. It has also enhanced the oversight of critical third-party providers, such as cloud service providers[9]. In addition, DORA gave supervisors the task of testing whether a financial institution can detect, respond to and recover from sophisticated attacks that mirror real-world threats, thereby providing a more systemic and enforceable framework for resilience[10].

Taken together, these efforts have raised the cost and complexity of successful attacks, effectively pushing up the 'price of admission' and prompting many threat actors to target less well-prepared sectors instead. There is, however, no room for complacency.

Advancements in AI are reshaping the threat landscape, fundamentally altering the balance and asymmetry between defenders and adversaries. Put bluntly, if ensuring operational resilience was already critical a few years ago, it certainly is today – amid a rapidly evolving threat landscape shaped by frontier AI models.

Artificial intelligence: a structural shift in the cyber threat landscape

AI adoption is already widespread among Europe's significant banks. Our annual data collection on banks' use of innovative technologies shows that more than 85% of banks under European banking supervision use artificial intelligence.

Used responsibly, AI can help banks strengthen their operations, improve risk management and enhance IT security. But AI also vastly improves the capabilities available to malicious actors. Until very recently, launching a sophisticated cyberattack required deep technical expertise, extensive reconnaissance and coding, and often weeks – or even months – of trial and error. Not anymore.

A new generation of large-scale AI models is emerging, with increasingly advanced cybersecurity capabilities. If these tools become more widely accessible, they could enable a much broader range of malicious actors to carry out complex attacks with greater speed and precision.

Our current understanding is that tools of this kind are not simply another incremental improvement; they are a structural shift in the economics of cyber risk. Tools like Mythos appear to be significantly more advanced than existing tools in three important ways. First, they can discover and exploit vulnerabilities at a speed and scale far beyond what we have seen before. Second, they can combine seemingly minor vulnerabilities into serious attacks. And third, they can help reverse-engineer patches into exploitable vulnerabilities and, again, do so at unprecedented speed.

Together, these characteristics suggest that the 'price of admission' will fall. The marginal cost of identifying and exploiting vulnerabilities in IT systems will decline, possibly by orders of magnitude. Cyberattacks that previously required significant expertise, time and resources may in future be achieved more quickly, at scale, and by a much broader set of potentially malicious actors. Current evidence suggests that these models may be effective not only against environments with weak levels of defence but also against standards that were once previously considered state of the art.

The direction of travel is unmistakable: the speed, scale and accessibility of advanced cyber capabilities are increasing, and the time available to defenders is shrinking. Banks therefore need to prepare more quickly, more effectively and more consistently across the sector. In musical terms, *andante* may have previously been good enough, but now we need to move to *presto*.

The pivotal role of management bodies in addressing this strategic challenge

Most importantly, the challenges posed by new generations of AI models should not be viewed solely as a cybersecurity issue – they are a firm-wide strategic challenge with potential implications for banks' safety and soundness. It is therefore essential that banks' management bodies take clear ownership of the issue, ensuring that resources and tools are commensurate with its scale. This approach is vital to close cyber resilience gaps, enable timely patching and maintain strong cyber hygiene.

Moreover, the critical infrastructure on which banks depend – including cloud providers, telecommunications networks, payment systems and electricity and water supplies – could also become targets. As a result, scenarios that were once considered tail risks may become more likely, such as vulnerabilities in a single, widely used infrastructure quickly escalating into disruption across an entire sector, with knock-on effects on banks' ability to operate.

This makes it all the more important to both strengthen the oversight and monitoring of third-party dependencies and enhance information sharing across the financial system. Given that many of these threats are similar in nature, the timely exchange of information on vulnerabilities, incidents and mitigation measures is a cornerstone of collective resilience.

Considering that some banks' preparedness is still weak this is also where we, as supervisors, have a role to play. The SSM will use its system-wide perspective to support institutions by pointing out areas of attention and good practices, which could prove particularly beneficial for smaller banks with less sophisticated IT environments[11].

In this spirit, we brought together supervised banks to discuss the implications of frontier AI models for banks' resilience and the practical actions needed in response. As a next step we will send a so-called 'dear CEO letter' to all banks in which we aim to ask banks to take proactive measures to ensure the continued robustness and security of their systems in the face of these transformative challenges and will follow up with individual banks in a targeted manner. Our aim is straightforward: to ensure that banks take the necessary steps now, before these technologies are more widely used by threat actors.

Strengthening operational resilience requires investment

Operational resilience is not a stand-alone issue that is separate from the current debate on banking sector competitiveness. It is part of the foundational elements that shape banks' competitiveness.

If banks are unable to maintain their customers' trust by providing a reliable service, their ability to compete in an increasingly digitalised financial system will be undermined. Ensuring operational resilience is therefore not only a safeguard – it is also key to remaining competitive, both today and in the years ahead.

Strengthening operational resilience requires multi-year investment in people, systems and governance. In short, it is not a quick fix, it is a moving target which calls for continuous effort and ongoing improvement. Banks should therefore give careful consideration to bolstering operational resilience in their investment strategies. The currently strong bank profitability provides an opportunity to continue investing.

At the same time, the banking sector's defensive capabilities are not evenly distributed, leaving parts of the system more exposed than others. While some larger banks have a size advantage when it comes to having the IT budgets that match the scale of the task, this may admittedly be more difficult for small and medium-sized banks.

This is, however, no reason for inaction. In a diverse banking system, where banks of different sizes and business models thrive and support the real economy, all banks must be able to ensure a sufficient level of operational resilience.

This point is particularly important at a time in which further embracing proportionality in supervision and regulation has become a topical issue in the debate. There are undoubtedly areas where a more proportionate approach is worth pursuing[12]. Such enhanced proportionality, however, cannot come at a cost of prudent risk management.

Conclusion

Europe is facing enormous financing needs to boost its autonomy. We must finance the transition to a cleaner economy, strengthen our collective defence, build the industries of the digital age and support societies that are growing older. To do so, we need strong and competitive banks. But banks can only play their role if they are resilient, including to operational threats.

Frontier AI models are changing the cyber threat landscape. They are lowering barriers for attackers, increasing the speed of exploitation and exposing weaknesses that were too often tolerated for too long.

This is not about creating a sense of alarm, but rather a sense of urgency
Because we cannot afford to be complacent. Our message as supervisors is simple: act early, invest decisively now, and do not wait for the next incident to reveal where your vulnerabilities lie. Such a proactive approach will contribute to a thriving, diverse banking system that is capable of supporting the real economy through the digital, green and defence transitions.

A resilient and thriving banking system is not simply a nice to have. It will be imperative to tackle the challenges we are facing both today and in the years ahead. ■

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3. The number of cyber incidents reported by banks to the ECB rose sharply up to the end of 2024. The data for 2025 is not directly comparable because the incident reporting thresholds were changed following the entry into force of the EU's Digital Operational Resilience Act (DORA). As a result of DORA, the ECB now receives ICT (non-cyber but operational) incident reports as well as ICT cyber incident reports. However, the latter are smaller in number than before because the reporting thresholds differ from those under the ECB's former cyber incident reporting framework.

4. In practice, this means being able to prevent, withstand, respond to, recover and learn from operational shocks The Basel Committee on Banking Supervision defines operational resilience as follows: "the ability of a bank to deliver critical operations through disruption. This ability enables a bank to identify and protect itself from threats and potential failures, respond and adapt to, as well as recover and learn from disruptive events in order to minimise their impact on the delivery of critical operations through disruption. In considering its operational resilience, a bank should assume that disruptions will occur, and take into account its overall risk appetite and tolerance for disruption." See paragraph 11 of the Basel Committee's principles for operational resilience.

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insurance companies rank approximately fourth among the top ten industries affected by cyberattacks in volume terms, jointly with the educational services industry, and below the public administration, healthcare and technology industries; see the University of Maryland's CISSM Cyber Events Database. In the European financial sector as a whole, banks are by far the entities experiencing the greatest number of cyberattacks. See European Union Agency for Cybersecurity (2025), ENISA threat landscape: finance sector, February.

6. Some incidents have disrupted payment channels, delayed customer services and, in a few cases, caused notable financial losses. But none has threatened the viability of a major bank or produced a systemic shock.

7. Some 86% of CROs cite cybersecurity and technology risk as a top priority for the next 12 months, whereas only 62% cite credit risk. Institute of International Finance (2026), Annual EY/IIF Global Bank Risk Management Survey – Shifting priorities: CRO agendas in a time of uncertainty and innovation, IIF, 24 February.

8. In addition to working with banks on their own preparedness. starting in 2023 the SSM organized cyber dry-runs to test our own preparedness to respond to large-scale cyber incidents. The simulations focused on detection, escalation, information sharing, and coordination capabilities during a systemic crisis, possibly when the ECB's and the NCAs own ICT systems are also affected. This kind of activity is key for improving our own operational resilience, strengthening contingency plans and identifying areas where cooperation should be improved.

9. This is essential because banks increasingly rely on external providers for some critical functions that are difficult or impossible to replace, thereby exposing them to cascading effects from cyber incidents in the supply chain, even if they themselves have not been directly targeted.

10. Threat-led penetration testing (TLPT) under the EU's Digital Operational Resilience Act (DORA).

11. Good practices do not describe or establish new regulatory requirements and have no legally binding effect. This means that a bank may be fully compliant with the applicable legal framework without implementing any of the good practices pointed by the ECB, provided that it follows other practices that are more appropriate to its particular risk profile, business model and circumstances.

12. Even if proportionality is already embedded in the European regulatory and supervisory approach, we see room to embrace it further. The small and non-complex institutions (SNCIs) regime, is the natural starting point, while maintaining the Single Rulebook, which ensures the risk-based nature of the prudential framework is retained for all banks. One could consider, for example, increasing the scope of eligible small banks through an increase of the €5 billion threshold of the SNCI regime as well as extending the scope of the simplified rules. Any simpler regime for smaller banks also needs to be accompanied by a credible, flexible and efficient crisis management framework for these institutions: See Elderson, F (2026), "Boosting prosperity through deeper integration", keynote speech at the conference "Financing Europe: a new era of strategic investment", Brussels, 12 May; and ECB (2026), Eurosystem response to the EU Commission's targeted consultation on the competitiveness of the EU banking sector, April.

This article is based on a keynote speech delivered at the Goldman Sachs European Financials Conference 2026, Zurich, 3 June 2026.

Reconfiguring Europe in a fractured global economy

The dramatic developments unfolding globally, spanning wars, geopolitical shifts, and trade disruptions, have caught Europe off balance. Marco Buti, Giancarlo Corsetti and Anna Peychev discuss the 2026 *Florence Report* and urge the EU to replace its broken 'reduced responsibility model' with a New European Social Contract integrating defence, finance, and the supply of public goods

There is little doubt that the international order is at a point of rupture (Gensler *et al* 2025, Obstfeld 2025, Papakonstantinou and Pisani 2024). The dramatic developments unfolding globally, spanning wars, geopolitical shifts, and trade disruptions, have caught Europe – both the EU and its member states – off balance.

Where the current evolution will eventually settle is as yet uncertain. It is already clear, however, that this upheaval has dismantled the external governance and institutional framework that underpinned the EU's policy agenda, institutional design, and economic development, leaving what we have termed Europe's 'reduced responsibility model' (RRM) entirely dysfunctional.

The *Florence Report* (Buti *et al* 2026) – the flagship initiative of the EMU Lab at the Robert Schuman Centre for Advanced Studies at the European University Institute – explores how Europe can navigate this fundamentally changed world order. It discusses the roots and dimensions of fragmentation and examines how these developments constrain policy space for action at both the national and the EU governance levels.

Pursuing a pragmatic way forward, the report re-examines established governance frameworks to articulate a coherent policy agenda to get over the RRM towards a more independent and secure Europe.

The end of the reduced responsibility model

For decades, the EU operated under a 'reduced responsibility model' – member states could under-invest in common defence by relying on US protection, count on the vast American market to pursue export-led growth strategies, and anchor financial stability to US-led hegemonic governance of international law and trade institutions.

To be clear, European integration was first and foremost led by strong internal political drivers, but the international context at the time allowed member states to progress with the Union project by bypassing 'full responsibility' in key areas. United Europe's remarkable achievements all suffered from the same 'hold-back' diagnosis.

Beneath its apparent and surprising resilience, the global economy faces a high risk of collapse, triggered either by war or by financial shocks, originating with overextended private credit or a potential AI bubble burst

Europe embraced the Single Market project, but never completed a common strategy to secure the efficiency and resilience of own infrastructure, telecommunication, or energy networks. It launched the euro, pretending that the unmatched independence of the ECB, the Stability and Growth Pact, and the no bail-out clause would guarantee a resilient financial and macroeconomic framework to deliver on the promise of shared prosperity.

Fractured by open geopolitical rivalry and strategic competition, the global environment is no longer conducive to the EU's reduced responsibility model. Neutral commons such as energy, finance, and climate have been explicitly weaponised, turning public goods into public bads. What the EU counted on as pillars of cooperation and stability are now being used against it.

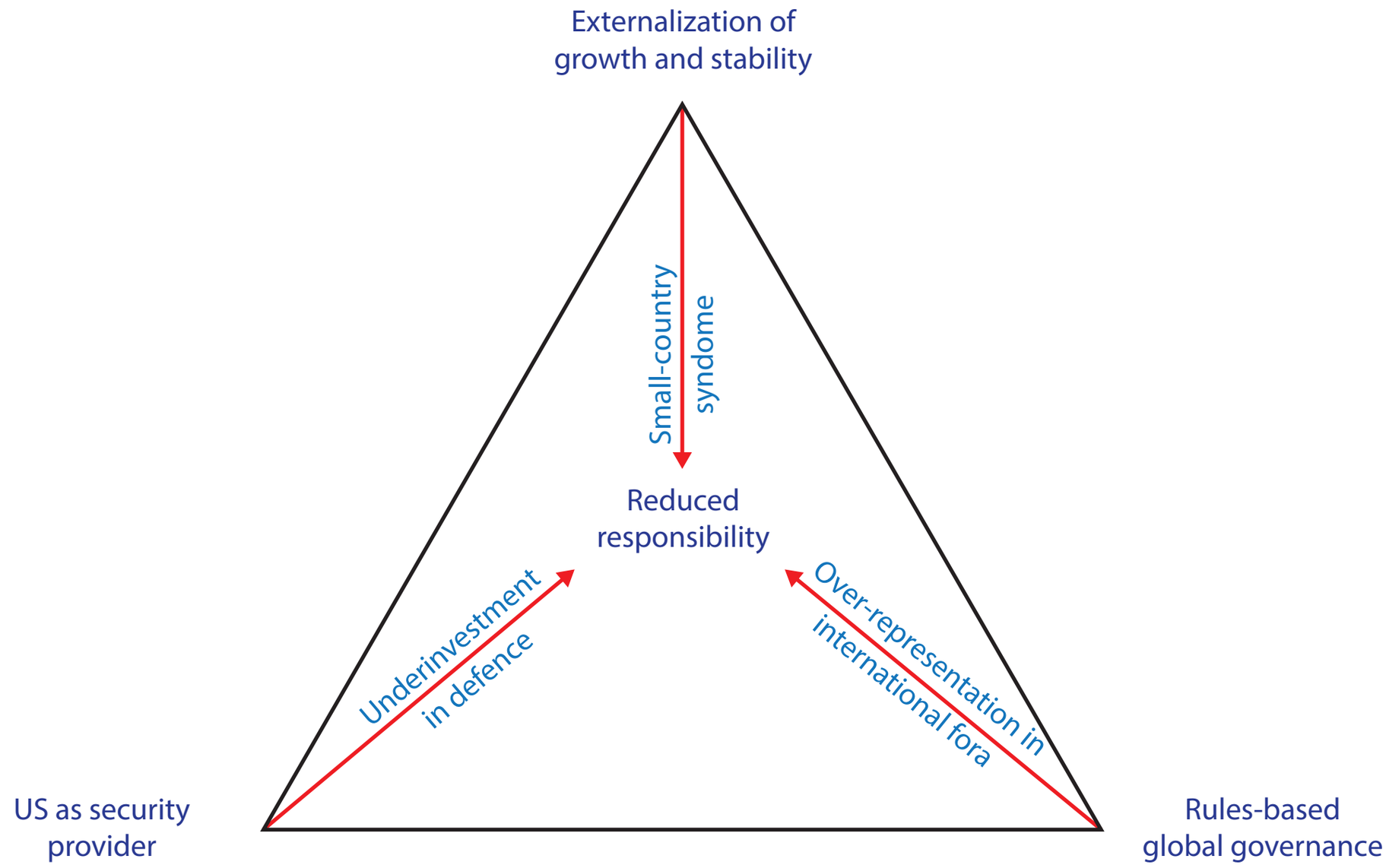
Although we are still in uncharted waters, it is already evident the breakdown of the status quo is structural: the external conditions that sustained Europe's development have largely disappeared and are unlikely to materialise again in the same constellation that allowed the RRM to flourish in the first place.

Beneath its apparent and surprising resilience, the global economy faces a high risk of collapse, triggered either by war or by financial shocks, originating with overextended private credit or a potential AI bubble burst.

The current situation is truly exceptional: the collapse of the RRM is a silent crisis eroding the very fundamentals that Europe long based its progress upon. These dynamics are not easily discerned and the EU's conventional crisis-management model based on ad hoc reactive measures will not suffice in handling them.

Instead, the Union must embrace a different approach in kind: the wholesale and accelerated implementation of a shared and cohesive strategy to stabilise its very foundations.

Figure 1. Europe's reduced responsibility model



Four priors

There are four core convictions guiding the analysis in the *Florence Report*. First, while boosting growth and competitiveness is essential, that is not an end in itself. Rather, it is a means to sustaining Europe's social model in the face of ageing, climate change, and geopolitical pressures, and therefore requires broad political consensus from inception to implementation.

Second, we believe that the European social model should be understood not as a constraint on economic dynamism, but as a source of stability and a potential enabler of innovation. Properly designed social policies can reconcile labour market flexibility with social sustainability.

We reject the defeatist narrative of a weak Europe and argue instead that the EU's foundations – democratic values, rule of law, and regulated markets – constitute a distinct and underappreciated form of power that positions Europe as a global leader in sustaining the rules-based international order that is essential for the survival and functioning of modern democracies.

Finally, despite the political limits to federalisation, the EU can still capture the benefits from economies of scale through targeted joint action on common projects. Delivering tangible gains for citizens through shared action may, in turn, reshape political preferences and create virtuous feedback effects that gradually ease domestic and EU-level constraints.

A three-pronged policy agenda

Delivering a new model for European independence and security involves a fundamental shift in perspective: the Union is not as a constraint on national policy space, but a creator of it. By trading a degree of formal sovereignty for

collective security and prosperity – especially in areas such as climate transition, common defence, and large-scale digital infrastructure – member states can secure goods that no single nation can provide effectively on its own and gain a level of global relevance that is otherwise beyond individual reach.

This approach also underpins the successful implementation of the *Florence Report's* three-pronged policy agenda: strengthening multilateralism through multipolar global alliances in line with European values, creating a genuine Savings and Investment Union on boost competitiveness and innovation, and reorienting the EU budget towards the provision of European public goods.

In light of recent experience and existing legal constraints, further progress on this shared endeavour will likely emerge from initiatives driven by shifting coalitions of willing member states. The central task is to structure these efforts to enable broader participation over time and avoid devolving into an EU à la carte – a collection fragmented projects that weaken the EU's institutional unity.

The fundamental challenge to delivering on this course of action is not a lack of inherent power, but the need to overcome self-defeatism and what can be described as a 'fragmentation trap' – a short-termism in policy behaviour driven by national political narratives which frame shared sovereignty as a zero-sum game even if further integration would demonstrably raise welfare across all member states. That is why overcoming the now dysfunctional RRM requires the creation of an institutional setting attuned to remedying these biases.

Most crucially on the path ahead, the EU must confront the fundamental issues plaguing its productivity. But rather than simply playing catch-up with the US or China, Europe should exploit its dynamic comparative advantage by boosting its own technological trajectories combining innovation with efficiency, equity, and sustainability.

Table 1. Response to the crisis of the reduced responsibility model

Different paths	Intergovernmental approach	Renewal comminity method
Defence and security	Reliance on higher national spending and ad-hoc coalitions for limited issues.	Creation of a defence union and a single market for defence.
Growth and stability	Retreat into neo-mercantilism, national industrial policies, and fragmented financial systems.	Development of a central fiscal capacity, a safe asset, and strengthening the euro's international role.
Global governance	Network of bilateral national agreements with third parties.	Unified push for a new multipolar system.

A New European Social Contract

The collapse of the external conditions underpinning Europe's reduced responsibility model has exposed structural weaknesses, eroded policy space, and amplified divergence amongst member states. Fragmentation – both internal and external – now constrains Europe's ability to take much-needed action causing a direct threat to European prosperity.

Overcoming this dynamic will depend on re-establishing a political and institutional own capacity for collective action, anchored in a renewed European social contract. Central to this vision is the concept of 'insurance-based solidarity' championed by the late Jurgen Habermas: because no member state can reliably predict its future exposure to shocks, all have an interest in arrangements that allow risks and costs to be shared over time.

This 'veil of ignorance' reinforces the case for collective mechanisms that go beyond narrow national calculations. Solidarity then becomes forward-looking: it is justified not by permanent transfers, but by the expectation that all may at different times benefit from common support.

By extension, the New European Social Contract is not just an economic arrangement, but a political project of mutual recognition and responsibility. Mutual trust is the 'intertemporal glue' of this arrangement, allowing countries to sustain cooperation over time by recognising that the benefits of this shared insurance may not be immediate, but will materialise across different moments and circumstances.

There is also a fundamental political asset that should not be overlooked in this regard: public support for European integration and a stronger EU remains robust, even in traditionally sceptical countries. Capitalising on this approval could help ease political constraints and address the Union's current challenges; failing to do so risks eroding it.

By embracing foresight and insurance-based solidarity, the Union can demonstrate to its citizens and the world that it is both ready and capable of taking its destiny into its own hands. The *Florence Report* provides the intellectual case for a New European Social Contract, asserting that a Union that is stronger than the sum of its parts is the only viable option for navigating a world where old alliances and certainties have vanished.

Turning away from the full responsibility that comes with building a stable multipolar world, realising the Saving and Investment Union, and stepping up the supply of European public goods is not an option anymore. The external and internal dimensions of a stronger Europe are inextricably linked in a single whole. ■

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This article was originally published on VoxEU.org.

Climate, nature and monetary policy

Global efforts to tackle the climate and nature crises have not progressed as hoped, says Christine Lagarde. This sharpens the case for deeper analysis from the research and central banking communities to better understand the risks to price and financial stability

This conference on climate, nature and monetary policy, the first of its kind at the ECB, is one that would have been hard to imagine even a decade ago. Not because climate risk was unrecognised at the time. The scientific community had long been clear about its seriousness, and the Paris Agreement set a common direction of travel for governments, which carry the primary responsibility for tackling climate change.

Rather, the attention given to what climate change meant for central banks – in research and in policy – was still in its infancy. And where it did exist, it focused primarily on the consequences for financial stability, with landmark interventions as early as 2015[1].

The implications for monetary policy came into focus more slowly. For instance, it was only in 2018 that an ECB Executive Board member devoted a speech to the topic – and even then, the case made was largely hypothetical, reflecting, in part, the lack of substantive research at the time[2].

The consequences of nature risks for monetary policy took longer still to enter the policy conversation. Measured against those early days, the distance covered by researchers and monetary policymakers has been substantial – as this conference's rich agenda shows.

However, the journey of the past decade has also been bittersweet. Global efforts to tackle the climate and nature crises have not progressed nearly as well as many would have hoped.

But this shortfall does not mean our efforts have been in vain. If anything, it sharpens the case for deeper analysis from the research and central banking communities – to better understand the risks that lie ahead, and to distinguish the signals of science from the noise of politics.

A decade of progress

If we look back on recent years, a virtuous circle has emerged between advances in knowledge and the institutional architecture that some central banks have built around it. Deeper understanding has made the case for, and led to the establishment of, that architecture. And that architecture has in turn created fertile ground for new knowledge to grow. This has enabled researchers and monetary policymakers, collectively, to become better at what they do.

Climate and nature risks are, by their very nature, deeply uncertain – and, in the face of such uncertainty, chance favours the prepared mind

Take our advances in knowledge first. Our grasp of how climate change shapes the macroeconomic environment in which monetary policy operates has now grown considerably – though it remains far from complete.

Extreme weather events offer a good illustration of this. We now have a greater appreciation that they can hit different parts of the economy differently – and the net impact on medium-term inflation is not always clear in advance.

A weather event that disrupts agricultural production can put upward pressure on food prices. Last summer's heatwave, for example, is estimated to have added up to 0.7 percentage points to unprocessed food prices in the euro area after one year[3]. But such events can also weigh on output, and probably more persistently so than was once thought.

ECB research has found that four years after a drought or flood, regional output remains depressed by around 3 percentage points on average[4]. And if extreme weather shocks were to hit entire economies, the resulting weakness in activity and incomes could dampen demand – potentially putting downward pressure on headline inflation.

As governments pursue the green transition, central banks have also been able to examine how decarbonisation shapes the macroeconomic environment – including its implications for inflation. One example of this is the rollout of ETS2, which extends carbon pricing across the EU to buildings and road transport for the first time. The ECB already factors ETS2 into its macroeconomic projections, estimating that it will add around 0.2 percentage points to headline inflation in the euro area in 2028.

This growing body of knowledge has, in turn, provided the foundation for new networks, frameworks and measures. Some of these networks have blossomed. For example, the Network for Greening the Financial System

(NGFS) launched in 2017 with just eight members. It now comprises over 150 central banks and supervisory authorities across 95 countries[5].

The NGFS itself has become an engine of collective learning. Its climate scenarios, now in their fifth iteration and each more sophisticated than the last, are testament to what pooling minds across so many institutions can produce. The same story has played out within individual institutions – including the ECB, where the progression has been from recognition to integration.

Our 2021 strategy review was grounded in extensive analysis of how climate change interacts with our price stability mandate[6].The outcome of that review was the Eurosystem's commitment to incorporating climate change considerations systematically into our monetary policy and central banking[7]. Last year's strategy assessment extended that commitment to nature[8].

The roadmap established by the 2021 review was ambitious in scope, spanning stress-testing exercises, risk assessment, corporate bond holdings and the collateral framework. And thanks to the dedicated work of ECB staff across the institution, coordinated by our Climate Change Centre, that roadmap has been substantially delivered upon.

Building on that foundation, our recent climate and nature strategy illustrates how institutional efforts are in turn advancing knowledge and strengthening the symbiotic relationship between researchers and policymakers.

Work on nature-related risks is a case in point. Last month, a collaboration between the ECB, the London School of Economics and the University of Oxford revealed how an extreme episode of water scarcity could put as much as 24% of euro area output at risk[9].

Cutting through the noise

Findings like these underline the scale of the climate and nature risks we face. And yet the broader response, from governments and societies as a whole, has fallen short of what the moment demands.

The past decade has thrown up a troubling paradox: every new data point tells us to accelerate the green transition – and yet it is losing pace. It has been the warmest decade on record. The rate of sea level rise has doubled since satellite measurements began[10]. And scientists now consider it likely that, within the next five years, the world will breach the 1.5°C limit set out in the Paris Agreement – far sooner than projections suggested in 2015.

But sharper awareness has not been matched by sharper resolve. The green transition has, if anything, lost momentum. Last year global carbon emissions from fossil fuels hit a record high[11]. And although governments once showed a united resolve in Paris, we now see backtracking in certain jurisdictions.

Part of the reason is that climate change – a phenomenon that strikes regardless of political disposition – has itself become a partisan issue. In recent years, we have even seen debates in Europe about whether the green transition has made the continent more vulnerable in today's geopolitically volatile world by increasing energy bills.

But the status quo is clearly unsustainable. Europe imports roughly 60% of its energy – almost all of it fossil fuels – and today's surging energy prices are a reminder of the cost of that dependency. Alternative sources of energy offer the clearest path to minimising the trade-offs between Europe's energy policy goals of security, sustainability and affordability[12].

Indeed, ECB analysis of the current energy shock shows that countries where a higher share of electricity is generated from non-fossil fuel sources, such as Spain and Portugal, have been more insulated from the rise in

gas prices[13]. But how we approach the transition matters too – and getting it right means identifying the most economically efficient pathways, so as to maximise the opportunities for growth and decarbonisation to advance together.

It is precisely in moments like these – when the climate debate grows louder and becomes less clear-eyed – that rigorous work on climate and nature risks by the research and central banking communities matters most.

The world needs the kind of impartial, fact-based analysis that these communities provide – to cut through the noise and help policymakers and citizens alike understand the signals and what is at stake. That is why a conference such as this one is so welcome. The rich range of topics on the agenda, which a decade ago would have been hard to fill, is itself a measure of how far we have come.

Climate and nature risks are, by their very nature, deeply uncertain – and, in the face of such uncertainty, chance favours the prepared mind, as Louis Pasteur once observed[14]. The research and central banking communities embody that preparation. And there is still much to do. ■

Christine Lagarde is President of the European Central Bank

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This article is based on introductory remarks delivered at the Climate, Nature and Monetary Policy Conference organised by the ECB, Frankfurt School and CETEX, Frankfurt am Main, 5 May 2026.

Stablecoins and the future of money

Stablecoins are not an efficient way to strengthen the international role of the euro, says Christine Lagarde. The best solution to do so remains: deeper capital market integration through the savings and investment union and a stronger safe asset base

Few developments in recent years have moved from the periphery to the centre of the policy debate as quickly as stablecoins. Stablecoins have grown from less than $10 billion six years ago to more than $300 billion today. They are overwhelmingly denominated in US dollars, and nearly 90% of the market is controlled by two issuers – Tether and Circle – based in El Salvador and the United States, respectively.

As their adoption has expanded and their links to the real financial system are deepening, the risks they pose have come firmly into focus, especially as regards financial stability. These concerns have been particularly acute in parts of Latin America and Africa, but they are now firmly part of the policy debate in advanced economies as well.

Europe was early to recognise this. The Markets in Crypto-Assets Regulation (MiCAR) brought stablecoins within the regulatory perimeter in 2024, ahead of developments elsewhere, aiming to contain these risks and safeguard the integrity of the financial system.

In the United States, however, the approach has taken a broader turn. The GENIUS Act is not just a consumer protection and financial stability measure. The US Administration explicitly describes it as a tool to ensure *"the continued global dominance of the US dollar"* and to cement demand for US Treasuries[1]. The terms of the debate have shifted with it. It is no longer about whether stablecoins should exist, but whether jurisdictions can afford to be without them.

The growing argument is that to remain relevant, Europe must respond by promoting euro-denominated stablecoins of its own. Otherwise, it faces a future of digital dollarisation and a loss of monetary sovereignty. But what this debate has not asked clearly enough is what, precisely, stablecoins are for. The benefits attributed to them rest on two distinct functions – a monetary function and a technological function – that are systematically conflated in the current debate. To navigate clearly, we need to separate them.

A thinker born 2,000 years ago put it plainly. Seneca wrote *"Ignoranti quem portum petat, nullus suus ventus est."* To one who does not know to which port one is sailing, no wind is favourable.

The answer, however, does not lie in rejecting technology or discouraging stablecoins altogether. Instead, we must build the public infrastructure that will enable alternative instruments, such as stablecoins and other forms of tokenised money, to operate within a framework anchored by central bank money

The argument I want to develop today is that once we disentangle those two functions, the case for promoting euro-denominated stablecoins is far weaker than it appears. And a more fundamental question comes into view: do we actually need stablecoins to obtain the benefits they are said to provide? Or are we mistaking the instrument for the outcome, when what matters is the architecture underpinning which other instruments can safely emerge?

One instrument, two functions

Stablecoins were initially designed to solve a narrow problem within the crypto ecosystem: price volatility.

To make a specific type of cryptoasset usable for settlement, the creators of stablecoins anchored them mainly to fiat money[2], the very system they had originally sought to bypass, backing each token one-for-one with cash and short-dated government debt[3].

That design choice made stablecoins the internal settlement currency of decentralised finance and the primary bridge between crypto and currencies. It still accounts for the overwhelming majority of their transaction volume.

But as stablecoins move beyond the crypto ecosystem, two distinct functions have started coming into view.

The first is monetary. Stablecoins are increasingly seen as a way to extend the global reach of reserve currencies by easing two long-standing constraints on how those currencies circulate and who can hold the assets behind them.

The first constraint is access to crossborder payment infrastructure. Historically, that access ran through merchant houses in the Renaissance and nowadays comes via the correspondent banking networks[4]. Stablecoins allow monetary value to move outside traditional banking channels, with fewer intermediaries and allegedly lower costs, extending the currency's reach into areas where access has declined.

This is most evident when transactions remain inside the crypto ecosystem, as is increasingly the case in crossborder business-to-business payments, which already account for around 60% of stablecoin payment volume – though that volume amounts to just 0.01 % of global business-to-business flows[5]. Converting into and out of stablecoins, however, incurs costs that can erode those gains.

The second constraint is the ease of holding the currency outside its home jurisdiction. Households abroad have long held dollars in physical form, and institutions have held them through capital markets. But each route involves friction, with cash being cumbersome and earning no yield, and capital market access remaining the preserve of institutional investors.

Stablecoins reduce those frictions, as digital access is faster and easier than hard cash, and it reaches savers in countries where weak currencies can erode savings. In economies where access to a stable currency has historically been constrained, transaction flows already reach around 7.7% of GDP in Latin America and 6.7% in Africa and the Middle East[6].

The implications deepen if stablecoins were to be remunerated. As US dollar-pegged stablecoins hold Treasury bills as reserves, a yield-bearing stablecoin makes its holder, indirectly, a holder of US government debt – held not only as a store of value, but as an investment asset.

And individual portfolio choices aggregate into systemic effects. Research finds that a $3.5 billion inflow into dollarbacked stablecoins lowers threemonth Treasury bill yields by around 2.5-3.5 basis points under normal conditions, with the effect more than doubling in periods of Treasury bill shortages[7].

The second function of stablecoins is technological. It is about how transactions are executed and settled within emerging financial infrastructure.

Digital innovation in recent years has made it possible for financial assets to migrate onto distributed ledger technology (DLT), allowing real-world assets to be tokenised – represented as digital tokens on programmable blockchains[8]. As trading and ownership move onto these platforms, a new requirement emerges: transactions need a settlement asset that can operate natively within the same environment.

Stablecoins have naturally filled this role. They have become the default cash leg for so-called atomic settlement – the simultaneous exchange of two assets within a single transaction, where either both sides settle instantly or neither does. This removes settlement risk by design.

This function requires a stable unit of value on-chain. Most cryptoassets are too volatile to serve this purpose. By anchoring their value to fiat currencies and backing it with liquid reserves, stablecoins are, for now, the only instruments able to perform this role reliably at scale. In effect, they act as the system's native 'cash'.

The importance of this becomes clearer when contrasted with existing financial infrastructure. Today, securities transactions often settle over multiple days, require reconciliation across fragmented ledgers, and tie up collateral for longer than necessary. Distributed ledgers compress these processes into a single environment, where issuance, trading, settlement and custody can occur continuously. Activities that once required manual coordination – such as coupon payments, margin calls and collateral movements – can instead be executed automatically through code.

Adoption is already accelerating. Tokenised money market funds whose shares are issued as tokens on DLT, deployable as collateral in derivatives and repo markets, roughly doubled in market capitalisation in 2025, reaching around €7 billion, outpacing growth in both stablecoins and traditional money market funds[9].

Taken together, these developments reveal a technology that is doing two distinct things at once – reshaping monetary demand and transforming settlement infrastructure – in ways that blur the boundary between them. That blurring is precisely what makes the current policy debate so difficult to navigate. And it is where Europe risks going wrong.

Does Europe need stablecoins?

With close to 98% of stablecoins denominated in US dollars[10], and with the United States now moving to entrench that position through legislation, the growing argument is that Europe must match the US model to remain competitive. But that framing rests on the confusion I have just described. It treats one instrument as if it performs one function.

But when we examine each function separately, the case for adoption looks less compelling. Let me take each in turn, beginning with the monetary function.

The monetary function

Euro-denominated stablecoins, operating within the framework already established by MiCAR, could generate additional global demand for euro area safe assets[11]. If that demand were to grow – driven by buyers outside the euro area, with reserves channelled into safe assets – sovereign yields would compress, financing conditions would ease, and the international reach of the euro would be extended through a new digital channel.

In the short term, the proposition looks like a tailwind. But these stablecoins need to be assessed alongside the trade-offs they would create, at least two of which are material.

The first concerns financial stability. Stablecoins are private liabilities whose stability depends on the credibility and liquidity of their backing. When confidence holds, they function as intended. But when it weakens, the demand for redemption can become sudden and self-reinforcing.

This is not hypothetical. When Silicon Valley Bank collapsed in March 2023, Circle disclosed that $3.3 billion of USD Coin's reserves were held there. USD Coin briefly traded at USD 0.877, more than 12 cents below its promised par. At scale, such dynamics can transmit stress to the underlying asset markets.

The promise of par redemption depends on the very market confidence that can vanish when financial stability deteriorates – and a mass redemption can accelerate that deterioration. As stablecoin use grows, so too does the potential for feedback loops between redemptions and asset markets[12], particularly where issuers are non-banks.

Multi-issuer schemes add a further layer of vulnerability. Where the same stablecoin is issued jointly by EU and non-EU entities, MiCAR's safeguards reach only the EU issuer. In a run, investors will naturally seek to redeem where protections are strongest – which is likely to be the EU, where MiCAR also prohibits redemption fees.

But the reserves held in the EU may not be sufficient to meet such concentrated demand. We know the dangers. And we do not need to wait for a crisis to prevent them.

The second trade-off concerns monetary policy transmission. The ECB's ability to maintain price stability depends on interest rate decisions reaching firms and households through the banking system. When retail deposits migrate into non-bank stablecoins and return to banks as wholesale funding, that channel narrows. Banks lend less, or less efficiently, and the pass-through from policy rates to the real economy weakens.

ECB research has found that in the euro area, where banks remain the dominant source of credit to the real economy, large-scale deposit substitution would weaken lending to firms and the transmission of monetary policy[13]. In the United States, where firms have broad access to capital markets, this effect may matter less: a contraction in bank lending could potentially be more easily absorbed.

Taken together, these trade-offs are significant. They outweigh the short-term gains in financing conditions and international reach that euro-denominated stablecoins might provide. If we want to strengthen the international appeal of the euro, stablecoins are not an efficient way of doing so.

The best solution remains the same: more integrated capital markets through the savings and investments union, and over time a safe asset base that matches the scale of our ambitions for the euro's international role.

The technology function

Nonetheless, the technology that stablecoins make accessible is genuinely transformative. DLT makes it possible to build shared, crossjurisdictional financial market infrastructure from the ground up – issuance, trading and settlement on a single platform, accessible across borders without relying on a maze of legacy intermediaries.

For Europe, that opportunity is especially compelling. Our financial market infrastructure remains one of the most fragmented in the world. In 2023 there were 295 trading venues, 14 central clearing counterparties and 32 central securities depositories across the EU, compared with two clearing houses and a single central securities depository in the United States. DLT offers a real path towards integration.

For that reason, the prospect of rapid dollar stablecoin uptake in European tokenised markets is a legitimate concern that risks entrenching dollar dependency at the level of settlement infrastructure itself.

The answer, however, does not lie in rejecting technology or discouraging stablecoins altogether. Instead, we must build the public infrastructure that will enable alternative instruments, such as stablecoins and other forms of tokenised money, to operate within a framework anchored by central bank money.

On its own, the stablecoin model has two structural weaknesses as a foundation for settlement. The first is fragility. A key benefit of tokenised financial markets is atomic settlement, but that guarantee is only as strong as the instrument that serves as cash within the system.

As stablecoins can break away from their peg during times of stress, they do not confer the unconditional finality that central bank money does[14]. At stake is the singleness of money, the principle that a unit of currency has the same value regardless of who issues it. A settlement layer built on private stablecoins risks weakening that principle.

The second is fragmentation. The promise of tokenised finance is a single, interoperable environment[15], but if settlement relies on stablecoins, that environment fragments across however many competing instruments the market produces. Consequently, we end up with multiple platforms and no common anchor for convertibility. A Eurosystem survey has confirmed that the absence of a widely accepted tokenised cash settlement asset has already acted as a material constraint on the adoption of tokenisation in Europe.

While these are weaknesses of the instrument itself, they are not arguments against private tokenised money as part of a broader ecosystem. Tokenised commercial bank deposits, for example, offer another route, as they carry the credit quality of regulated institutions, can circulate on DLT platforms and may in time prove preferable to stablecoins for many wholesale use cases.

Regardless of which instrument will prevail, the public infrastructure must be in place to ensure safety and interoperability across the system. This is what the Eurosystem is building.

As of September, we will offer wholesale settlement through the Pontes project, linking distributed ledger platforms to TARGET, our existing settlement system, ensuring that DLT-based transactions can be settled in central bank money from day one. The tests conducted in 2024 showed that this approach works in real-world conditions, with 50 transactions across nine jurisdictions and around €1.6 billion in settled value[16]. The Appia roadmap published in March goes even further, and sets out the path to a fully interoperable, European, tokenised financial ecosystem by 2028[17].

Dollar-denominated stablecoins have, through first-mover advantage and network effects, already become the default settlement asset in tokenised finance. When central bank money is available natively on-chain, and when tokenised deposits and MiCAR-compliant euro instruments can operate within the same interoperable environment, market participants will have no reason to rely on a foreign private substitute by default.

Conclusion

The question I posed at the outset was whether we need stablecoins to obtain the benefits they are said to provide, or whether we are mistaking the instrument for the outcome. The answer, I have argued, depends on the function.

For the monetary function, the foundations have to come first: deeper and more integrated capital markets, and a safe asset. Stablecoins cannot build those foundations for us, and without them, euro-denominated stablecoins could risk amplifying the very vulnerabilities we are trying to overcome.

For the settlement function, the key question is less about which private instrument will prevail – be it stablecoins, tokenised deposits or a yet-to-emerge alternative – and more about whether a common anchor is in place. That's why we are placing central bank money at the heart of this new infrastructure.

I began with Seneca, who said that no wind is favourable to one who does not know the port. Let me end there too. Europe knows which port it is sailing to. Our task is not to replicate instruments developed elsewhere, but to build the foundations and the infrastructure that serve our own objectives, so that we can harness the benefits of innovation without importing the fragilities. ■

Christine Lagarde is President of the European Central Bank

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This article is based on a speech delivered at the Banco de España LatAm Economic Forum in Roda de Bará, Spain, 8 May 2026.

The global financial powerhouses: from Wall Street to offshore havens

The global economy is facing unprecedented geopolitical and economic challenges. Paul Stirling provides an in-depth analysis of International Finance Centres, which remain indispensable engines of the global economy

In an era of geopolitical tension, rapid technological disruption, and shifting capital flows, international financial centres (IFCs) remain the indispensable engines of the global economy. These hubs channel trillions in cross-border investment, foster innovation in fintech and AI, and provide sophisticated risk management tools. Yet they face constant pressure—from regulatory crackdowns and transparency demands to competition from rising regional players and the accelerating pace of digital transformation.

According to the Global Financial Centres Index 39[1] (GFCI 39), published by Z/Yen in March 2026, the landscape shows remarkable stability at the top alongside dynamic shifts lower down. New York retains the crown, followed closely by London, Hong Kong, and Singapore.

Dubai has surged to 7th place—its highest ranking ever—while Tokyo re-enters the top 10. San Francisco holds 5th, with Shanghai (6th) and Shenzhen (9th) underscoring Asia's strength. Overall ratings declined modestly across most centres amid global uncertainties, but connectivity, innovation, and regulatory predictability increasingly drive competitiveness.

This article examines the ecosystem from dominant global centres to dynamic regional hubs and specialised offshore jurisdictions. We analyse their respective strengths and weaknesses, incorporate executive perspectives from key players, and explore how offshore finance continues to thrive amid scrutiny, evolving from traditional tax planning toward compliance, innovation, and specialised services.

The enduring NY-London axis

New York and London form the traditional backbone of global finance, often referred to as the NY-LON axis. Together, they dominate wholesale markets, capital raising, derivatives, foreign exchange, and innovation, handling a disproportionate share of global transactions despite multipolar pressures.

New York (Wall Street) stands unrivalled in capital market depth. Home to the NYSE and Nasdaq, it benefits from the US dollar's reserve currency status, unparalleled liquidity in Treasuries and equities, and deep synergies with Silicon Valley's tech ecosystem. Institutional investors, private equity giants like Blackstone and KKR, and hedge funds cluster here, drawn by a robust legal framework (common law) and regulatory oversight from the SEC and Federal Reserve.

International financial centres, including their vital offshore components, continue to underpin global prosperity. While challenges from geopolitics, regulation, and technology persist, their adaptability suggests a resilient future

Strengths include unmatched scale—US equity markets represent roughly 40-50% of global market capitalisation in many metrics—talent attraction from Ivy League universities, and a culture of risk-taking that fuels disruptive innovation. Private equity and venture capital deployment remain world leading.

However, challenges are significant: exorbitant real estate and living costs in Manhattan, heavy regulatory burdens (Dodd-Frank, evolving SEC rules on climate disclosure and crypto), political polarisation, and vulnerability to US domestic policy shifts or global shocks like interest rate volatility.

London maintains its position as Europe's premier international hub despite Brexit. It leads in foreign exchange (daily turnover often exceeding $2 trillion pre-adjustments), derivatives, insurance (via Lloyd's of London), and crossborder banking. English common law, time-zone advantages (bridging Asia and the Americas), and a multilingual talent pool from the Commonwealth provide enduring edges.

The City and Canary Wharf continue attracting fintech innovators through the FCA's regulatory sandbox, which has supported hundreds of trials in payments, crypto, and AI-driven services.

Post-Brexit frictions persist, including reduced EU passporting rights, talent mobility hurdles, and some relocation of euro-clearing business. High operational costs and competition from Frankfurt, Paris, and Dublin add pressure. Yet London's adaptability—evident in its fintech leadership and green finance initiatives—keeps it resilient.

Professor Michael Mainelli, Chairman of Z/Yen, notes the concentration at the top: *"The significant gap in ratings between the leading four centres and the rest implies there is no paradox of increasing concentration on fewer safe centres during a period of increasing deglobalisation."*

Asia's rising powerhouses

Hong Kong (3rd) serves as a critical bridge between China and Western markets, excelling in IPOs, RMB internationalisation, and stock connect schemes. Its low-tax regime, common law system, and deep liquidity in equities and bonds are core strengths.

However, US-China tensions, the National Security Law, and capital flow restrictions introduce uncertainty. Hong Kong has responded with fintech and wealth management pushes, maintaining strong connectivity.

Singapore (4th) emphasises stability, wealth management, and fintech. Pro-business policies, world-class infrastructure, political predictability, and strict regulation make it a preferred treasury and asset management hub for Southeast Asia and beyond. It punches above its weight in sustainable finance and digital assets.

Limitations include a small domestic market and reliance on expatriate talent, though initiatives like the MAS sandbox mitigate this. Singapore's rise reflects Asia's broader shift toward multipolarity.

Regional contenders: Dubai's meteoric rise and others

Regional centres gain ground in a multipolar world. Dubai, via the Dubai International Financial Centre (DIFC), climbed to 7th globally in GFCI 39. HE Essa Kazim, Governor of DIFC, commented: *"Dubai's remarkable progress in the Global Financial Centres Index is an outstanding milestone that highlights the Emirate's ambitious vision and expanding influence on the international financial stage. Anchored by DIFC's world-class infrastructure and forward-looking regulatory environment, we continue to strengthen Dubai's position as the region's leading global financial hub."*

Pros include zero-tax zones, 100% foreign ownership, modern infrastructure, and a strategic location. Growth in Islamic finance, fintech, hedge funds, and family offices is robust, backed by the D33 agenda targeting top 4 status by 2033. Challenges are regional risks, expat talent dependence, and maturing regulation.

Other contenders include Frankfurt (eurozone banking, green finance), Shanghai/Shenzhen (China's domestic depth with capital controls), Mumbai's GIFT City (India's emerging hub), and rising spots like Astana or Johannesburg.

Offshore finance: specialisation and scrutiny

Offshore financial centres (OFCs) primarily serve non-residents, offering tax neutrality, asset protection, and flexible structures. They manage tens of trillions in global hedge funds, captive insurance, private wealth, and special purpose vehicles—assets estimated in the $13 trillion+ range for offshore financial wealth alone in recent analyses, with broader fund and corporate structures far larger. Modern OFCs emphasise compliance, innovation, and specialisation while meeting OECD, FATF, and EU standards.

The Cayman Islands leads in hedge funds and structured finance. With no direct taxes and English common law, it hosts the majority of global hedge funds and private funds (over 30,000 entities, with assets under management exceeding $8-10 trillion in recent estimates). Regulation by CIMA is sophisticated, and recent tokenisation rules enhance its digital edge.

British Virgin Islands (BVI) excels in company formation (hundreds of thousands of active entities), fintech, and digital assets. *"BVI has a long track-record of promoting digital innovation and leveraging the full power of digital capability... Initiatives like the fintech sandbox are helping to stimulate innovation... The ability to embrace digital innovation will be crucial to a sustainable, post-pandemic economic recovery,"* BVI Finance has highlighted. BVI's Incubator Fund and progressive virtual asset guidance support startups while maintaining compliance via systems like BOSSs.

Guernsey strengthens its role in private wealth, trusts, funds, and sustainable finance. As a leading international finance centre, it offers specialist expertise in green and natural capital funds, channelling billions into climate projects. Its stable regulatory environment, proximity to Europe, and focus on substance make it attractive for family offices and ESG-aligned structures. Guernsey Finance promotes innovation across private equity, insurance, and pensions, with strong UK linkages (eg. significant capital flows supporting UK infrastructure).

Bermuda dominates insurance, reinsurance, and fintech. The Bermuda Fintech Advisory Board captures its approach: *"Companies who are looking for a world class jurisdiction with a forward-thinking government that welcomes entrepreneurs... can find in Bermuda the jurisdiction that can make that idea a business reality."* Its Digital Asset Business Act (DABA), sandbox licensing, and Currency Standard Initiative position it at the cutting edge of digital assets, insurtech, and on-chain innovation, building on its re/insurance legacy.

Switzerland (Zurich/Geneva) upholds private banking excellence and neutrality, adapting to CRS/AEOI while excelling in wealth protection and asset management. Luxembourg leads EU fund domiciliation (UCITS/AIFs) with passporting advantages.

General advantages of offshore finance:

- Optimised tax planning and earnings retention for legitimate structures.
- Superior asset protection from creditors, litigation, and political risks.
- Privacy within robust compliance frameworks (beneficial ownership registers).

- Regulatory efficiency and specialist expertise (eg. BVI companies for holding structures, Bermuda captives for insurance, Guernsey trusts).

- Diversification, innovation in digital assets/sustainable finance, and access to global networks.

Drawbacks:

- Reputational risks and de-risking by some onshore banks.

- Elevated compliance/maintenance costs (FATCA, CRS, economic substance rules).

- Ongoing transparency pressures and blacklisting threats.

- Potential for misuse (though AML/CFT regimes have strengthened significantly).

- Complexity requiring expert advice.

Offshore finance has evolved dramatically since 2008 and the Panama Papers. Centres like Cayman, BVI, Guernsey, and Bermuda now largely meet or exceed international benchmarks on transparency while preserving efficiencies. Offshore assets have grown substantially as focus shifts to regulatory arbitrage, service excellence, and technology. Hybrid onshore-offshore strategies often yield optimal outcomes.

Technology, sustainability, and the future outlook

AI-driven trading, tokenisation, blockchain, and confidential computing reshape competition. Main centres dominate high-frequency and institutional flows, while OFCs adapt nimbly (eg. Cayman tokenisation, Bermuda's on-

Figure 1. Comparative pros and cons: choosing the right hub

CENTRE TYPE	KEY STRENGTHS	NOTABLE WEAKNESSES	IDEAL FOR
Main global (NY/London)	Liquidity, innovation, market depth	High costs, regulatory burden, volatility	Capital raising, trading, fintech scaling
Regional (eg. Dubai)	Tax incentives, location, growth momentum	Geopolitical exposure, talent transience	Diversification, ME/Asia bridging, Islamic finance
Offshore (Cayman, Swiss, Lux)	Tax neutrality, asset protection, specialisation	Scrutiny, compliance costs, stigma	Funds domiciliation, wealth structuring, holding companies

chain ambitions, BVI sandboxes). Sustainable finance grows critical—Guernsey's Green Fund regime and Bermuda's ESG frameworks exemplify leadership.

GFCI data underscores the rising importance of the Global Innovation Index, government effectiveness, cybersecurity, and human capital. For businesses/investors, they need to adopt hybrid models, diversify jurisdictions, monitor AI/blockchain/sustainable opportunities, and prioritise substance. Policymakers should foster innovation alongside transparency to reduce systemic risks. Centres must invest in talent, infrastructure, and partnerships (eg. Cayman-London-Singapore-Dubai links).

In conclusion, international financial centres, including vital offshore components, underpin global prosperity. Challenges from geopolitics, regulation, and technology persist, but adaptability—exemplified by Dubai's ascent, BVI's fintech push, Bermuda's insurtech/digital leadership, Guernsey's sustainable wealth expertise, and the enduring NY-London-Asia axis—suggests a resilient future. Those who innovate, connect, and balance efficiency with responsibility will thrive toward 2030 and beyond. ■

ABOUT THE AUTHOR

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Upholding independence in challenging times

Money rests on a promise: that its value will be preserved over time. This promise is upheld by the trust that citizens place in the institutions responsible for safeguarding it, says Christine Lagarde. Preserving that trust is the mission that unites central banks

"I want the bank to be in the hands of the government enough, but not too much."

Napoleon Bonaparte said these words six years after founding the Banque de France, just as he was tightening his grip on the institution[1]. Two centuries later, these words still capture a tension that sits at the heart of our profession. To best serve the public interest, a central bank must be close enough to the state – but independent enough to resist the pressures of the moment.

The 1970s taught us a great deal about this. The 'great inflation' of that decade was not caused by a lack of independence, but by oil shocks and by the difficulty of interpreting supply shocks, for which central banks were unprepared.

But the empirical work that followed pointed to one clear and robust finding: countries with less independent central banks experienced higher and more persistent inflation[2]. This evidence underscored the need to shield monetary policy decisions from the electoral cycle. By the turn of the millennium, more than four out of five central banks had become operationally independent[3]. Global inflation fell back to historically low levels.

This success, however, carried an inherent ambiguity. The architects of the doctrine knew that legal provisions alone were insufficient: de jure independence - written into statutes - had to be matched by de facto independence, which is demonstrated through the ability to effectively resist interference. Yet it was in this legalistic form that it spread across the world.

And as long as the economic environment remained favourable – marked by globalisation, infrequent supply shocks and enough fiscal space – this distinction was inconsequential. Low inflation owed as much to the global environment as it did to the frameworks themselves[4].

Today, these conditions are shifting, and a long-underestimated factor – the credibility earned through action – is becoming decisive. It is precisely when monetary policy decisions are politically fraught and economically costly that credibility is most needed. And it is also when credibility is hardest to keep.

The question is no longer simply how to guarantee independence. It is how to protect it when it is put to the test.

In a world where conditions are getting harder, the challenge is no longer to simply maintain legal independence, but above all to maintain the credibility that is needed to exercise it

The European experience

Europe sheds a useful light here, precisely because the ECB has had to live through this test. Even before the classic test of high inflation, the ECB had to navigate crises that the architects of its independence had not foreseen - but that demanded equally difficult decisions.

The architects of monetary union understood the importance of central bank independence. Europe gave itself one of the most protective legal frameworks in the world. Its institutional model was inspired by the Bundesbank, whose credibility rested on the union of de jure and de facto independence. And yet, at its birth in 1998, that framework conferred no credibility on the ECB.

As Alexandre Lamfalussy had predicted: without a track record of its own, the new institution would be judged solely on its actions[5]. It took a quarter of a century to anchor that trust in practice. In the early years, great vigilance was needed in the face of inflation, to prove that price stability was a genuine commitment rather than an abstract principle[6].

The sovereign debt crisis posed a different challenge: how to preserve monetary transmission against fragmentation in sovereign bond markets, without stepping beyond the mandate? The unconventional instruments used in the years that followed – initially against fragmentation, then against very low inflation – were strictly guided by a monetary policy logic.

These measures were not universally welcome. But those challenged in court were upheld and found to be consistent with the mandate. And in that moment, the true extent of independence was revealed: the ability to adapt instruments to circumstances, in full respect of the mandate underpinning them.

Then came the classic test. In 2022, confronted with inflation levels unprecedented in the history of the euro, the Governing Council tightened its policy at an unparalleled speed. These were not easy decisions. But long-term inflation expectations remained anchored. Households understood why the ECB was acting. Markets did too and drew their own conclusions. The credibility built over two decades had done its job.

Here lies the key lesson: the treaties gave the ECB legal independence, but the crises gave it the authority it previously lacked to exercise that independence effectively. But that is not the whole story. All of this was built in an environment that was still favourable, one where globalisation absorbed many of the shocks.

A more demanding environment

Today this environment is undergoing a transformation. And the framework in which we operate has become more demanding. First, supply shocks are becoming more frequent, placing monetary policy before its most difficult dilemma, because they drive inflation and economic activity in opposite directions.

Second, fiscal pressures stemming from defence needs, the climate transition, the digital transition and ageing are narrowing budgetary margins. And beyond these structural forces, a broader erosion is taking place, namely a decline in trust in public institutions, including in technical institutions like central banks[7]. Over the past decade, the de facto independence has deteriorated in almost half of central banks in countries that account for 75% of global GDP[8].

When the Chair of the Federal Reserve publicly defended the institution's independence, the ability to contain political pressures was thanks to the public support built up over the years through the Fed's independent decision-making. Voices from across the political spectrum had also underscored this independence.

The matter is not settled, but we can clearly see the mechanism at play: where credibility exists, defending independence does not fall on the central bank's shoulders alone. Instead, it is upheld by all those who have witnessed its value[9].

Many of the central banks represented here today have long operated under structurally more challenging conditions. They have had to build up their credibility without leaning on a longstanding established institutional heritage. They have weathered frequent and asymmetric external shocks – in commodities, capital and climate; and needed to safeguard monetary independence in the face of tight fiscal constraints, which impose challenges on monetary policy that others have only begun to encounter recently.

You have long practised the work that has now become the task of all. We have more to learn from your experience than the other way around.

Three conditions for maintaining independence in a more demanding environment

Three practical conditions seem essential to safeguard central bank independence. The first is clarity of the mandate, as understood by the central bank itself. Price stability must remain the primary objective, and it must be defended even if there is a real, immediate cost.

The Eurosystem supports the EU's general economic policies – growth, employment and climate – but only insofar as they do not harm this primary objective. This hierarchy protects the central bank from outside pressure and allows it to commit to secondary objectives, but never at the expense of the first. When a central bank is seen to turn this hierarchy on its head, its independence suffers as a result[10].

The second condition is direct communication with citizens. The anchoring of inflation expectations depends on households being convinced that the central bank will do what it says. This conviction is built less by words than by accumulated experience - the sense that commitments, once made, are consistently kept.

This conviction gains democratic legitimacy through transparent decision-making methods and accountability to elected institutions. It is in this space that credibility is earned - and also where it can be lost most quickly, when decisions and words no longer align.

The third condition is preserving the room for manoeuvre of monetary policy. That room depends first and foremost on fiscal responsibility: the legal frameworks cannot safeguard central bank independence when fiscal trajectories become unsustainable[11]. It also depends on the resilience of the financial system.

When fragility in parts of the system - whether in banks, non-bank intermediaries or the financial markets - make each interest rate change potentially destabilising, the central bank sees its room for manœuvre curtailed and financial stability considerations risk overshadowing price stability in practice.

Maintaining monetary independence therefore requires, alongside fiscal responsibility, financial regulation that sustains the resilience acquired since 2008 – and which extends to the new components of the financial system that have developed since then.

Conclusion

To restore trust in the currency, Napoleon founded the Banque de France, after the hyperinflation caused by the assignats had wiped out French households' savings[12]. But several years later, as the demands of the state grew, he once again tightened his grip on the central bank, and gradually took back the independence he had granted.

It is precisely this temptation that the period ahead is likely to sharpen. Over the two centuries that separate us from that period, a remarkable institutional response has emerged - one that must, however, be protected and cultivated.

In a world where conditions are getting harder, the challenge is no longer to simply maintain legal independence, but above all to maintain the credibility that is needed to exercise it. And the lesson of history is clear: it takes time to build trust, but only an instant to lose it.

For money rests on a promise: that its value will be preserved over time. This promise depends on the trust that citizens place in the institutions charged with safeguarding it. Preserving that trust – and so to preserve the value of money – is the mission that brings us all here today. ■

Christine Lagarde is the President of the European Central Bank

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In need of further thinking

Andrew Bailey argues that modern central bank independence is well-defined for monetary policy but incomplete, and highlights the challenges for a central bank's financial stability mandate

I am going to use my time to reflect on central bank independence and to point to where I believe the concept is incomplete and hence more challenged. I will use the term CBI hereon. Modern CBI emerged out of the high inflation era of the 1970s. This does not mean that the concept originated then, it has a much longer history. But in its modern form the 1970s was the experience that prompted change. I will use the Bank of England as a brief case study to illustrate the antecedents to the change.

The first stop is 1802, when Henry Thornton wrote *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain*[1]. Thornton is sometimes described as the father of the modern central bank. He asserted that: *"The Bank of England is quite independent of the executive government"* (p61). Reconciling this with the extensive lending of the Bank to the Government, he commented that: *"The ground on which the bank lends so much to government is clearly that of mutual convenience as well as long habit"* (p61). *"The preference is no symptom of a want for independence of its directors"* (p62). *"The government of Great Britain is under little or no temptation either to dictate to the Bank of England, or to lean upon it in any way which is inconvenient or dangerous to the bank itself"* (p63). And finally, *"To suffer either the solicitation of merchants, or the wishes of government, to determine the measure of the bank issue, is unquestionably to adopt a very false principle of conduct"* (p295).

Two points I would draw out from Thornton's description. First, the older notion of independence relied on what in modern terms we would call an alignment of interests and incentives between government, private interests and the central bank. It did not provide for anything more formal in terms of the form of independence.

Second, it did though require an anchor, and that was the value of money. On this point, let's go back to John Locke writing in the 17^{th2}. He emphasised the importance of *"money being constantly the same, and by its interest giving the same sort of product, through the whole country"* (p35). *"Money is the measure of commerce, and of the rate of everything, and therefore ought to be kept as steady and invariable as may be"* (p113).

In the wake of the experiences throughout the twentieth century, and particularly after the 1970s, the idea of CBI being assured only by a balance of interests and incentives looked past its time, but the anchoring on the value of money remained as important as ever. Three things followed from this.

The meaning and substance of central bank independence is different between monetary policy and financial stability

First, for many countries, the UK included, CBI evolved to a system of formal statutory powers established in legislation. I do, of course, recognise that some other countries reached this point earlier in the twentieth century.

Second, CBI remained anchored on the stability of the real value of money, achieved through monetary policy.

Third, there are differences between countries in terms of whether monetary policy independence relates to setting the objective, the target, or operating to achieve these two. Broadly speaking, few independent central banks set their own objectives, all are responsible operationally speaking, and the picture is mixed when it comes to setting the target. The UK system is more to the operational end of the distribution in that the Bank of England does not set the objective or the target – it has operational independence.

However, de facto, modern central banks typically have two objectives – monetary and financial stability. The substance of my comments today will be around how these two fit together in the theory and practice of CBI. Given what happened in the 1970s, it is no surprise that modern CBI was based around monetary policy.

A core element of the case for CBI in respect of monetary policy is the so-called time consistency argument. Ex ante, a government wants low inflation and stable growth, but ex post it may be tempted to create a little extra inflation to reduce unemployment or ease debt burdens. If people expect this to happen, there is no lasting benefit in terms, say, of lower unemployment, but there is higher inflation, so the worst of both worlds.

Delegating monetary policy to an independent central bank is a commitment device to reduce the incentive to renege on the promise of low inflation, which can thereby anchor inflation expectations. Thus, to take the UK case, an inflation target set by the Government combined with operational CBI to meet that target ensures that the central bank's incentives are aligned with the public interest in price stability.

In principle at least, the argument for financial stability is similar. Governments want a stable financial system but can be tempted to lower standards to increase lending and growth. So, delegation to an independent central bank makes sense.

Where I think financial stability differs from monetary policy is that the act of delegation is a less robust contract, reflecting the completeness of the remit and the measurability of the objective, and also because of the different direct impact of financial stability on the long-run growth of the economy, a point I will come to later.

This opens financial stability up to differences in the way conflicts of interest can arise. Financial stability policies interact with private interests in a variety of ways, so a difference is between monetary policy operating through an aggregate tool and financial stability through many levers directly affecting private interests in many ways. Seen in insolation, each of these levers may not be essential for the financial stability objective, but they are essential when viewed as a set.

For financial stability, there is more scope for conflict between the public good interest and private interests. This can put governments in the position of having to choose which side to take – to use Thornton's words, between the salutations of merchants and the central bank. The current debate on levels of bank capital is a good illustration of this.

It is striking therefore that the literature has given little attention to the concept of CBI in respect of financial stability. In practice, the issue goes further. Two features of the commentary stand out for me.

The first is a tendency to describe other activities of central banks as tangential to monetary policy. This set of activities includes financial stability.

The second feature goes rather further and suggests that an objective of financial stability can require the central bank to compromise on the objective of monetary stability, particularly when the financial system appears to be under threat of instability. So, this feature moves from tangential to actual conflict of interest.

What then are the consequences of the system we have today? I will pick out two such consequences. The first consequence is that, to the extent there is tension between the objectives of monetary and financial stability, it can be pro-cyclical.

In other words, the relative priority given to financial stability can depend on the conditions at the time. The period before the financial crisis saw a relative neglect of financial stability. The crisis necessarily led to a surge of interest in and emphasis on financial stability. This sort of pro-cyclicality is not, I would argue, the best form of organisation. It needs to be more steady over time in terms of the intensity of focus. This in itself is an argument for robust CBI for financial stability.

The second consequence is that the nature and definition of CBI differs between monetary and financial stability. This is a very important and a, perhaps surprisingly, under-discussed issue. The two notions of CBI – in the context of monetary and financial stability - do differ in important ways.

Why is this the case? Monetary stability is easier to define and certainly easier to capture in a single numerical target – as the UK system does in an inflation target. To be clear, this does not inevitably make the task at hand easier for monetary policy. But it certainly creates a focus. I think it also means that the structure, system and governance of monetary policy is more straightforward to capture in legislation, though not in a way that removes the need for judgement to be exercised by the monetary policymaker.

What is it about financial stability that makes it less straightforward? A number of elements of financial stability are relevant to this question. First, financial stability is a large canvas and there are many elements to it. This means that not only is it impossible to capture in a single numerical target but it is defined as the absence of something that operates dynamically and across many dimensions and thereby engaging many private interests. It is also the case that determining the line between acceptable risk and the potential for instability is difficult to ground. Success in the world of financial stability comes when nothing happens.

Second, it is important to consider how monetary and financial stability affect the real side of economies. The canonical view of the impact of monetary policy on the long run growth of economies is that if anything it does so only indirectly by preserving price stability and thereby reducing uncertainty so that businesses and households can better plan for the future.

An older argument with respect to monetary policy is based on the so-called neutrality of money, such that long-run changes in the money supply affect only nominal variables (prices, wages, exchange rates). They do not affect real variables (real GDP, employment, investment, consumption).

The idea goes back to the classical economists, who drew the distinction between the real and nominal spheres of the economy and treated money as a veil over an underlying barter system of exchange. It followed that the monetary policy was assumed not to affect the long-run trend growth rate of economies.

This view has been modified in more recent times. While holding to the view that there is no long-run trade-off between inflation and output, in the short run modern economists tend to treat money as non-neutral because sticky prices and wages mean that changes in money and monetary policy can have a temporary effect on output

and employment. Added to this, there is now considerable support for the credit channel effect of monetary policy, working through the supply and cost of credit, not just risk-free interest rates.

Financial stability on the other hand has a more immediate and direct effect on the level and growth of real output, employment and investment. For instance, a stable banking system directly supports economic growth, while an unstable one will tend to disrupt lending and have negative consequences for growth. In this sense, there is no long-run trade-off between financial stability and growth either.

This distinction between monetary and financial stability matters in at least two other important respects when thinking about CBI. First, it follows from the point on growth that financial stability will have clearer distributional effects within the economy and society broadly. This point is important when thinking about CBI, and it can be uncomfortable for central banks (who generally do not wish to be involved in distributional issues).

Second, and closely linked to the distributional point, financial stability will interact with many more areas of public policy. Many other parts of government will state an interest as a consequence because they will consider themselves to be directly affected by the outcomes of decisions taken by central banks in respect of financial stability.

In my experience there are many examples of this mechanism at work. It will usually operate most powerfully in other areas of financial and economic policy, but the reach goes further – think of, for instance, policies to do with IT security, cyber risk, etc.

The same goes for private interests. They are more directly engaged by issues of financial stability. This might seem like a strange thing to say. Surely, people have views on interest rates? Of course they do, but in keeping with the

more background property of monetary policy – and critical though that is – the private interests are not as sharply defined typically.

The consequence of this difference is that financial stability in its broader sense tends to induce a lot more direct lobbying by affected private interests. It is therefore more talked about in a specific sense, whereas monetary policy is very widely talked about in a more general sense. It means that more interest groups feel that they should have a direct say in financial stability decisions.

Moreover, I would draw a further distinction within financial stability, between macroprudential and microprudential, in other words system-wide and firm specific regulation. The issue is most acute for the latter. If the activity involves directly regulating individual firms, and the objective of that regulation is to get firms to do, or not do, things that had not occurred to them based on their private interest, it is pretty easy to see that the challenge to independence will be more direct and more forceful. And, in my experience, this is exactly what we do see.

Another element relates to an important difference in the process of conducting financial stability policy when compared to monetary policy. Financial stability policymaking often involves setting rules, something which does not arise in the same way for monetary policy (where rules have a different meaning). This can place financial stability work more closely adjacent to the work of governments and parliaments, because as financial stability-focused rules change it will sometimes be necessary for aspects of legislation to change at the same time.

My point is not that this is inevitably problematic, but it creates two phenomena. The first is that the rule-making process drives a regular need for intensive and detailed coordination between central banks' financial stability work and government policymaking. The second is that where the boundary is drawn between central bank financial

stability rule-making and what is done by governments and parliaments varies widely across jurisdictions and through time.

So, the conclusion here is that the meaning and substance of CBI is different between monetary policy and financial stability. I am interested that this point is not often made quite so directly.

What are the consequences of this distinction? I can think of times when there has been pressure to avoid compromising monetary policy by placing emphasis on the financial stability sibling. It can also cause approaches towards financial stability to be pro-cyclical, in the sense of only wanting/having to deal with it when times are difficult. There is also a noticeable pro-cyclical nature to the private interests and the lobbying. Thus, as episodes of financial instability recede into the past, the lobbying grows. This can be challenging, because an important part of financial stability policy is counter-cyclical – in other words use the better times to build up the defences.

The best statement of this condition came from the economist Hyman Minsky:

> *"As a previous financial crisis recedes in time, it is quite natural for central bankers, government officials, bankers, businessmen and even economists to believe that a new era has arrived. Cassandra-like warnings that nothing basic has changed, that there is a financial breaking point that will lead to a deep depression, are naturally ignored in these circumstances."* (p237)[3].

I have used the quotation from Minsky before. After I did so, someone came up to me and said politely, *"don't you think it's time to retire Minsky."* This intervention illustrated perfectly what Minsky was talking about. But that leaves the question what to do about all of this? More particularly, we are left with a situation where we have two rather different forms of CBI, or at least sufficiently different to be an issue.

In terms of responses, let me rule out either end of the possible range. I don't think ignoring the difference is acceptable. Nor do I think we can try to override the underlying drivers and make each form the same. That leaves two options I think. One is a form of status quo.

It is to accept that central banks have two objectives – monetary and financial stability – and there are versions of legislated independence attached to both which can differ, and then to say let's limit our ambition to being more transparent in setting out the differences. That would be a step forward, but I am going to argue that we should be more ambitious.

By arguing for ambition, my view is that we should start by identifying what ties the two objectives together rather than what makes them different. Is there a single unifying definition of the objective of central banks which, while not ignoring the differences I have described, seeks to set out the common ground? And, in doing this, is it possible to use this common ground to create a more useful and resilient objective?

The simple answer to whether there is a single unifying definition and objective is yes, and it is I think staring us in the face. It is that the objective of central banks is the value of money, to go back to John Locke.

One way in which I have come to this argument is the experience – highly enjoyable I should say – of visiting schools on my trips around the UK. I usually talk to the Economics and Business students at our equivalent of high schools, and I give a few minutes introduction on the Bank of England and what we do before taking questions. Over the years, I have concluded that the best way to start is by saying that at the Bank we are in the money business, and then describing what I mean by this.

So, what does this mean for an overarching central bank objective, the Value of Money? In some ways, the easy part is monetary policy. The objective of price stability is the stability of the real value of money. Defining financial stability is the harder part. But, can we anchor financial stability in the stability of the nominal value of money? I think that has potential as a definition.

The key element of financial stability is the banking system. Most of the stock of money is on the balance sheets of banks. Fractional reserve banking ties together the money and credit systems. Key here is the assured value of the stock of bank deposits – the stock of commercial bank money (also known as "inside money"). And, for payments, another of the core functions of central banks, the system also depends on the assured nominal value of this inside money. In other words, we trust that a dollar or pound in my account is worth the same as the dollar or pound in your account. There is, of course, an important anchor to underpin the assured nominal value, namely, the ability to convert inside money into central bank money (outside money).

As Milton Friedman and Anna Schwartz documented, this assured value of inside money was not always true in the history of American banking, where there was an absence of outside money, and the system was unstable. Beyond providing outside money, as a central bank we regulate banks in good part because we want to ensure trust in money, which means an assured nominal value.

This also helps to explain why it tends to be very hard in practice not to assure the nominal value of uninsured bank deposits. It is also why when I look at an innovation such as stablecoins, my reaction is that if you want to be in the payments business in scale, and payments are a key function of money, you have to meet the test of money, and trust in it, which is assured nominal value. It's another talk, so I will not go any further than to say that I think some more work is needed on some stablecoin design to get to this point.

There is though a big question outstanding in my attempt to capture more thoroughly financial stability under the single central bank objective of stability of the value of money. Is the objective of central banks only about money? This is a genuinely open question.

It may be that nominally stable money is necessary but not sufficient to ensure that the financial system is able consistently to deliver essential financial services to households and businesses. Definitionally, this would still be a good step forwards however. But, let me set out why I don't think this issue of whether it is only about money is as large as it may seem.

I will start by recognising an important point. Since the financial crisis, the non-bank financial system has expanded in size relative to the bank system. Moreover, if you look at the agenda of the global Financial Stability Board, which I chair, you cannot help notice that it has a very large component of non-bank items, indeed larger than the bank agenda. On the face of it, this looks like a problem for my argument that the central bank financial stability objective can be captured under the value of money.

I'm not sure this is the case. Yes, the non-bank sector has expanded. It reinforces the separation between banks, whose liabilities are money with assured value, and non-banks, whose liabilities are investment type instruments, where the investor should not expect assured value (they take more risk that way, and can earn and lose value).

But it would be a mistake to believe that we have separated the bank and non-bank systems in a rigid way. We have not. The non-bank system relies on the bank system for liquidity, and in turn the banks are underpinned by central bank liquidity (outside money). The bank and non-bank systems are highly inter-connected but in somewhat different ways to those before the financial crisis. To give an example, banks support non-bank leverage in financial markets via their prime brokerage activities.

So, when central banks look at financial stability in today's world, a lot of our focus is on the interlinkage between the banking and non-banking financial systems. Moreover, some of this interlinkage is on-balance sheet, some is off-balance sheet but contractual, and some is the potential for contagion in spite of the absence of formal contractual connections.

Another interesting question here is whether the money anchor of a financial stability definition should factor in more explicitly the velocity of as well as value of money. For purely illustrative purposes, let's think in terms of the simple traditional quantity theory of money. MV=PY, where M is money supply, V is the velocity of money, P is the price level, and Y is real output. The typical simplifying assumption is that V and Y are broadly stable, and thus the price level responds to changes in the money supply.

But what if that is not the case? Let's take the so-called Dash for Cash at the outset of Covid as a very good illustrative case study. There was a precipitous fall in Y (real output) as economies shut down. At that time, the rate of growth of P (inflation) was generally very low. There was a so-called Dash for Cash – eg. firms drew down credit lines with banks out of fear of access as economies entered such a difficult state.

In other words, they hoarded money. So, as M (money supply) rose, V (velocity) fell very sharply. Let's assume central banks had not stepped in to provide money via QE. There was a risk of a major financial stability problem as the demand for liquidity was not met, and that would have further rebounded onto the state of the economy and monetary policy.

I recognise that this does not provide an answer to whether the QE should have been short-term or more prolonged. That is another question, not for today. But it does illustrate how there was a strong money anchor to the financial stability question.

A core element of financial stability is that financial institutions which hold money should be trusted, and thus that the value of money can be trusted. Let me illustrate this briefly with a contemporary issue. There is more concern, following recent events, about the resilience of so-called private credit. This is a non-bank activity that has grown rapidly since the financial crisis. The point is sometimes made that private credit – lending to corporates outside the banking system – has grown rapidly because the banks have been over-regulated, and therefore are not so lending. This misses an important point.

The main liability of banks is money. We regulate banks to ensure the value of that money. The liability of private credit is not money – it doesn't and shouldn't come with the same assurance of value. That's important to generate lending to support economic activity. The difference if fundamental. The job of financial stability is to ensure that distinction is robust – that is what we have to challenge, test and design in.

I therefore want to leave open the question, can we usefully capture the objectives of central banks - monetary and financial stability – under a single description of the value of money? This needs to have its tyres kicked. But a key part of financial stability is maintaining the integrity of money.

That said, frictions and imperfections in the financial system can lead to sub-optimal outcomes in many states of the world and, notably in bad states when amplification mechanisms can kick in. As with any other type of public policy, there is a role for financial stability policy in mitigating the effects of these frictions.

Financial frictions can however have much broader effects than just via risks to the integrity of money. In theory, at least, that motivates a much broader role for FS policy, particularly with a wider focus on continuity of financial service provision.

It is, however, interesting, and I think remains an open question to consider where are the limits of what an independent central bank should do in the financial stability space. It is then even more incumbent on us to explain what we are doing and why than it is in the more tightly defined monetary policy space.

But, I see merit in creating a single overarching narrative with a strong focus on the value of money. It would remove descriptions of financial stability such as 'tangential' or 'in conflict'. Even more important, it would help to anchor financial stability by emphasising the importance of the value of money. This is important because independence in respect of financial stability is otherwise not as robust, and I would argue not robust enough. ■

Andrew Bailey is Governor of the Bank of England

Endnotes

1. Henry Thornton, "An Enquiry into the Nature and Effects of the Paper Credit of Great Britain". J Hatchard, 1802.

2. John Locke "Economic Writings" London: Rivington, 12th Edition, 1824.

3. Hyman P Minksy: Stabilizing an Unstable Economy: Yale University Press, 1986.

I would like to thank Sarah Breeden, Nicki Dukelow, Jonathan Hall, Richard Harrison, Karen Jude, Catherine Mann, Dawn Plummer, Martin Seneca, Matthew Waldron, Carolyn Wilkins and Sam Woods for their comments and help in the preparation of these remarks. This article is based on a speech delivered at Columbia University, New York, 14 April 20026.

Can US banks have it all?

Uuriintuya Batsaikhan discusses the outline plan to reduce stigma associated with short-term borrowing from the Federal Reserve, and argues that the reform package may be doing banks too many favours, and risks amplifying liquidity risk, potentially threatening more bank failures

The United States is planning a revision of rules on bank liquidity. US Treasury Secretary Scott Bessent said in early March that the Treasury is working on changes including a proposal for pre-positioning of collateral, under which banks would hold assets in advance with the Federal Reserve to secure access to liquidity. This would, according to Bessent, help tackle a phenomenon that leads banks to avoid borrowing from the Fed in case they are perceived as struggling.

In short, the Fed's discount window – its lending facility for banks needing short-term liquidity – should be a normal part of the system rather than a last-resort tool, use of which immediately signals that a bank is in distress. So-called 'discount window stigma' was apparent in 2023 when banks including Silicon Valley Bank, which failed in March 2023, held Treasuries and agency mortgage-backed securities booked at their original purchase price that looked liquid on paper but could be turned into cash only by selling at lower prices at the time of turmoil, cutting into capital.

Recalling this episode, Bessent said that a framework that delivers liquidity only in stylised stress scenarios is not credible in practice.

The plan for pre-positioned collateral he outlined sounds like a pragmatic adjustment to how liquidity support ought to be organised. But the question is not only how much collateral banks should post, but what kind of collateral should qualify and on what terms.

Bessent argued that more recognition of pre-positioned, collateralised borrowing capacity in liquidity rules would reduce the need for banks to sit on large piles of safe assets, allowing more of those portfolios to support lending. In practice, this could mean that less-liquid or less-marketable assets are parked at the central bank, while high-quality liquid assets are used elsewhere on bank balance sheets.

The future Fed framework could be similar to that of the European Central Bank, which accepts as collateral not only government bonds but also credit claims, asset-backed securities and other private-sector claims. By and large, this has not been a source of instability.

If the collateral pool eligible for pre-positioning includes riskier assets, banks are effectively manufacturing liquidity from the very positions most likely to become illiquid in a stress event, which is exactly what the reform is supposed to prevent

But the ECB framework is broad because it must serve a monetary union spanning diverse financial systems, legal traditions and asset markets. A narrow collateral pool would have systematically excluded banks in countries where sovereign debt markets were thin. In other words, breadth was a condition of equal access and not a concession to risk appetite.

Read in isolation, Bessent's plan might look like an attempt to put idle assets to work. But read together with a broader push by US regulators to loosen prudential requirements on bank capital, the picture is different. The Fed, the Office of the Comptroller of the Currency (a bureau of the US Treasury) and the Federal Deposit Insurance Corporation have jointly proposed reductions in capital requirements for large and small banks. US banks appear to want it all ways: the ability to pledge less-liquid collateral, easier access to central bank liquidity and lighter limits on their risk-taking. Bessent seems willing to accommodate those demands.

The US debate also tends to overlook the broader context of the evolution of central bank operational frameworks. The Fed now operates a supply-driven ample reserves framework. In this environment, the interbank rate is no longer set by supply and demand for reserves but is anchored by the interest rate on reserve balances (IORB) that the Fed pays directly to banks.

Since December 2025, the Fed has been conducting reserve management purchases of $40 billion per month in Treasury bills as routine operations to maintain adequate reserve levels. This represents a world in which continuing reliance on central bank liquidity is formally integrated into the monetary plumbing, with the Fed actively expanding its balance sheet on a rolling basis to keep the system functioning at its intended levels. In this world, what does a genuine stress scenario look like?

If a bank needs to go beyond pre-positioned collateral and tap emergency liquidity assistance when the system is already swimming in reserves, the stigma could be worse, not better.

If the collateral pool eligible for pre-positioning includes riskier assets, banks are effectively manufacturing liquidity from the very positions most likely to become illiquid in a stress event, which is exactly what the reform is supposed to prevent.

Pre-positioned collateral could make the liquidity framework more credible, and a less stigmatised discount window would be an improvement. But the reform package Bessent has outlined cannot be assessed in isolation from the broader direction of policy. If it widens the safety net while loosening the constraints that justify it, it risks amplifying liquidity risk, potentially threatening more bank failures. ■

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The author thanks Guntram Wolff, Rebecca Christie, Francesco Papadia, Ulrich Bindseil and Nicolas Véron. This article is based on a Bruegel First Glance.

A reset on liquidity regulation

The US is planning a revision of rules on bank liquidity. Scott Bessent argues that the existing rules are ineffective and impede lending, and that the US is on the cusp of a fundamental reset in how its financial system is regulated

The regulatory reset

Under President Trump's leadership, the Treasury Department has coordinated a fundamental reset of financial regulation. And the regulators have certainly not wasted time. They have ended decades of regulation by reflex and rolled back the Biden administration's regulatory excesses.

They have tackled the problem of 'too small to succeed' and affirmed a commitment to preserving the community bank model. They have refocused bank supervision on material financial risk. They have recommitted to regulatory tailoring. They are clearing the way for digital assets and other responsible innovation.

And very soon, they will propose a modernisation of bank capital that simplifies and rationalises the framework, ends the capital arbitrage that drives financial activity to nonbanks, and ensures competitive parity for smaller banks. Bank liquidity is the next big-ticket item.

This is a critically important topic with immediate real-world implications for this historic time. Artificial intelligence is no longer science fiction. The onshoring of American manufacturing is no longer aspirational. The competition for critical minerals is no longer abstract.

To unlock the vast promise of this transformation and secure America's Golden Age, we confront the pressing necessity of unlocking hundreds of billions—potentially trillions—in new lending capacity to finance AI infrastructure, domestic supply chains, and the defence industrial base.

The problem, however, is that the framework for supervising and regulating bank liquidity created in response to the 2008 financial crisis has excessively and unnecessarily limited banks' ability to do what they are supposed to do—lend.

The debate on bank liquidity goes directly to whether we will have a financial system that supports growth and economic security—or quietly stifles it under the guise of prudence. Which is all to say, liquidity regulation[1] is an area of steady and serious focus for the Treasury Department.

To unlock the vast promise of this transformation and secure America's Golden Age, we confront the pressing necessity of unlocking hundreds of billions—potentially trillions—in new lending capacity to finance AI infrastructure, domestic supply chains, and the defence industrial base

The case for a fresh look

During the 2008 crisis, liquidity evaporated suddenly. Wholesale funding froze. Fire sales impaired balance sheets across the system. Governments and central banks were compelled to step in. The legitimacy of the financial system and our institutions generally came into question.

Post-crisis liquidity regulation has succeeded in reducing the likelihood of a redux of 2008. But its genesis also gives us cause for a fresh look. Liquidity regulation was novel and even muddled guesswork, an inevitable overcorrection written in the dark shadow of the crisis.

On this first point, liquidity had historically been the province of supervision, not formula. There was simply no precedent for prescribing numerical liquidity buffers in rule. There also was no settled conceptual framework for calibrating those numerical requirements, as even then-Governor Tarullo recognised[2].

Capital regulation rests on a calibration framework for assigning exposure-specific requirements. The architects of liquidity regulation, in contrast, assigned inflow and outflow rates based on historical experience and intuition. Call it two parts data, one part gut, and a heavy dash of post-crisis trauma.

Another reason for a fresh look is that things have changed considerably since. The speed at which liquidity stress can be triggered and transmitted—already fast in 2008—has only accelerated, as we saw in March 2023.

After March 2023, almost everyone now agrees that operational readiness and discount window stigma need a better solution. SVB, Signature, and First Republic each had substantial holdings of Treasuries and agency MBS. But that liquidity existed only on paper. Collateral was not fully prepositioned. Discount window access was untested.

That was in part because the policymakers who had designed the framework were so keenly focused on reducing dependence on the lender of last resort so as to mitigate moral hazard[3].

Then reality intervened in March 2023. Now, the conversation is about reducing discount window stigma, incentivizing collateral prepositioning, and normalizing routine testing of central bank facilities.

The upshot is that we should not treat post-crisis liquidity regulation as somehow sacrosanct. These rules are working drafts, not tablets handed down from the mountain. With the benefit of some distance from the crisis, it is time for a fresh look.

Re-assessing the costs and benefits

Shifting then to the costs and benefits. At its core, liquidity regulation necessarily draws a line: to what extent should banks self-insure liquidity risk, and how much of that risk should be borne by the lender of last resort?

Requiring banks to fully self-insure even severe liquidity risk comes at a steep cost. When 25 percent of large banks' balance sheets are allocated to safe assets—up from roughly 10 percent before the crisis—that necessarily means less lending for mortgages, small businesses, AI hyperscalers, and critical infrastructure.

Those costs must be balanced against the benefits. To foster resiliency, we should guard against the run risks posed by excessive reliance on short-term wholesale funding. That lesson from 2008 remains intact.

Liquidity regulation should also support orderly resolution. As SVB's Thursday turmoil reminds us, buffers buy time—ideally until the Friday close—so that authorities can arrange a sale or otherwise implement an orderly

wind-down. Liquidity regulation also should enhance operational readiness for stress. In particular, banks should be encouraged to preposition collateral and test central bank facilities.

Given these objectives, one clear shortcoming is that banks generally have proven unwilling to draw down buffers during stress periods. The architects of liquidity regulation were explicit that buffer useability was critical to achieving their intended effect[4].

But in practice, both regulators and markets have treated the buffers as untouchable hard minimums. As a result, instead of acting as shock absorbers, buffer requirements can actually exacerbate the hoarding of liquid assets, accelerating the transmission of liquidity stress throughout the system.

And here's an irony: by driving banks to exhaust regulatory buffers before accessing the discount window, we have entrenched discount window stigma. If you only go to the window when things are really bad, then going to the window signals that things are really bad.

The framework has also done little to enhance readiness and willingness to use the central bank's facilities. Indeed, as policymakers at the time made clear, the intent was 180 degrees the opposite, in effect deputising large banks as liquidity insurers for the financial system writ large. That was a mistake.

Use of the lender of last resort during severe stress is not a policy failure. That's what the central bank is designed to do—prevent liquidity spirals. When banks monetise liquid assets through sales or repo, that simply redistributes reserves, potentially even spreading liquidity stress across the system.

Because only the central bank can create new reserves, only the central bank can add the aggregate system-wide base liquidity that typically is necessary to counteract a flight to safety. That unique power positions the central bank as the natural insurer against severe liquidity stress.

Potential reforms

Given this misalignment in liquidity regulation, there is a strong case for a wholesale revisiting of the framework. But that should not hold up near-term reforms to restore the lender of last resort to its intended role. To that end, the liquidity coverage ratio requirements and other liquidity rules[5] should give appropriate capped recognition of borrowing capacity associated with collateral prepositioned at the discount window.

This is a targeted, sensible reform that simply recognises that prepositioned, collateralised borrowing capacity is real, monetisable liquidity. This reform would help rebalance the boundary between self-insurance and the lender of last resort. It also would enhance operational preparedness by creating strong incentives for prepositioning collateral and regular testing. And it could reduce discount window stigma by normalizing access.

The cap on recognised discount window borrowing capacity is a critical feature. Self-insurance against idiosyncratic liquidity risk remains critical for resiliency and orderly resolution.

In designing and calibrating the cap, regulators could explore whether it should be sized for each bank based on the bank's demonstrated usage of the discount window. For example, recognised borrowing capacity could be capped at the lesser of the overall ceiling and some multiple of the bank's discount window borrowing over a specified period of time. That approach could ensure that this borrowing capacity is indeed real liquidity while helping to reduce discount window stigma.

Regulators could also explore a mechanism to adjust the cap during severe stress. Temporarily increasing recognition could enhance buffer useability by temporarily adjusting banks' liquidity metrics. Increasing the cap during stress also could interact with incentives for ongoing, limited use to create automatic structural stabilisers that involve the discount window early on when stress is incipient.

Importantly, none of this need undermine market or regulatory discipline. Central bank borrowing would remain collateralised, subject to conservative haircuts, and limited to solvent institutions. Capital requirements would remain appropriately calibrated. Supervisors would retain their access and discretion.

What this would do is align liquidity regulation with the appropriate role of the lender of last resort. The central bank can, should, and indeed must, step in to provide liquidity during periods of severe stress. We should design the framework accordingly.

Conclusion

Over the last year, the regulators have made significant progress toward a financial system that supports parallel prosperity for both Wall Street and Main Street. Liquidity reform will be a critical step toward getting banks back into lending—back into financing homes, factories, infrastructure, and innovation.

In parallel with this work, Treasury will continue to coordinate complementary reforms. The administration will continue to advocate for targeted deposit insurance reform, in particular expanded coverage for noninterest-bearing transaction accounts. I expect FinCEN and the bank regulators will soon propose a rule to recentre AML/CFT supervision on program effectiveness and enhance FinCEN's role in AML/CFT supervision and enforcement.

I expect the bank regulators will soon revamp the model risk governance guidance that has constrained responsible AI adoption. And we will continue to push for agreements among the bank regulators to reduce duplicative examinations.

With this progress, I would encourage you to think ambitiously about the future of finance and financial regulation. To that end, Treasury will begin to rethink the appropriate activities of banking organisations, with an eye in particular toward facilitating responsible adoption of new technologies. ■

Scott Bessent is the Secretary of the Treasury of the United States

Endnotes

1. Liquidity regulation includes the liquidity coverage ratio requirement, the net stable funding ratio requirement, internal liquidity stress tests conducted pursuant to rule, the resolution liquidity adequacy and positioning requirement, and the resolution liquidity execution need requirement, as well as the related supervisory expectations with respect to liquidity risk management.

2.In November 2014, then-Governor Tarullo said, "Liquidity regulation is still a relatively new undertaking. … There is still need for conceptual work on such questions as how to specify the extent to which banks should be required to self-insure against liquidity risk." Daniel K Tarullo, Governor, Bd. of Governors of the Fed. Reserve Sys., Liquidity Regulation, Remarks at The Clearing House 2014 Annual Conference (Nov. 20, 2014).

3.At the time, then-Governor Stein argued that "liquidity regulation . . . reflect[s] a desire to reduce dependence on the central bank as a lender of last resort (LOLR)" and that "a central premise must be that the use of LOLR capacity in a crisis scenario is socially costly." He rationalised that premise in part on the assumption that "the use of an LOLR to support banks when they get into trouble can lead to moral hazard problems." Jeremy C Stein, Governor, Bd. of Governors of the Fed. Reserve Sys., Liquidity Regulation and Central Banking, Remarks at "Finding the Right Balance," 2013 Credit Markets Symposium Sponsored by the Federal Reserve Bank of Richmond (Apr. 19, 2013). Governor Stein did however express an openness to counting some committed LOLR capacity in the liquidity coverage ratio requirement, but only to the extent it had an upfront fee.

4.Id. ("The [Group of Governors and Heads of Supervision] has also made clear its view that, during periods of stress, it would be appropriate for banks to use their [high-quality liquid assets], thereby falling below the minimum. However, creating a regime in which banks voluntarily choose to do so is not an easy task. A number of observers have expressed the concern that if a bank is held to an [liquidity coverage ratio] standard of 100 percent in normal times, it may be reluctant to allow its ratio to drop below 100 percent when facing large outflows, even if regulators were to permit this temporary deviation, for fear that a decline in the ratio could be interpreted as a sign of weakness.").

5.The regulators could consider adjustments to other liquidity regulations, including the internal liquidity stress tests and the resolution-related liquidity requirements.

This article is based on remarks given March 3, 2026.

Capital rules for the real economy

Capital requirements form the foundation of the regulatory framework. Michelle Bowman details her comprehensive review and what is next for bank capital requirements and Basel III

Capital requirements form the foundation of our prudential regulatory framework, and in the coming weeks we will propose rules to implement the final phase of Basel III in the United States. These changes to the capital framework eliminate overlapping requirements, right-size calibrations to match actual risk, and comprehensively address long-standing gaps in our prudential framework. The result is more efficient regulation and banks that are better positioned to support economic growth, while preserving safety and soundness.

Following the 2008 financial crisis, regulators implemented reforms that substantially increased bank capital and strengthened financial system resilience. While these initial reforms were necessary, experience shows requirements that overly calibrate low-risk activities produce unintended consequences. It constrains credit availability, pushes activity into the less-regulated nonbank sector, and layers on complexity and costs without meaningfully enhancing safety and soundness.

Requirements like the global systemically important bank (G-SIB) surcharge, which has increased in such a way that it has become disassociated from actual risk, illustrate this problem. Continuously increasing capital levels without a specific purpose imposes real economic cost.

When capital requirements become excessive, they impair the banking system's fundamental function of providing credit to the real economy. The price is paid in forgone economic growth, reduced job creation, and lower standards of living.

In our work to modernize the capital framework, we evaluated changes in the aggregate while taking a bottom-up approach to ensure that the overall framework is appropriate.

We did not begin by setting an aggregate 'target' and working backward. Instead, each requirement is evaluated on its merits—examining whether it is properly calibrated to risk, achieves its intended purpose, and avoids creating unintended outcomes.

We have developed proposals to modify each of the four pillars of our regulatory capital framework for the largest banks: stress testing, the supplementary leverage ratio, the Basel III framework for risk-based capital requirements, and the G-SIB surcharge.

When capital requirements become excessive, they impair the banking system's fundamental function of providing credit to the real economy. The price is paid in forgone economic growth, reduced job creation, and lower standards of living

The Federal Reserve is taking steps to modernize our capital requirements and is working together with the Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation to propose joint rulemakings. The proposals take into account the aggregate impact of revisions already introduced to the enhanced supplementary leverage ratio (eSLR), which would restore it to its role as a backstop to risk-based capital requirements, and to the stress testing framework[1].

The Federal Reserve has already proposed a number of changes to the stress testing framework and process to enhance transparency and public accountability. In addition, the outstanding stress testing proposals reduce excessive volatility while providing a robust analysis of bank conditions under a hypothetical stress scenario[2].

The proposals to address the remaining two pillars, Basel III and the G-SIB surcharge, streamline the risk-based capital framework using a single set of calculations, improve alignment between requirements and risk, and revise the G-SIB surcharge to better capture the risks of our largest and most complex banks.

We are also updating capital requirements for smaller and less complex banks. Last November, the banking agencies proposed enhancements to the community bank leverage ratio. These revisions reduce regulatory burden and increase flexibility for qualifying community banks, while preserving strong capital levels[3]. A new 'standardized approach' will also revise the risk-based capital requirements for non-G-SIB banks.

Together, these proposals will better align requirements with risk and allow banks to engage in lower-risk, traditional banking activities. Collectively, they reduce incentives for activities like mortgage origination, mortgage servicing, and lending to businesses to migrate outside of the regulated banking sector.

Importantly, the capital framework remains robust. Under the new framework, banks maintain their capacity to absorb losses while continuing to provide credit and financial services to households and businesses across a wide range of economic conditions.

Basel III proposal

The Basel III proposal builds on the 2017 Basel agreement while incorporating targeted adjustments to reflect US-specific aspects of banking and financial markets. Finalizing these reforms will provide the industry greater certainty for planning and management. It will also promote broadly consistent international capital standards.

An important feature of this proposal is the elimination of duplicative capital calculations for the largest banks. Today, these banks must maintain two sets of risk-based capital ratios—one using the standardized approach and another using internal model-based advanced approaches.

Experience shows this duplication creates burden without providing corresponding benefits. Therefore, the proposal establishes a single approach to calculate the risk-based capital requirements for the largest banks.

Credit risk

To better support the flow of credit to households and businesses, the revised framework improves the risk sensitivity of requirements for lending activities. The proposal recognizes loan-to-value ratios in mortgage capital requirements and reflects repayment history in retail lending.

Importantly, it does not add new capital penalties for mortgages or consumer lending and seeks public feedback on the appropriate role of private mortgage insurance. The proposal also differentiates requirements based on the credit quality of businesses, ensuring that capital treatment is aligned with risk.

Operational risk

The new framework includes standardized requirements for operational risk, consistent with international standards, but tailored to large US banks. Activities that produce fee-based revenues and expenses, like credit cards, would have those revenues and costs accounted for on a net basis, rather than separately as in the Basel standard.

Staff analysis also indicates that certain activities, like wealth management and custody services, have historically exhibited lower levels of operational risk, and the proposed requirements are calibrated to reflect those differences.

Market risk

The proposal also strengthens capital requirements for banks' trading activities in a manner calibrated to unique US capital markets. The methodology better captures losses under stressed conditions and reflects the risk of less liquid positions. It introduces a standardized calculation that applies consistently across firms, while reducing burden for banks with simple trading activities.

Relative to the Basel standard, the proposal better recognizes diversification across positions and extends the use of bank internal models where data are sufficiently robust, ensuring capital requirements are commensurate with risk.

CVA risk

The proposal also introduces a capital requirement for credit valuation adjustment (or CVA), which is the risk of losses on derivative positions from counterparty credit risk. This requirement applies to banks with significant trading activity and material derivative portfolios, consistent with international standards. Importantly, the requirement focuses on bilateral transactions among large financial firms, avoiding unintended costs for commercial end users of derivatives including farmers and manufacturers.

Overlaps with stress testing

Stress testing, and the resulting stress capital buffer, complement the risk-based framework by adding granularity and risk sensitivity. However, overlaps between the stress test and the risk-based framework can produce excessive requirements for some activities.

In developing the Basel III proposal, we were mindful of these overlaps and evaluated the combined effect of the requirements in our impact analysis. In line with international standards and with a view toward improving risk sensitivity, the Basel III proposal increases capital requirements for operational risk and market risk.

Separately, recently proposed changes to stress testing models are expected to improve the reliability of the operational risk model and the coherence of the global market shock scenario. In doing so, it reduces requirements for operational risk and trading positions. The overall calibration of these risks should remain largely unchanged, while individual components of the framework are meaningfully improved.

Standardized approach proposal

While implementing Basel III requirements for large and internationally active banks are long overdue, it is equally important to update risk-based capital requirements for all banks. The approach leverages a similar rationale—to reduce redundancy, simplify where possible, achieve better calibration of requirements relative to risk, and remove incentives for activities to migrate out of the banking system. The standardized approach proposal modifies risk-based capital calculations for most banks, improving risk alignment while preserving a simple framework.

The proposed changes address critical categories of bank lending, including mortgages, consumer lending, and business lending. These changes moderately reduce requirements and align the standardized approach with the Basel III proposal. This ensures greater consistency and a level playing field among all banks.

The changes better align requirements with risk, increasing efficiency, and ensure the availability of credit to households and businesses. At the same time, all US banks would remain subject to robust capital standards.

Both the standardized approach and the Basel III proposals remove any requirement to deduct mortgage servicing assets from regulatory capital. Instead, they assign a 250 percent risk weight to these assets while seeking public feedback about the appropriate risk weight. This should reduce disincentives for participating in mortgage markets and servicing their mortgage originations, thereby addressing the mortgage activity migration to nonbanks over the past 15 years.

The standardized approach proposal also requires large banks to include elements of accumulated other comprehensive income (AOCI) in common equity tier 1 capital. This aligns with the treatment of these assets for the largest institutions. The proposal also invites public comment on the appropriate scope of mandatory AOCI recognition and sets a five-year phase in for this change to avoid a material immediate increase in capital requirements.

G-SIB surcharge proposal

I will now turn to a discussion of the G-SIB surcharge proposal. Under our current framework, the largest, most complex banks are subject to a G-SIB surcharge, which is a capital requirement intended to mitigate the systemic risk posed by these banks. This proposal strengthens and modernizes the calculation of this requirement in several ways.

First, the proposal updates the parameters—or coefficients—that determine the impact of firms' activities on the G-SIB surcharge. This better reflects recent changes in the financial system. When the G-SIB surcharge was

introduced in 2015, the Board committed to regularly review the surcharge coefficients. This practice would have ensured that the coefficients account for changes in the price level and economic growth[4].

More than 10 years later, the Board has yet to complete a review. Over time, the surcharges have continued to escalate, even when the size of the largest banks has grown roughly in line with the broader economy. In addition, our surcharges have increasingly diverged from the international method for setting G-SIB surcharges.

The proposal addresses this divergence by realigning our surcharge with the international method. And to ensure that surcharges do not unintentionally increase, the proposal indexes the surcharge to economic growth going forward. These changes keep this additional capital requirement calibrated to the systemic risks of our largest, most complex banks over time.

Second, the proposal revises the surcharge component that accounts for risk associated with short-term funding, which was originally intended to represent 20 percent of the surcharge. Instead, it represents roughly 30 percent. Revising this element of the surcharge would bring it into better alignment with other elements of the calculation.

Third, to reduce incentives to make year-end adjustments to balance sheets, the proposal requires G-SIBs to calculate certain systemic risk indicators as an average of their daily or monthly values, rather than the year-end value.

Fourth, to reduce cliff effects and increase sensitivity to changes in a firm's risk profile, the proposal assigns surcharges in increments of 10 basis points rather than 50 basis points.

Finally, the proposal improves the measurement of certain systemic indicators, aligning it with international standards.

These adjustments reduce capital requirements. Most of this reduction comes from fulfilling the Board's commitment to adjust for economic growth and correct excessive requirements associated with the short-term wholesale funding component.

Impact on capital requirements

We expect the Basel III proposal to result in a small increase in requirements for the largest banks, similar to what is expected in the UK. The G-SIB surcharge proposal would result in a modest decrease in the surcharges, which addresses the recent increases in this requirement that deviated from risk. Together, these proposals would decrease the requirements by a small amount.

These changes should be viewed as part of a broad, careful review of capital requirements undertaken over the past nine months. We have carefully considered the overlaps between Basel III and stress testing to ensure that, when combined, capital requirements appropriately capture risk rather than being overly punitive. The resulting cumulative effect on the largest banks' capital requirements is modest.

Recent changes to capital rules and accounting standards have significantly increased requirements for large US banks. They are now subject to new and generally higher requirements for potential credit losses and derivative exposures. Stress test losses also increase capital requirements, and balance sheet expansion in line with economic growth and inflation has increased G-SIB surcharges.

Changes to the G-SIB surcharge based on underlying risk are appropriate but increases driven mainly by real economic growth and inflation do not reflect increases in systemic risk. In addition, they are contrary to the Board's long-standing commitment to update the methodology.

Our capital proposals, including the 2025 stress test improvements, maintain capital requirements above the 2019 rules. The cumulative impact serves as a sensible recalibration reflecting the recent growth of regulatory capital requirements for the largest banks.

Smaller banks, which are more focused on traditional lending activities, will see slightly larger reductions in capital requirements. These changes will maintain resilience and provide flexibility to provide credit to US households and businesses.

Closing thoughts

Crafting these reforms is no easy task, and over time there have been many attempts to address some of the individual components of the framework. The proposals that will be published in the coming week will bring us closer to fulfilling the US commitment to implement the 2017 Basel III agreement and will complete the first step of our comprehensive review of the capital framework. We look forward to publishing all of these proposals and receiving public comments. ■

Michelle W Bowman is the Vice Chair for Supervision of the Board of Governors of the US Federal Reserve System

Endnotes

1. See Regulatory Capital Rule (PDF), 90 Fed. Reg. 55,248 (December 1, 2025).

2. See Modifications to the Capital Plan Rule and Stress Capital Buffer Requirement (PDF), 90 Fed. Reg. 16,843 (April 22, 2025); and Enhanced Transparency and Public Accountability of the Supervisory Stress Test Models and Scenarios (PDF), 90 Fed. Reg. 51,856 (November 18, 2025).

3. See Regulatory Capital Rule (PDF), 90 Fed. Reg. 55,048 (December 1, 2025).

4. See Regulatory Capital Rules (PDF), 80 Fed. Reg. 49,082 (August 14, 2015).

The views expressed here are my own and are not necessarily those of my colleagues on the Federal Open Market Committee or the Board of Governors of the Federal Reserve System. This article is based on a speech delivered at the Cato Institute Policy Forum: Basel III and Bank Capital Rules, Washington, DC, United States.

Clinical supervision

Sam Woods reflects on the nature of banking supervision. Taking stock of how supervision has evolved in the UK and internationally, he considers what the role of a supervisor is and how it might evolve in future

Deep in the bowels of all major financial sectors you can find a group of people toiling away under the banner of 'prudential regulation'. Sometimes they are found within central banks, so are descendants of Henry Thornton. Sometimes they form their own agency, or are part of a wider regulator. They are usually charged with ensuring the safety and soundness of banks[1].

But 'prudential regulator' is something of a misnomer. One function of these bodies is well-known, and relatively easy to describe and observe - these people regulate, meaning they set rules for banks to follow, in much the same way as regulators do in other parts of the economy.

The other main function is more surprising. Not only do they regulate banks, but many of them also 'supervise' them. This is a relatively interventionist activity compared to the monitoring functions of many regulators, and one which is rather unusual in a capitalist economy. It is also much less observable, which may explain why it has received much less attention from academics[2].

It is also notable that - at least in the UK - some elements of this supervisory activity are beginning to be exported to other areas of the economy such as energy and water[3]. Given this it seems a good moment to pause for a moment and consider what bank supervision is, why we do it, why it looks the way it does, and where it might go in the future. Why bother?

Before going into this, it's worth reminding ourselves why we regulate banks in the first place, which is due to the very high and persistent cost to the economy from financial crises - research suggests that the average net present value cost of a financial crisis, even if well managed, is around 43% of GDP[4].

These costs create an externality: they do not fully accrue to bank executives and shareholders, and instead mostly fall on the wider economy through their material and persistent impacts on growth. While market discipline and strong governance can play a role in addressing this market failure, regulation aims to make banks internalise this public concern more fully.

In banking you cannot in any meaningful way separate the service or product being provided from the bank as an entity: the deposits and lending banks provide are the bank, and hence the public interest is in the health of the bank itself

One reason banking crises are so costly is that banks provide a critical piece of public infrastructure: money. The money that most people and businesses use as a store of value and for day-to-day payments is in the form of commercial bank liabilities, or bank deposits as they are more commonly known. It is critical to the functioning of the economy that the value of a £100 deposit at one bank is the same as a £100 deposit at another, so that people and businesses can transact freely. Prudential regulation ensures that this remains the case.

The potential for interruption to this key piece of public infrastructure, and therefore to banks' role in providing financing to the real economy, is a key driver of the costs I have just mentioned. I wouldn't quite put it this way, but there is a view that the motivation for bank regulation is that the state has effectively licensed money (and by extension, credit) creation to private actors who earn a return for performing this task[5]; so it is natural for the state to wish to monitor, and be seen to monitor, those actors' administration of such important public infrastructure.

I appreciate that this comes across as rather statist, because it is only half of the picture. In practice, in most major economies today banks are generally owned by private sector shareholders, and bank executives must deliver for those shareholders or find themselves out of a job. But I am focusing here on the state's interest, and how that is pursued. Bank executives have to manage that interest while also serving their shareholders, which can be a tricky task.

With these broad motivations as a starting point, why do we supervise banks in the particular way we do?

What is 'supervision'?

In most areas of regulation, it is normal to have rules that oblige regulated firms to act in a certain way and have people employed by the state to check adherence and take corrective action as necessary. Indeed, what one might call the proto-regulators in the UK - the factory inspectorates and Justices of the Peace - performed such functions[6].

And to this day, a lot of regulation still looks like this - whether it is the Food Standards Agency, the Health & Safety Executive, or in some respects the police.

But for banking, we employ people called 'supervisors', who monitor the firms under their supervision in a much more comprehensive and continuous manner. This activity is of a different and more intrusive nature than performing inspections of factories or restaurants. Indeed, even the etymology of the word 'supervisor' is interesting: it implies overseeing the work of another.

This is a peculiar arrangement, and not one that sits easily within a capitalist framework. Nor does it seem to be fully captured by other possible descriptions of the role, such as:

- The inspector. One potential function of the supervisor is to ensure firms comply with regulations. On this view, the role of the supervisor might be an inspector, periodically conducting spot checks to confirm compliance with the regulations that are in force.

- The policewoman or prosecutor[7]. In this role, the supervisor might be seen as sniffing out non-compliance or malfeasance and punishing firms accordingly to deter poor behaviour across the sector.

- The fire warden[8]. We might be concerned that it is not sufficient simply to check firms' compliance against a set of rules. Firms might breach the rules in between inspections, or the rules might be out of date. And so we might characterise the supervisor as a kind of fire warden: maintaining a close and continuous independent watch over the firm to catch emerging risks to the public interest early and raise them with management so that they can be mitigated.

- The 'gap-filler'[9]. Where existing regulations are not sufficient to capture the risks posed by a particular firm, perhaps due to the complex and adaptive nature of finance, the supervisor could be seen as a 'gap-filler', using powers of persuasion to ensure the firm takes appropriate action.

- The 'meta-regulator'. Others have argued that since supervisors cannot monitor all aspects of a firm at all times given their finite resources, they must rely on banks' executives to implement robust risk management and governance arrangements. This could be viewed as a form of 'meta-regulation', where the supervisor leverages the capabilities of firms' management, systems and processes to ensure that firms internalise and adhere to the regulatory requirements to which they are subject.

Before we decide which of these roles - if any - best describes our current model of supervision, it is worth considering where this role has come from and how it has changed through time, through two brief case studies: the US and the UK.

The American experience

In the United States, oversight of banks first began around the turn of the 19th century as a response to the proliferation of private note-issuing banks during the era of free banking. The lack of a single currency-issuing central bank meant that the value of banknotes fluctuated with the health of the issuing bank.

Individual states - who granted bank charters - therefore had an interest in monitoring banks to ensure that the money they issued maintained value. One notable example is New York State, which passed an act in 1829 which introduced periodic checks of banks, including their capital levels[11]. I would argue that this activity, almost 200 years ago in New York, is recognisably a direct forbear of prudential regulation around the world today.

The next key development came in the 1860s during the American Civil War, when Congress passed a series of legislative changes to ensure the banking system helped finance the war effort and to control private monetary issuance. As part of this, Congress created the Office of the Comptroller of the Currency (OCC) as the national banking supervisor.

Over time, the OCC built a systematic approach to supervision, with a nationwide network of supervisors conducting regular examinations, identifying issues, and expecting remediation. However, its formal supervisory powers were initially limited, meaning it often relied on influencing firms and on firms' own governance and risk management[12].

A series of bank failures later led to additional new supervisory authorities: the Federal Reserve in 1913 and the Federal Deposit Insurance Corporation in 1933. But the structured approach pioneered by the OCC in the late 1800s seems to have persisted in various forms to this day.

The British experience

In sharp contrast, in line with a broader British tradition of economic governance, bank supervision in the UK operated informally right up until the 1970s, when the Bank of England first took on formal responsibility for this role. Before this, a form of supervision was conducted by the Principal of the Bank's Discount Office and their deputies.

The Discount Office's original function was to manage the Bank's financial exposures through its 'discounting' - ie. Purchasing - of short-dated debt instruments. Over time, the Discount Office leveraged this role to conduct market surveillance, with a particular focus on the health of money market participants until the end of the First World War[13].

Beginning in the inter-war period, the Bank's focus turned over time towards the banking sector, but until it gained formal responsibility for banking supervision in 1979 its powers over the banks were very limited. The Bank therefore had to rely on informal suasion and its relationships with key individuals in the banking sector, an approach which had its limits.

One such example was the long-running disagreement between the Bank, Barclays and Lloyds over the firms' acquisition of a number of overseas businesses in the 1920s. The Governor at the time, Montagu Norman, believed these operations posed material risks to the banks but lacked the powers to compel their divestment. He had instead to resort to denying these overseas subsidiaries access to the Bank's facilities, but to little immediate effect[14].

The turning point came after the secondary banking crisis of the 1970s, when a series of failures of financial institutions highlighted the limits of informal supervision. With allegedly as few as six people working directly on banking supervision at the time, the Bank's approach became untenable.

So in 1979 Parliament gave the Bank a formal supervisory role. But the Bank sought to maintain elements of its flexible, judgement-based approach, viewing supervision as most effective when the Bank was able to provide direct and targeted feedback to firms through open and frank conversations with their executives[15]. This philosophy has persisted to some degree in the UK's approach to banking supervision to this day.

Why thus? Taking account of where we have come from and where we are today, why does bank supervision look the way it does?

Legislatures have given supervisors markedly broad powers: to grant or revoke firms' licenses to operate, to require firms to provide them with information or take action to ensure their safety and soundness, to fine firms, and to approve or remove firms' management and board members. They have also been equipped to monitor firms closely.

In the case of larger banks, supervisors typically maintain a close watch over firms' activities, reviewing business plans, risk frameworks, governance, corporate structures and financial performance. And in certain jurisdictions, the supervisors are co-located on the premises of the firms that they supervise.

Supervisors not only monitor banks closely, they also use banks' own governance and systems to detect and mitigate a wider range of issues than they could through supervision alone. This 'meta-regulation' is bolstered in the UK (and in a similar way in various other jurisdictions) by the senior managers regime, which aims to better align the incentives of the regulator and bank executives.

Using the wide range of information available to them, supervisors are then empowered to identify risks to the safety and soundness that banks are exposed to, to judge their severity, and decide what action is required to manage these risks. Rather than being tied to a set of formulaic metrics or criteria, supervisors are encouraged to use their own supervisory judgement as part of a flexible approach which allows them to account for a variety of business models, risks, and wider macroeconomic factors.

And to maintain the credibility of the supervisory process, supervisory conclusions need to be exposed to a robust process of challenge and assurance and formulated independent of wider social policy or political considerations.

The supervisory approach I have outlined distinctly sets prudential regulation apart from most regulators in other sectors. The approach seems extraordinarily broad and intrusive in the context of a capitalist economy. Why is this? The answer may of course be that it is a mistake to arrange things in this way, but as it is a very common arrangement across many countries it is worth looking for a rationale.

Much regulation can be characterised as either 'social regulation', dealing with externalities and safety (such as health and safety, food standards, or conduct regulation), or 'economic regulation', which addresses monopoly power in industries like telecoms or water[16]. But prudential regulation of banks seems different.

As noted above, the essential public infrastructure they provide - money in the form of bank deposits - is itself a financial liability of the banks. It is in the public interest that this money maintains its value, underpins day-to-day payments, and facilitates credit provision to the wider economy, which is dependent on the financial and operational health of the banks that issue it.

This, alongside the material costs of financial crises that I have previously noted, motivates prudential regulators to focus primarily on the health of banks as a whole - their safety and soundness as a corporate entity. This leads to a particular supervisory focus on the private and internal workings of the firm, not only to identify emerging risks but also to ensure that firms are able to identify and mitigate such risks themselves at an early stage.

I think it is this unique feature of banks that has given rise to the practice of supervision, focusing as it does so much on the health of the corporate entity - because in the case of banks that entity is itself the main vector of the public interest. Put simply, in banking you cannot in any meaningful way separate the service or product being provided from the bank as an entity: the deposits and lending banks provide are the bank, and hence the public interest is in the health of the bank itself.

This unusually strong interest in the health of the corporate entity is what motivates supervision, and requires supervisors to keep a close and continuous watch over firms. With this comes I think an unusually high risk of regulatory capture, due to that close and continuous nature of the prudential regulator's relationship with banks.

The supervisor needs to maintain an independent view of a firm while dealing with senior and highly adept bank executives with whom the supervisor has at least a partially shared and strong interest in the firm's overall health.

For that reason, I would argue that independence of mind is a key quality of a good supervisor, and instilling such a mindset in its supervisors is one of the main responsibilities of a prudential authority.

The practice of supervision also bolsters prudential regulators' ability to ensure that their activity is appropriately flexible and proportionate. A forward-looking, judgement-based approach that identifies and mitigates issues through supervisory discretion reduces the need to take an excessively prescriptive (and burdensome) approach to rule-making.

Taken to its logical extreme, one might even argue that with sufficiently empowered supervisors a rulebook might be unnecessary, assuming a political mandate and objectives that remained unchanged. But there would be a very high bar to adopting this approach: supervisors would need to consistently maintain sufficient independence of mind and a detailed understanding of a complex and innovative industry, which cannot be guaranteed across an entire organisation. Without rules banks might reasonably argue that it is impossible to know what is expected of a regulated firm, as might the supervisors themselves.

Consistency across supervisors would be harder to achieve, and it would become much harder for legislatures and the public to hold regulators to account against their mandates. And so I believe that a set of clearly defined rules remains an essential part of prudential regulation and a vital safeguard against lapses in supervisory judgement.

Let's get clinical

I return to my question at the beginning of this speech: what is the role of the supervisor? It is a complex role that resists simple classification. The supervisor's job is clearly broader than that of an inspector or enforcer - the role consists of more than a backward-looking examination of firms' compliance with the rules. I have some sympathy with the idea that the supervisor is more akin to a fire warden or nightwatchman, which captures the forward-looking and continuous assessment of risks that the supervisor must make.

But to my mind, and this may seem peculiar to some listening to this speech, a closer analogy is actually that of the doctor or public health official. Doctors work with their patients to identify any troubling symptoms, diagnose the underlying condition, and prescribe the appropriate course of treatment.

In doing so, they do not simply consult a checklist of simple quantitative metrics, but instead develop hypotheses of what is afflicting their patient, through diagnostic testing and discussion with that patient. And as they consult with colleagues and consider new information as it comes to light, they update their diagnosis and treatment plan as required. This is not dissimilar to the banking supervisor's judgement-based assessment process.

The relationship between supervisors and their firms also has some similarities with the doctor and patient relationship. Both doctors and supervisors need to build relationships underpinned by trust if they are to maintain the health of those in their care. To be effective and credible, their integrity and independence needs to be beyond question. This enables both firms and patients to be comfortable raising potential problems at an early stage before those problems become acute. The Hippocratic Oath provides an example of this approach for the medical profession.

There also need to be clear, pre-defined boundaries about what is an acceptable level of intervention - you would rightly be sceptical if your doctor told you what brand of car to buy. Likewise, a supervisor must resist seeking to interfere with the day-to-day commercial management of firms and instead focus on the role for which he or she is equipped: to identify and mitigate the key risks to firms' safety and soundness.

By the same token, just as healthy people may only see their doctor on occasion for a check-up and some healthy living advice, the intensity and focus of supervision should differ according to the health of the firm.

One crucial aspect of the work of the supervisor, however, is that the ill-health of a firm under their care can pose serious risks to the health of other firms through the risk of financial contagion, and ultimately to the public at large given the severe economic and fiscal costs of financial crises.

The role of the supervisor therefore not only has strong similarities to the medical profession, but also to the field of public health. Public health officials are concerned for the health of society as a whole, balancing the interests and rights of individual patients with the risks posed to the wider population through the spread of contagion. This is why both prudential regulators and public health authorities are usually empowered to take action to direct others in the public interest[17].

Even if both supervisors and public health officials use their ability to compel others sparingly, it is reasonable to worry that these strong powers are vulnerable to abuse without robust safeguards. There are numerous examples of well-intentioned professionals causing significant harm to those in their care in recent history.

This illustrates the importance of accountability: the authorities are subject to strict legal constraints over their powers (including the need to ensure they do not violate the fundamental rights of anyone subject to those powers), with their exercise subject to review by the judiciary.

Back to the future

Having spoken at some length about how we might characterise the current role of a supervisor, I will offer a few thoughts on how it might evolve in future. I have suggested that bank supervision is an expert role, and one which is challenging to perform well. It is necessary but not sufficient to be technically proficient at navigating various arcane topics of financial regulation like capital, liquidity and group consolidation. Supervisors also require a deep and holistic understanding of financial institutions, the risks that affect them and the psychology of organisations and individuals.

To deliver on their mandates, supervisors need to be able to develop and maintain these skills, supported by a wider system which recognises the value of independent, expert, supervisors. Many of these qualities are already evident in the supervisors I have had the privilege to work with during my time at the PRA, and we continue to benefit today from their expertise and judgement.

But despite these demanding requirements, the qualifications and mindset to perform this role well have been quite loosely defined. Over time, I therefore wonder whether banking supervision may benefit from being viewed more formally as a 'profession' - akin to other such roles like doctors and lawyers.

Looking ahead, this way of thinking about supervision also raises questions about how our workforce might evolve. One potential path is a greater emphasis on depth and breadth of expertise, with supervisors devoting more of their effort to risk identification, analysis, supervisory engagement and learning, and less to activities that can be standardised or automated through advances in data, analytics and technology.

As I have set out, the supervisory role is inherently multi-faceted, drawing on a wide range of disciplines. As the financial system and broader economy continue to evolve, supervisors will need to upskill across an even broader

set of issues, with artificial intelligence, quantum computing, the evolution of market-based finance and geopolitics among the more salient examples today. This might in time mean a more senior and more specialised workforce.

Although my current term as head of the UK's prudential regulator is coming to an end, I would strongly encourage others to join a profession that demands technical expertise, judgement, independence of mind and imagination - and whose work ultimately underpins trust in the financial system and in money itself.

I suspect we will continue to ask a great deal of the supervisors of the future, as we do today, but in return the role offers continual learning, intellectual stretch, and the opportunity to exercise judgement on issues that matter deeply for economic and financial stability.

Sam Woods is Deputy Governor for Prudential Regulation and Chief Executive Officer of the Prudential Regulation Authority at the Bank of England

Endnotes

1. Some, such as the UK's Prudential Regulation Authority, also regulate insurers. I will focus on banks in this speech, to prevent it becoming even longer.

2. Exceptions to this include: Julia Black (Oxford University), Peter Conti-Brown (University of Pennsylvania), Julie Anderson Hill (University of Wyoming), Lev Menand (Columbia Law School), Todd Phillips (Georgia State University), Sean H Vanatta (University of Glasgow).

3. Ofgem (2020) "Supplier Licensing Review: Ongoing requirements and exit arrangements – Decision" and Independent Water Commission (2025) "Final Report".

4. Brooke et al (2015) "Measuring the macroeconomic costs and benefits of higher UK bank capital requirements", Bank of England Financial Stability Paper No. 35.

5. Menand, L (2021) "Why supervise banks? The foundations of the American monetary settlement", Vanderbilt Law Review 74(4), p951-1022.

6. Antony I Ogus, "Regulation: Legal Form and Economic Theory". Oxford: Hart, 2004.

7. Vanatta, SH (2020) "Histories of bank supervision", unpublished. Available at SSRN.

8. Vanatta (2020).

9. Menand (2021).

10. Black, J (2010) "The Rise, Fall and Fate of Principles Based Regulation", LSE Law, Society and Economy Working Papers 17/2010.

11. Peter ContiBrown and Sean H Vanatta, "Private Finance, Public Power: A History of Bank Supervision in America". Princeton: Princeton University Press, 2025.

12. ContiBrown and Vanatta (2025).

13. Richard S Sayers, "The Bank of England, 1891–1944", Vols. 1-3. Cambridge: Cambridge University Press, 1976.

14. Sayers (1976).

15. Forrest Capie, "The Bank of England: 1950s to 1979", New York: Cambridge University Press, 2010.

16. Ogus (2004).
17. For the UK, this is set out in the Financial Services and Markets Act 2000 and the Public Health (Control of Disease) Act 1984 for prudential supervision and public health respectively.

I am particularly grateful to Julia Black, Niamh Moloney and Aaron Schroeder-Willis for their help in preparing this speech, and also to other colleagues across the Bank. Any mistakes are my own. This article is based on a speech given at The Henry Thornton Lecture at Bayes Business School, 12 May 2026.

US asset management dominance threatens Europe

The global asset management industry is simultaneously growing and consolidating. Dirk Schoenmaker argues that US firms' rise in EU asset management may weaken sustainable finance, making tougher stewardship, ESMA supervision and autonomy urgent

Executive summary

Asset managers work on behalf of asset owners, such as pension funds and insurance companies, allocating their holdings of household or other savings. In Europe, the market share of United States asset managers is rising, while that of their European counterparts is declining. US asset managers may even be about to overtake European asset managers in Europe.

However, there are differences between US and European asset managers, and these could play out in the context of the European Union's savings and investment union plan. On environmental, social and governance (ESG) engagement, European asset managers remain active, while their US counterparts increasingly vote against social and environmental resolutions. This is counterproductive for Europe's sustainable finance agenda.

To preserve the efficiency and efficacy of the EU asset management market, three steps should be taken: 1) strengthen stewardship policies, 2) create a central supervisor and 3) enhance strategic autonomy.

Stewardship policies should be tightened and asset managers should highlight how their ESG policies aligns with those of the asset owners for which they work. A major element of this tightening would be the requirement to publish a detailed record of voting on shareholder resolutions.

Strong supervision by the European Securities and Markets Authority should ensure that US asset managers are appropriately supervised across the EU. Asset managers apply a hub-and-spoke model, operating from Dublin and Luxembourg. National supervisors cannot effectively oversee the Europe-wide operations, which may create blind spots.

A successful savings and investment union needs strong European players to allocate European savings to European investments. The European Commission should act to counter a home bias towards US investments. When hiring asset managers, pension funds and insurers should evaluate not only the lowest cost in the short term, but also financial and ESG performance in the long term.

Enhancing stewardship regulations is only useful if there is also a strong supervisor enforcing adherence to these regulations

1 Introduction

The global asset management industry is simultaneously growing and consolidating. Three firms – BlackRock, Vanguard and State Street, all from the United States – have emerged as the dominant players. They oversee $26 trillion of assets under management. Their share of the European market is also rising, surpassing the growth of European players[1]. Does that matter for Europe?

Meanwhile, the European Commission is rejuvenating plans for what was known as the capital markets union under a new name, the savings and investments union, with the goal of creating an integrated European Union capital market. Investment banks and asset managers play a central role in the allocation of savings from households to investments in firms. US investment banks are already taking a growing share of the European capital market (Goodhart and Schoenmaker 2016) and the same dynamics are being seen in asset management, with European players being taken over by their US rivals.

This *Policy Brief* documents the market share of US and European asset managers in the European capital market and then explores three issues of concern for policymakers:

1. Asset managers play a major role in environmental, social and governance (ESG) engagement by firms and in voting on shareholder resolutions. US asset managers seem to be increasingly voting against social and environmental resolutions, while European asset managers continue to vote in favour.

2. Can the current system of national securities supervision cope with these large and growing asset managers operating across Europe (and the world)?

3. The EU discussion on strategic autonomy – or ensuring the capacity to act in crucial areas without relying on outside help – suggests that Europe should have and retain capacity to operate key functions and ensure capital allocation to European investments. Is asset management such a key function? If so, what can the European Commission and the financial sector do to maintain that capacity?

In examining these policy concerns, we take the overriding policy goal of establishing an integrated capital market as given. We start in section 2 by documenting the rise of US asset management in Europe. In section 3, we examine how US asset managers operate. In section 4, we set out recommendations for policy.

2 US rise; European decline

2.1 The function of asset management

Asset managers manage investments on behalf of pension funds, insurance companies, sovereign wealth funds, companies and households, with the objective of growing wealth while managing risk. In this way, asset managers play a core role in the EU savings and investments union (SIU), which aims to improve access to funding for investors, allocation of capital and prospects for EU savers (Véron 2025). The European Commission, which is behind the SIU initiative, thus has a keen interest from an economic perspective in the proper functioning of asset managers.

Pension funds (34 percent of assets under management) and insurance companies (22 percent of assets under management) are the largest institutional clients for asset managers (IPE 2025). These pension funds and insurance companies are considered 'universal owners' – they own diversified slices of the entire global economy (Quigley 2026).

Because they cannot diversify away from systemic risks, such as climate change, biodiversity loss and rising inequality, they focus on enhancing long-term, sustainable market returns rather than just individual asset performance. Their investment choices affect the likely future economic and societal performance of countries and sectors.

And this relationship is a two-way street: asset owners are important for achieving and maintaining flourishing economies and their long-term performance also depends on having flourishing economies in the future (Lukomnik and Burckart 2026). In a symbiotic relationship, pension funds can pay out good pensions in a thriving, liveable world exactly because their investments have contributed to that thriving, liveable world.

Asset management starts with investment planning to understand a client's financial and, increasingly, sustainability goals and to assess its risk tolerance. Based on these parameters, asset managers build portfolios for their clients. Portfolio construction involves selection of an appropriate asset mix of stocks, bonds, real estate and alternative assets, such as private equity and infrastructure. Assets are allocated across sectors, regions and asset classes to create diversified portfolios.

The final step in asset management is monitoring portfolio performance. Are companies realising profit and impact? Are adjustments needed in response to a changing environment? Asset managers also aid universal owners in their roles as stewards of long-term capital. That means supporting companies in good and bad times and steering them on their impact journey through engagement.

But if companies renege on their impact commitments and thus put the long-term relationship at risk, there may be justification for divestment (a tool of last resort). Stewardship of companies means working together on long-term value creation and thereby futureproofing the economy[2].

2.2 The market shares of US and European asset managers in Europe

Asset managers are generally ranked by assets under management. Table 1 shows the European market shares of the top 20 asset managers. It appears that the top 20 cover over 60 percent of the European asset management market. Figure 1 summarises the results. The European market share of European (EU, United Kingdom and Swiss) asset managers has declined since 2021, while the share of US asset managers has increased from 40 percent in 2021 to 47 percent in 2026.

Note that 2026 is an estimate, reflecting the recent takeover of UK-based Schroders by US-based Nuveen. This takeover fits into a broader pattern: Goldman Sachs (US) took over NN Investment Partners (the Netherlands) in 2022, and Bank of New York (US) acquired Insight Investment (UK) in 2009. Figure 1 shows an underlying structural trend of European asset managers downsizing or being taken over. If the trend continues, the European market share of US asset managers will soon exceed that of their European counterparts.

The dynamics among European asset managers are also interesting. Figure 2 shows that French asset managers are on the rise, from 31 percent of European asset managers in 2021 to 37 percent in 2026, while the UK share of European asset managers has declined from 43 percent in 2021 to 29 percent in 2026. German asset managers hover around 18 percent to 20 percent of European asset managers. French asset managers, similarly to French investment banks, are dominant within the European sub-segment of the European capital market. This confirms the important position of Paris in the EU capital market.

2.3 Global asset management

We have also calculated market shares for global asset management. Figure 3 shows the global share of North American (US and Canadian) asset managers increased from 73 percent in 2021 to 78 percent in 2025[3], while the share of European (EU, UK and Swiss) players decreased from 21 to 17 percent over the same period. The share

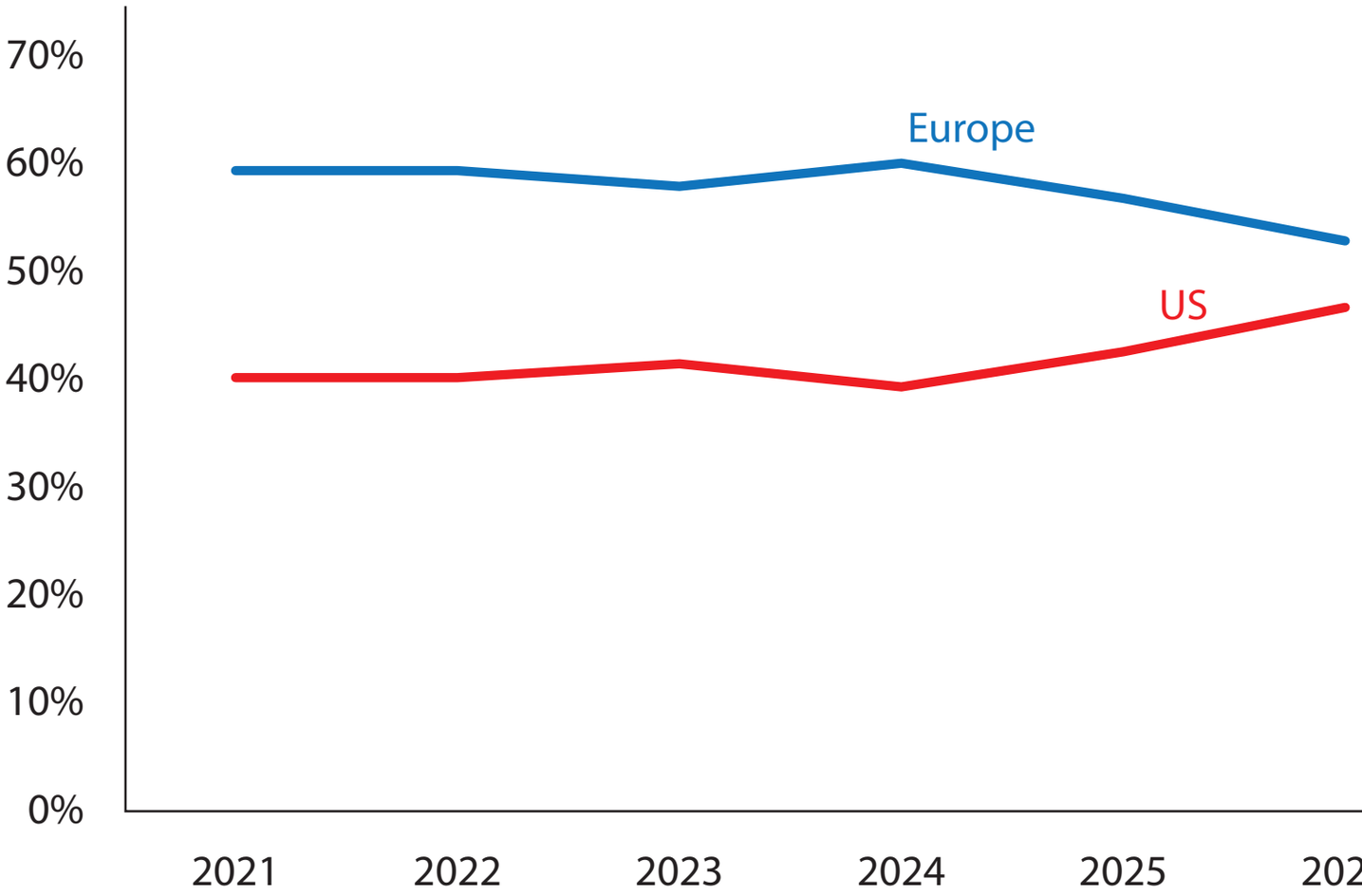
Table 1. Top 20 asset managers, % of European assets under management

Asset manager	Country	2021	2022	2023	2024	2025	2026*
1. BlackRock	US	9.8%	9.3%	9.6%	11.2%	12.5%	12.5%
2. Legal & General	UK	7.9%	7.8%	7.1%	8.6%	6.1%	6.1%
3. Amundi	France	3.7%	3.6%	4.2%	5.3%	5.4%	5.4%
4. Insight Investment (BNY)	US	6.3%	5.9%	4.9%	5.2%	4.8%	4.8%
5. Goldman Sachs	US	1.0%	1.1%	3.2%	3.7%	4.6%	4.6%
6. Natixis	France	3.2%	3.4%	3.6%	4.2%	4.3%	4.3%
7. State Street	US	2.3%	2.4%	2.5%	3.6%	3.7%	3.7%
8. Deutsche Bank	Germany	2.1%	2.2%	2.4%	2.8%	2.8%	2.8%
9. Schroders/Nuveen (2026)	UK/US	0.5%	2.0%	2.5%	2.9%	2.7%	2.7%
10. Aberdeen	UK	3.0%	2.7%	2.4%	2.5%	2.6%	2.6%
11. Allianz	Germany	2.4%	0.7%	0.9%	2.5%	2.5%	2.5%
12. BNP Paribas	France	1.9%	1.7%	2.0%	2.5%	2.4%	2.4%
13. Swisscanto	Switzerland	1.2%	1.2%	1.5%	2.1%	2.4%	2.0%
14. JP Morgan	US	1.6%	1.6%	2.1%	2.0%	2.0%	2.0%

15. Union Investment	Germany	1.3%	1.3%	1.6%	1.8%	1.8%	1.8%
16. Aegon	Netherlands	1.6%	1.5%	1.1%	1.5%	1.6%	1.6%
17. HSBC	UK	0.9%	1.0%	1.1%	1.4%	1.6%	1.6%
18. Achmea	Netherlands	1.2%	1.2%	1.1%	1.4%	1.4%	1.4%
19. Northern Trust	US	0.7%	0.8%	0.9%	0.8%	1.3%	1.3%
20. AXA	France	1.0%	0.9%	1.1%	1.1%	1.0%	1.0%
Total top 20		53.5%	52.1%	55.6%	67.0%	67.5%	67.5%
Share of top 20							
Share US asset managers	US	40.3%	40.3%	41.7%	39.6%	42.8%	46.8%
Share French asset managers	France	18.4%	18.3%	19.6%	19.5%	19.5%	19.5%
Share UK asset managers	UK	22.9%	25.8%	23.4%	23.1%	19.3%	15.3%
Share German asset managers	Germany	10.9%	8.1%	8.6%	10.5%	10.4%	10.4%
Share Dutch asset managers	Netherlands	5.3%	5.1%	3.9%	4.2%	4.4%	4.4%
Share Swiss asset managers	Switzerland	2.2%	2.3%	2.8%	3.1%	3.5%	3.5%
Total shares		100%	100%	100%	100%	100%	100%

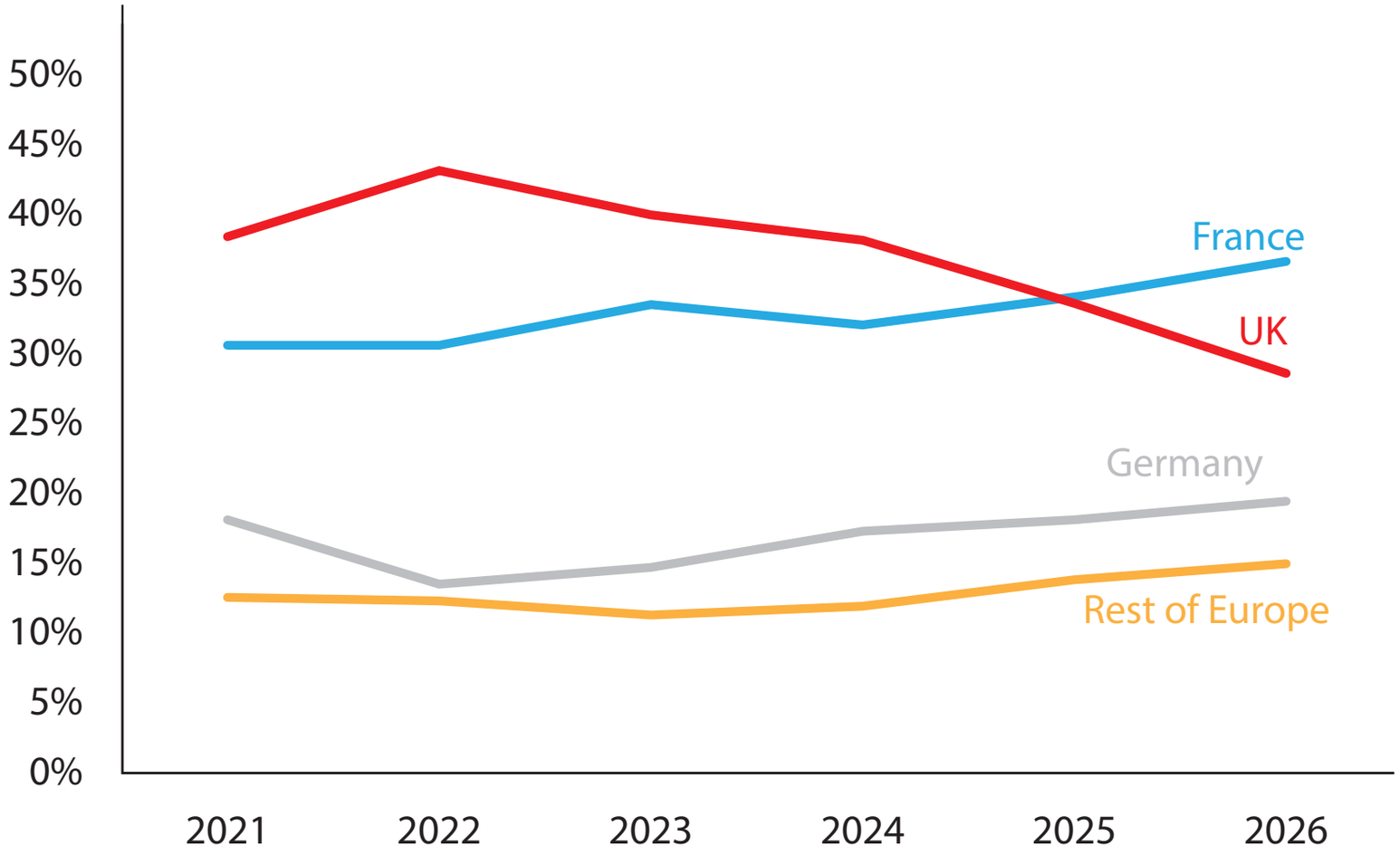
*Note: * shares for 2026 are estimated, including the takeover of Schroders by Nuveen.*
Source: Bruegel based on Investments & Pensions Europe.

Figure 1. Asset managers by origin, European market shares



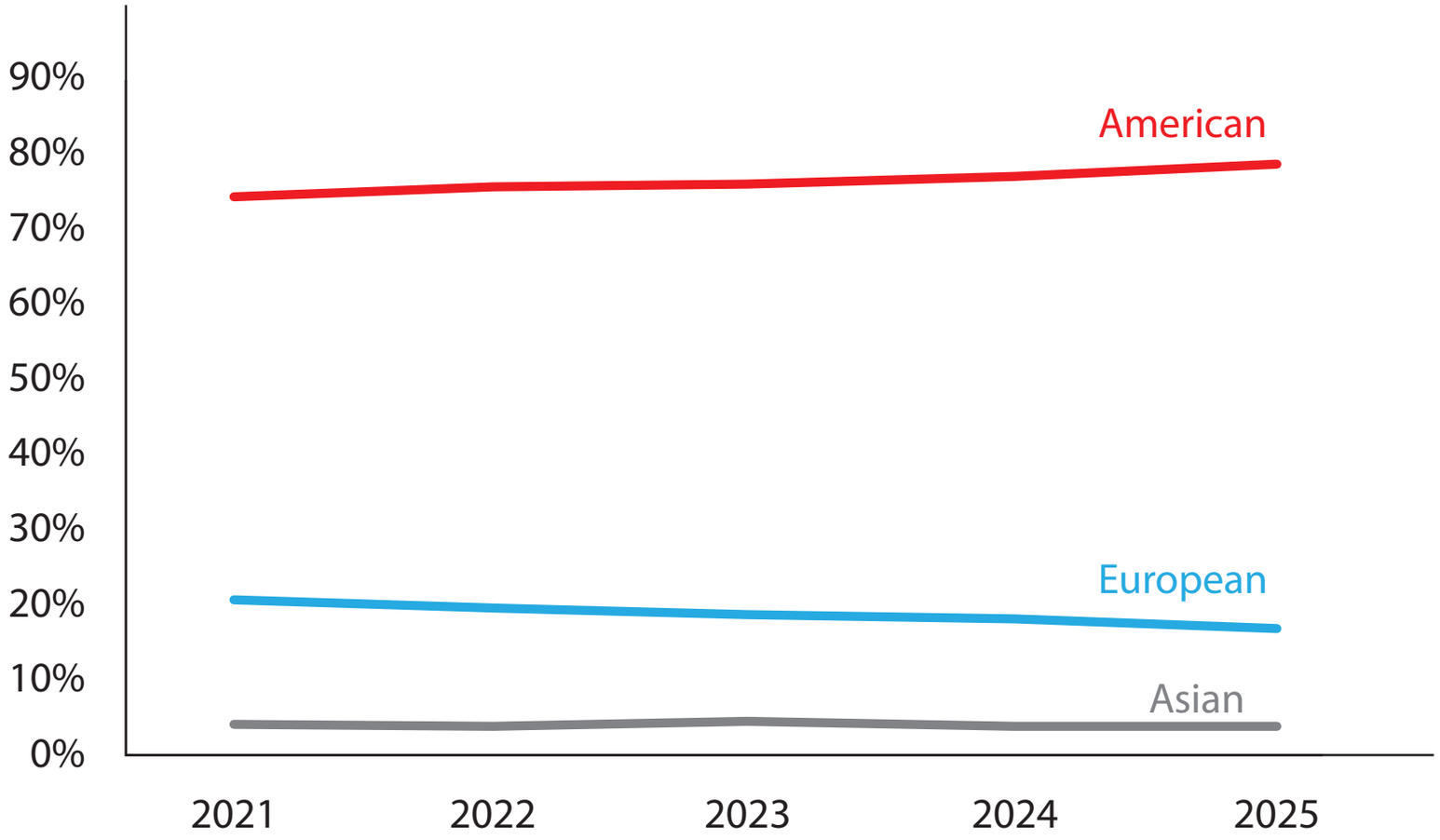
Source: Bruegel.

Figure 2. Division among European asset managers of the European sub-segment



Source: Bruegel.

Figure 3. Global asset management shares by region



Note: refers to market shares by assets under management.
Source: Bruegel based on Investments & Pensions Europe.

of Asian asset managers is stable at 5 percent. This confirms the general picture of the rise of primarily US asset managers and the decline of their European counterparts.

3 How do US asset managers operate?

How US asset managers operate is an interesting question. At the global level, the asset management industry is consolidating, led by US players. This consolidation has consequences for corporate governance and stewardship, raising questions about what incentives large asset managers have to discipline investee companies. In Europe, US asset managers apply the hub-and-spoke model, which poses a challenge for effective supervision and oversight.

3.1 A winner-takes-all market

The asset management industry is increasingly characterised by a 'winner-takes-all' structure (Philippon 2019). A small number of dominant firms, primarily BlackRock, Vanguard and State Street (collectively known as the Big Three), capture the vast majority of net inflows, driven by economies of scale, passive investing and technology. The economies of scale are particularly large for passively managed assets and publicly traded assets, such as stocks and bonds (De Vries *et al* 2024).

This competition has substantially reduced asset management fees. While standard, active or personalised wealth management fees typically range from 0.2 percent to 2 percent, the Big Three offer passive index funds with expense ratios well below 0.1 percent.

These substantial economies of scales in asset management spur consolidation. The global market share of the Big Three increased from 18 percent in 2021 to 21 percent in 2025 and is expected to rise further (IPE 2025; Bebchuk and Hirst 2022). The dominance of the Big Three is also reflected in their voting power: they hold a median stake

of 24 percent in S&P 500 companies and five percent to 16 percent in European companies as of 2025[4, 5]. This difference in holdings reflects a home bias in investments (Gaar *et al* 2020).

There is a bias in Big Three holdings towards US rather than European companies. The difference is only partly explained by a difference in free float of shares: 88 percent for US companies versus 71 percent for European companies (OECD 2021). Finally, the competitive nature of asset management also leads to pressure on costs, including governance and stewardship expenditures.

3.2 Little incentive for stewardship

Value maximisation can refer to the goal of generating the greatest possible positive economic, social and environmental benefits from activities, while minimising negative impacts from those activities (Schoenmaker and Schramade 2023).

For asset management, this means that asset owners and their managers should focus their stewardship of companies on maximising the long-term value of their investment portfolios. However, asset managers face two incentive problems (Bebchuk and Hirst 2022).

First, low fees mean an incentive to underinvest in stewardship activities. An asset manager's return from stewardship is a potential increase in its fee income from the assets they manage. This fee may be only about 20 basis points (section 3.1). So, a €1 million increase in portfolio value as a result of stewardship actions would earn an asset manager only €2,000 in fees per year.

Assuming the investment mandate is held for a rather long period of five years[6], the asset manager would only be willing to invest up to €10,000 in stewardship. From the perspective of the asset owner, it would be optimal to invest up to €1 million to produce the €1 million increase in portfolio value.

Second, asset managers may also have an incentive to be excessively deferential to corporate managers, compared to what would be optimal for their asset owners. Many of the stewardship decisions of asset managers involve choices about whether or not to defer to the views of the corporate managers of their investee companies. These choices can relate to, for example, governance matters, such as director elections and pay, and shareholder proposals on social and environmental issues.

Asset managers have an incentive to vote with, rather than against, corporate management, as they may have business ties with the companies (eg. revenues from administering and managing their pension plans). This is particularly the case for US asset managers (Bolton *et al* 2020; and Bebchuk and Hirst 2022)

This contention is disputed by asset managers (Bebchuk and Hirst 2022). Revealed-preference theory suggests that preferences can be determined by analysing actual behaviour rather than stated intentions. ShareAction (2025) publishes the voting record of major asset managers on shareholder resolutions, which typically ask for companies to take more action than wished for by corporate management.

Table 2 shows a clear dividing line between US and European asset managers in this respect. US asset managers (in particular the larger ones, including BlackRock, State Street and Goldman Sachs) tend to vote against social and environmental resolutions, while Euro-pean asset managers vote largely in favour.

Figure 4 shows that European asset managers have a track record of voting in favour around 80 percent of the time, while voting in favour by US asset managers dropped from 49 percent in 2021 to 17 percent in 2024.

This may, of course, also be a consequence of the anti-ESG movement in the US. But Bolton *et al* (2020) also reported that asset managers vote in more 'money-conscious' and less socially and environmentally friendly ways than pension funds[7] (these findings were based on 2012 data, well before the anti-ESG movement in the US started).

The Big Three's significant and growing power and influence potentially poses a challenge for corporate governance. According to Bebchuk and Hirst (2022), the promise of large investors disciplining corporate managers goes unfulfilled. An additional concern for Europe is the retreat of US asset managers from stewardship on social and environmental issues.

3.3 A hub-and-spoke model in Europe

Asset management groups apply the hub-and-spoke model in their European operations. Luxembourg and Ireland host most of the funds managed by these groups, serving as important hubs that connect asset owners and markets across the EU (Ceh *et al* 2026). This is not only the case for US asset managers, but also for European asset managers (which are often bank-owned). The preference of asset managers for the hub-and-spoke model is reinforced by the drive towards supervisory efficiency (Ceh *et al* 2026).

National securities supervisors supervise asset management operations under the EU's Markets in Financial Instruments Directive II (MiFID II; 2014/65/EU) and offer a European passport for these activities. MiFID II has

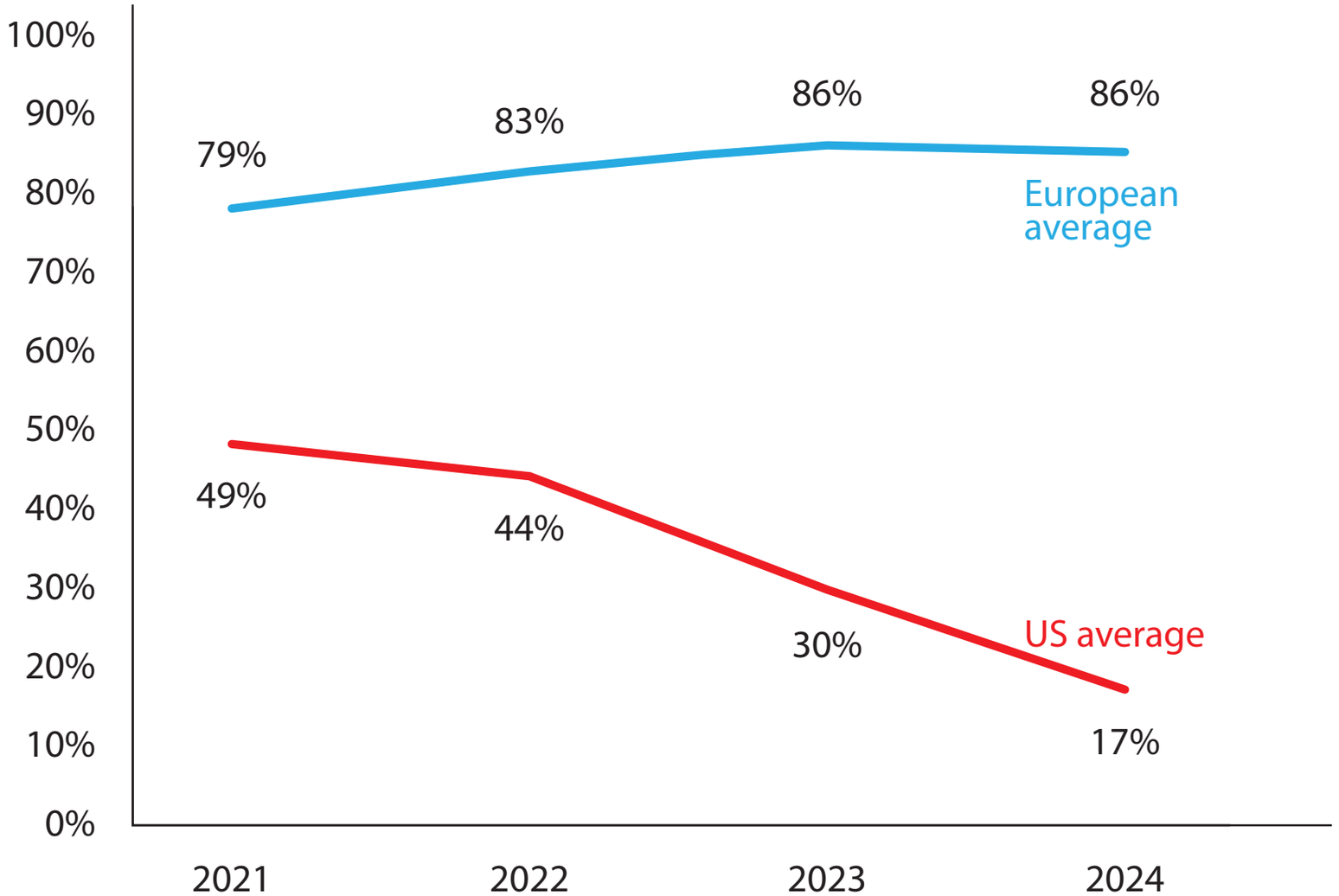
Table 2. Votes in favour of social and environmental resolutions, 2024, %

Asset manager	Country	Environmental	Social	Total
1. BlackRock	US	4%	4%	4%
2. Legal & General	UK	90%	87%	89%
3. Amundi	France	93%	96%	95%
4. Insight Investment (BNY)	US	n.a.	n.a.	n.a.
5. Goldman Sachs	US	9%	6%	8%
6. Natixis	France	n.a.	n.a.	n.a.
7. State Street	US	13%	7%	10%
8. Deutsche Bank	Germany	92%	93%	93%
9a. Schroders (till 2025)	UK	80%	76%	78%
9b. Nuveen (from 2026)	US	45%	38%	42%
10. Aberdeen	UK	51%	43%	47%
11. Allianz	Germany	87%	94%	91%
12. BNP Paribas	France	97%	99%	98%

13. Swisscanto	Switzerland	68%	81%	75%
14. JP Morgan	US	15%	13%	14%
15. Union Investment	Germany	92%	99%	96%
16. Aegon	Netherlands	88%	90%	89%
17. HSBC	UK	88%	91%	90%
18. Achmea	Netherlands	96%	97%	97%
19. Northern Trust	US	29%	24%	27%
20. AXA	France	84%	73%	79%
US average	US	19%	15%	17%
European average	European	85%	86%	86%

Source: Bruegel based on ShareAction.

Figure 4. Voting on social and environmental resolutions



Source: Bruegel.

requirements on portfolio management, investment advice and product governance. Insofar as the US asset managers have additional subsidiaries across the EU, the respective national securities supervisors exercise supervisory control over those subsidiaries.

Meanwhile, the Sustainable Finance Disclosure Regulation (SFDR; 2019/2088/EU) imposes mandatory sustainability disclosures for asset managers, and the Shareholder Rights Directive II (SRD II; 2017/828/EU) enhances transparency and engagement between asset managers and investee companies. Coordination and guidance is provided by the European Securities and Markets Authority (ESMA) in Paris.

Asset management groups prefer to deal with a single securities supervisor – the one in their main hub – for their European operations. The supervisors in Luxembourg and Ireland are specialised in asset and fund management (Ceh *et al* 2026), backed up by robust legal and regulatory frameworks and mazes of taxation treaties to prevent double taxation. But this predominantly national model of supervision for EU-wide operations has shortcomings.

National supervisors tend to focus more on an asset manager's operations in their national market and may thus overlook potential spillover effects to other countries (Schoenmaker, 2011). Another concern is whether any national supervisor can deal with the sheer size and complexity of asset managers with European or even global reach (Goodhart and Schoenmaker 2016).

Moreover, countries that could be affected by stress in the investment fund sector are often not responsible for supervising the relevant funds and therefore lack the ability to pre-empt emerging risks (Ceh *et al* 2026). Given the increasingly important role of fund managers, there are concerns that disruption in this sector can lead to significant disruption in broader financial markets.

These concerns materialised in March 2020 when the bond mutual fund sector suffered exceptionally large outflows because of the COVID-19 pandemic shock. The runs on these bond funds threatened to destabilise bond markets, as funds fire-sold assets, scrambling for liquidity (Breckenfelder and Hoerova 2023).

A more European supervisory framework, Ceh *et al* (2026) argued, would reduce supervisory blind spots and strengthen the sector's resilience, helping to preserve credit and liquidity flows during stress.

3.4 Politics in asset management

The anti-ESG movement is a politically driven backlash, primarily led by the US Republican Party, that argues ESG investing may undermine fiduciary duty and distort markets, while proponents see ESG as a legitimate tool for managing long-term financial risks and opportunities (Harmes 2025).

In a broad study covering more than 16,000 stocks in 48 countries, Alves *et al* (2025) showed that ESG investing has not systemically affected investment performance in the last two decades. So, ESG does not lead to higher (as some proponents may claim) or lower (as some anti-ESG adherents claim) financial returns. Alves *et al* (2025) referred to current financial returns. By contrast, stewardship (see section 3.2) is about long-term value creation.

US asset managers frequently hire prominent politicians, former government officials and high-level policy aides to navigate regulatory landscapes, manage geopolitical risks, lobby on government policies and gain privileged access to government opportunities. These hires, often referred to as 'revolving door' appointments, bridge the gap between financial firms and Washington DC. Some large US asset managers in Europe also hire prominent politicians and central bankers in their most important markets ('spokes' in the hub-and-spoke model) to enhance corporate profitability and protect corporate interests.

Examples of such hires for BlackRock include former UK Chancellor of the Exchequer George Osborne, former Swiss National Bank Governor Philipp Hildebrand, current Chancellor of Germany Friedrich Merz and a former economic advisor to the French President Jean-François Cirelli. For Goldman Sachs, examples include former European Commission President José Manuel Barroso and former UK Prime Minister Rishi Sunak[8]. The revolving door exists also in Europe, but is less prominent and less structurally embedded than in the US (Belli and Stevens 2024).

4 Policy recommendations

To overcome the challenges outlined in section 3, we propose a more robust policy framework across three linked areas:

1. Stewardship: strengthening not only disclosure, but also incentives and accountability for long-term value creation;

2. Supervision: ensuring consistent and effective enforcement through a centralised European supervisor;

3. Strategic autonomy: maintaining Europe's capacity to shape how capital is allocated and stewarded in line with its economic and societal objectives.

These three areas are interdependent: stronger stewardship expectations require effective supervision, and both depend on maintaining sufficient European capacity in asset management.

4.1 Stewardship for long-term value creation

Effective shareholder engagement is a cornerstone of corporate governance. However, as discussed in section 3, the current market structures create weak incentives for asset managers to invest in stewardship. Policy should

therefore go beyond disclosure and address incentives, accountability and the role of asset owners. The SRD II and SFDR should be adjusted (ShareAction 2026) in order to:

4.1.1 Strengthen accountability for voting and engagement

Transparency could be enhanced through:

- A requirement for institutional investors and asset managers to publish detailed voting records, with clear explanations for significant votes;

- The introduction of 'say on climate' votes[9] at annual general meetings to ensure systematic investor scrutiny of transition plans.

However, transparency alone is unlikely to be sufficient. Disclosure should be designed to enable meaningful assessment of whether stewardship activity supports long-term value creation.

4.1.2 Align mandates and incentives with stewardship objectives

Asset owners should play a more central role in setting and enforcing stewardship expectations. In particular:

- Pension funds and insurers should be required to define clear stewardship objectives as part of the mandates they issue to asset managers;

- Asset managers should report against these objectives in a consistent and comparable way;

- Mandate renewal and fee structures should reflect stewardship performance, not only short-term financial returns.

This would help address the principal–agent problem identified in section 3.

4.1.3 Require escalation frameworks

Stewardship should be understood as a process with defined escalation steps: dialogue with management, formalising concerns (writing formal engagement letters with clear expectations and timelines), collaborative action through investor coalitions, voting against directors and supporting ESG-related resolutions and, as last resort, divestment. Asset managers should:

- Publish their escalation policies;

- Disclose how and when escalation tools are used in practice.

This would strengthen the credibility of engagement and reduce the risk of overly deferential voting behaviour.

4.1.4 Strengthen accountability of asset owners to beneficiaries

Pension funds and insurers are typically treated as the principals in the investment chain. However, they are themselves agents acting on behalf of underlying members (or beneficiaries). Strengthening stewardship therefore requires reinforcing accountability at this level as well.

(a) Ascertaining beneficiary preferences
Pension funds and insurers should be required to make reasonable efforts to understand the sustainability preferences of their members, including on issues such as climate transition, biodiversity and social impacts. This could include:

- Structured surveys of member preferences;
- Deliberative processes, such as member panels or assemblies;
- Integration of these preferences into investment beliefs and stewardship policies.

This would provide a clearer mandate for long-term value creation that reflects members' interests over multi-decade horizons.

(b) Enabling member scrutiny and accountability
Pension funds should also be required to enable meaningful scrutiny of their stewardship activities by their members. This could include:

- Publishing accessible reports on voting and engagement outcomes;
- Providing clear explanations of how stewardship aligns with stated member preferences;
- Establishing mechanisms for member challenge and feedback.

Such measures would make asset owners more accountable while reducing the risk that stewardship becomes a purely technocratic exercise.

4.1.5 Maintain robust sustainability disclosure frameworks

Frameworks such as SRD II and SFDR should not be weakened. In particular:

- Entity-level disclosure of principal adverse impacts should be retained;
- Basic sustainability disclosures should be required across all funds, reducing the current asymmetry between 'sustainable' and 'non-sustainable' products.

4.2 Credible and strong supervision by ESMA

Enhancing stewardship regulations is only useful if there is also a strong supervisor enforcing adherence to these regulations. As discussed in section 3, the current system of national supervisors falls short of effective supervision of large and complex asset managers.

With the move to the savings and investments union, the EU supervisory architecture should be capable of handling the main players, which are becoming more concentrated and are US dominated. ESMA has already direct supervisory powers under the Credit Rating Agencies Regulation (Regulation (EC) No 1060/2009). These powers can be extended to institutional investors and asset managers under MiFID II.

Moving supervision to a well-resourced ESMA would improve the quality of supervision of the major players that pose a systemic risk, while closing blind spots and harmonising the supervisory approach, bringing an end to forum shopping.

Véron (2025) argued that a single supervisor could unshackle the SIU. Supervisory integration should be the priority for the EU legislative plan for SIU. ESMA, the EU-level hub for capital markets supervision, would become the single securities supervisor, similar to the European Central Bank's role in banking supervision.

4.3 Strategic autonomy in a vibrant European capital market

The European capital market facilitates the allocation of European savings to European investments. It will gain in importance and size with widely expected national pension reforms (Véron 2025). Given the home bias of asset managers (discussed in section 3), a critical mass of Europe-based asset management is needed to ensure that European investment needs are met.

The growing dominance of US asset managers raises questions about Europe's ability to shape how its capital is allocated and stewarded. Strategic autonomy in this context should not be understood as protectionism, but as ensuring that Europe retains sufficient capacity to:

- Support its own capital markets;
- Uphold its regulatory and policy objectives;
- Promote long-term value creation consistent with its economic and societal goals.

For strategic autonomy, two overarching recommendations can be made:

4.3.1 Strengthen European capacity

Policy options to support European asset management capacity could include:

- Facilitating scale among European asset managers;

- Ensuring that public and quasi-public asset owners take into account long-term system outcomes, not only short-term cost, when allocating mandates.

Supporting European investment platforms or vehicles that embed strong stewardship standards.

4.3.2 Role of institutional investors

Institutional investors themselves have a role in managing concentration and alignment risks. This goes beyond diversification for its own sake. They should:

- Evaluate the stewardship approach and long-term alignment of asset managers alongside fees;

- Avoid excessive reliance on a small number of global providers where this may weaken effective stewardship: bigger institutional investors typically hire several asset managers to avoid concentration risk; European institutional investors should include at least one large European asset manager;

- Engage collectively, where appropriate, to shape market practices: coordinated engagement is found to be more effective (Dimson *et al* 2026).

Taking together, these recommendations would ensure that Europe maintains its capacity to allocate and govern its investments in line with its economic and societal objectives. ■

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Endnotes

1. For example, Emma Dunkley and Harriet Clarfelt, 'BlackRock and Vanguard lead US "super league" dominating Europe', Financial Times, 11 August 2025.

2. In this Policy Brief, we take a broad definition of stewardship, which includes profit and ESG impact. But sometimes the term is used more narrowly to mean accountability to shareholders on profit only.

3. The North American market share is almost completely covered by US asset managers. Canadian asset managers cover only 1.5 percent to 2 percent of the global asset management market.

4. Andrew Kakabadse and Reeves Knyght, 'The quiet power of the Big Three: a new era of corporate governance', IR, 22 July 2025.

5. The Norges Bank Investment Fund is an asset owner and has an average 1.5 percent stake in global companies.

6. The asset management industry is very competitive. The typical length of an institutional investment mandate is generally three to five years, which allows for a full market cycle to evaluate performance.

7. Bolton et al (2020) showed that US asset managers vote more often with management across the board on environmental, social and governance resolutions.

8. To provide some detail on very senior leadership positions: Philipp Hildebrand has been Vice Chairman of BlackRock since 2012 and is responsible for strengthening the firm's largest global client and government relationships. After leaving the European Commission, José Manuel Barroso became non-executive chairman of Goldman Sachs International from 2016 to 2023. Friedrich Merz was chairman of the supervisory board for BlackRock Germany from 2016 to 2020.

9. See for example Forum pour l'Investissement Responsable, 'Say on Climate', undated.

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The author thanks Catherine Howarth of ShareAction, Nathan de Arriba-Sellier of Erasmus University, and Rebecca Christie, Nicolas Véron and Stavros Zenios of Bruegel for excellent comments and suggestions. This article is based on Bruegel Policy Brief Issue n°07/26 | April 2026.

Modernising money and markets

As technology evolves, Sarah Breeden sets out the Bank of England's vision for UK finance: a robust, multi-money retail payments system that promotes greater competition and innovation, and a multi-asset, multi-currency approach to tokenising the markets of the UK's global financial centre

I want to set out how the responsible adoption of tokenisation in the UK can enhance financial stability and support sustainable growth – not only in retail payments but also in financial markets and the services they provide to the UK and global economies.

The Bank, working with the Financial Conduct Authority (FCA), Government and industry, has already done a huge amount to modernise infrastructure and rules in support of that innovation. Our approach compares favourably internationally, and yesterday, with the FCA, we made further commitments[1]. Modernising the money and markets of the world's fifth-largest economy, and the largest net exporter of financial services, takes time. It should not be a botch job. But we are on the right path.

The task now is for authorities, government and industry to build on the UK's strong foundations – to put some 'runs on the board' and show that we are deepening our tokenised finance ecosystem.

No single firm can build that ecosystem alone. So I am thrilled that Chris Woolard has been appointed the Government's Wholesale Digital Markets Champion to help convene industry alongside the authorities. We look forward to working with him in that critical role.

If we work together in earnest over the coming months, we can prioritise the most valuable use cases across the buy side and sell side, work through any obstacles, and enable firms to invest in and scale new offerings and infrastructure. That is how finance will continue to play its vital role in supporting sustainable growth.

New technologies and the Bank's objectives

This work supports our financial stability objective. A regulated financial system that does not deliver outcomes for the real economy at the technological frontier is vulnerable to new players and activities growing quickly outside

the regulatory perimeter, or offshore. Those players can reach systemic scale fast, creating risks that are hard to address after the fact – a pattern we have seen as technological change has transformed other sectors.

This work also matters for innovation and growth – our secondary objectives. Our best contribution to sustainable growth is financial stability, so that the system continues to provide its vital services even when shocks hit[2]. But

As technology evolves, we will deliver our vision of both a robust, multi-money retail payments system – offering trust in money, competition, choice and innovation – and a multi-asset, multi-currency wholesale ecosystem that builds on the UK's long-standing strengths as a global financial centre

we also support growth by enabling the responsible adoption of new technologies in finance, lowering costs and improving functionality for users.

We do not forecast with perfect foresight, least of all on technology. Some benefits expected today will not materialise; other use cases and technologies will emerge. But by acting now to enable responsible adoption, we can give the benefits of new technologies the best chance to be realised, and in doing so support sustainable growth.

Our vision for retail payments and wholesale finance in a more tokenised system

Tokenisation has real potential to improve retail payments and wholesale finance. Shared ledgers, updated near-simultaneously across all parties to a transaction, could make payments and settlement faster and cheaper, with fewer intermediaries, less operational risk, lower cost, and shorter settlement windows.

Smart contracts allow greater customisation, conditionality and automation – offering additional functionality to today's standing orders and direct debits in retail payments, or often still-manual post-trade services for collateral, coupon and dividend payments – again improving efficiency and reducing cost.

And atomic swaps can extend delivery-versus-payment (DvP) and payment-versus-payment (PvP) settlement – already common in equities, bonds and FX, so money and asset move at the same time – to a wider range of retail and wholesale use cases, enabling a broader range of assets to be monetised easily, even intraday.

Against that technological backdrop, our vision for UK retail payments and financial markets is clear and distinctive, reflecting our position as one of the world's largest economies and a global financial centre.

In retail payments, we want a multi-money system that promotes competition and choice between robust forms of money.

Alongside traditional bank deposits, people should be able to pay with tokenised bank deposits, regulated stablecoins and, potentially, a retail central bank digital currency. More competition, from a wider range of technologies and business models, should lower costs and improve functionality for users. And by ensuring, through infrastructure and regulation, that all forms of money are equally robust and readily exchangeable – so that a pound is a pound, whoever issues it – we can strengthen monetary and financial stability, and support competition and innovation, more effectively than a model of walled gardens, in which only the largest firms can innovate successfully.

In wholesale financial services, we want tokenisation to deliver lower costs and greater functionality in a multi-asset and multi-currency ecosystem, as has long underpinned the UK's role as a global financial centre.

Our focus is on dynamic, resilient markets in tokenised real-world assets – equities, bonds, funds, private assets and more – that can move more efficiently across the trade lifecycle, improving issuance, trading, clearing, settlement and collateral use. And given the UK's global role, we want to remain open to multi-currency wholesale activity, based on international standards, deference to home authorities where overseas rules deliver similar outcomes, and continued high-quality cooperation between UK and overseas regulators.

What might that vision mean for users once realised? In retail payments, people will have another option alongside cards when paying in store or online[3]. Traditional and tokenised money will be exchanged seamlessly. So, for example, when shopping online, a payment I make with a regulated systemic stablecoin could instantly credit the retailer's bank account, but only once I confirm the parcel has been delivered[4]. And UK retail payments

infrastructure will be able more seamlessly to interact with systems overseas, so I can send an online banking payment to a friend abroad more quickly and cheaply than is the average today.

In wholesale payments, a UK supplier to an overseas corporate could be paid automatically once delivery is confirmed, helping to tackle the late-payment challenge for small businesses. A mid-sized corporate treasury could invest excess cash overnight in tokenised securities for a fraction of a day, then sell them with near real-time settlement the next morning, widening cash management options. And global corporates hedging in derivatives markets could meet margin calls more easily using tokenised collateral, with 24/7 cross-currency transfers to the subsidiary receiving the call, settled in near real time.

I haven't mentioned AI yet. That is a speech in its own right. For now, let me simply say that we are also doing a great deal to support its responsible adoption[5]. That includes agentic payments and commerce – where AI firms and payment companies are developing the technology and standards that would let me ask an AI agent to 'book my holiday', 'refill my fridge' or 'refresh my wardrobe'; and agentic trading in financial markets — where we are working with international counterparts on simulation methods to understand how AI agents could interact in ways that amplify stress, and how that could be mitigated.

What the Bank has done, and will do, to make this vision a reality, working with authorities, government and industry

Retail payments

In retail payments, the Government and UK authorities announced last summer a new public-private partnership to deliver the UK's next-generation infrastructure, modernising the systems we use today for online banking, salary payments and much more[6].

HM Treasury, the Bank, the FCA and the Payment Systems Regulator have set the strategy for UK retail payments[7]. The Bank has also taken on a new role leading work with industry, through our chairing of the new Retail Payments Infrastructure Board, to turn that strategy into a design for the new infrastructure. A private-sector Delivery Company will then be responsible for build. We will consult on that design shortly.

That new infrastructure will enable the seamless exchange between traditional and tokenised money that I have described. And alongside it, we are giving banks and systemic stablecoin issuers the regulatory clarity they need to innovate with confidence.

For systemic stablecoins, the Bank will publish draft rules next month and finalise them by year-end, in line with the US timeline. As part of that, we are considering carefully the feedback to our November consultation on addressing risks to credit provision from rapid stablecoin adoption through transitional limits on individuals' and businesses' holdings[8].

In that consultation, we made clear that we were open to other mechanisms to achieve the same objective. One option, also set out in the consultation, would be temporary guardrails on the total amount of a coin that could be issued. Reviewed regularly, that approach could achieve the same aim at lower cost to the sector and allow a wider range of high-value payment use cases, including for corporates.

We also want to encourage banks to adopt these new technologies in the money they issue. The Bank's Prudential Regulation Authority (PRA) yesterday reaffirmed its regulatory expectations around retail use[9]. We continue to expect banks to innovate in tokenised deposits, and our work on next-generation retail infrastructure will ensure those deposits can be used for payments between banks, not just among customers of the same bank.

At the same time, we are clear that banking groups can issue stablecoins, provided they do so from a non-deposit-taking, insolvency-remote group entity, similar to requirements in the US. We also expect those stablecoins to carry branding distinct from the group's deposits, and the recent Dear CEO letter clarifies how that can be achieved while still allowing reference to the parent brand. That is to reduce confusion, and the risk of contagion to bank deposits, if holders of the group's stablecoins – which will not be covered by deposit insurance – incur losses.

Finally, on a retail central bank digital currency – a digital pound – we will set out, with HM Treasury, the conclusions of our design phase later this year.

Financial markets

Working with other authorities, Government and industry, the Bank has already done a huge amount to begin delivering our vision for wholesale payments and digital markets. This is a complex, wide-ranging programme across both the asset and cash legs of wholesale transactions.

We are enabling live trading venues and settlement systems for the supply of tokenised assets, including for the Government's pilot issuance of a digital gilt instrument. We are ensuring no unwarranted frictions to demand for tokenised assets through their prudential treatment and collateral eligibility. We are providing infrastructure for the cash leg to settle in central bank money, in our widely praised modernisation of the Bank's own payments infrastructure. And we are also providing for a role for robust, privately issued money as the cash leg in wholesale transactions too.

It can be hard even for committed aficionados to keep track of all that is going on. So, yesterday, with the FCA, we published a Call for Input setting out the full programme of work, including significant new commitments that make both our vision and our ambition clear.

Industry and authorities, with Chris as our Wholesale Digital Markets Champion, now need to build on these foundations and move from pilots to production. Responses to the Call for Input will help shape that work and feed into a roadmap across authorities, industry and the Champion by year-end.

Trading and settlement of tokenised assets

A central part of our work on tokenised assets is the Bank-FCA Digital Securities Sandbox (DSS), which launched in 2024 and runs until January 2029. It lets firms establish live UK trading venues and settlement systems for tokenised securities.

Consistent with our multi-asset, multi-currency vision, it can support sterling and foreign-currency activity across asset classes including equities, corporate and government bonds, and investment funds. Sixteen firms are preparing to launch from later this year, with a route to permanent operation, including Euroclear, HSBC and the London Stock Exchange Group, alongside newer entrants.

The term 'sandbox' understates the point: this is live activity. Here, 'sandbox' means firms operate under a modified legislative and regulatory framework for trading and settlement, designed transparently to remove legal barriers that might otherwise hinder the use of new technologies. The DSS also includes issuance limits for key digital securities markets, set high enough to allow meaningful activity while safeguarding financial stability[10].

We think the DSS offers greater certainty, competition and innovation than narrower alternatives that grant targeted, temporary legal relief to individual firms for specific initiatives. By creating a transparent framework with a common set of rules, it can support a broader range of business models and use cases. It also gives firms and authorities a way to learn how best to enable the responsible adoption of distributed ledger technology (DLT) in financial markets and embed those lessons in permanent operations and regulation.

We will work with firms to ensure the DSS supports innovation and ensure there is a clear pathway for firms inside it to move out into permanent authorisation. And we will consider, with the government, how the wider settlement framework supports innovation.

Prudential treatment and collateral eligibility of tokenised assets

Alongside facilitating the supply of tokenised assets through the DSS, the Bank is also working to ensure there are no unwarranted frictions to demand, either in regulation or in the design of the Bank's market operations.

In regulation, the PRA clarified yesterday that, as a general rule, and in line with international standards, the prudential treatment of UK banks' exposures to tokenised assets will be the same as for their non-tokenised equivalents where the legal rights are identical and the underlying risks are comparable[11].

For collateral eligible at central counterparties, our aim is likewise to support eligibility of tokenised versions of assets already accepted as collateral. We will engage with industry on the detail through a discussion paper later this year.

And in the Bank's own lending operations, we will consider whether tokenised assets should be eligible as collateral in the Sterling Monetary Framework (SMF), which would backstop the ability to monetise them in private markets. In parallel, we are upgrading our internal systems in 2027 so we can connect directly to tokenised asset ledgers.

Digital Gilt instrument

Across this work, we are committed to supporting the Government's pilot issuance of a digital gilt instrument (DIGIT) – the first tokenised sovereign issuance by a G7 country – designed both to enable the Government to explore how this technology can be applied to UK government debt and to catalyse the development of UK-based

DLT infrastructure and, in turn, adoption across UK financial markets. DIGIT will be issued on a platform in the Bank-FCA Digital Securities Sandbox, and the Bank is prioritising work to assess its eligibility as collateral in the SMF.

Central bank money settlement

Market participants and international standards have long recognised the liquidity and financial stability benefits of wholesale transactions settling across accounts held at central banks[12]. Accordingly, as we see greater tokenisation of wholesale market activity, we have a low risk appetite for a significant shift away from settlement in central bank money[13].

We have therefore been doing a huge amount to enable tokenised wholesale transactions to settle in central bank money: both by developing new functionality in our newly upgraded Real-Time Gross Settlement (RTGS) infrastructure, RT2, and through a staged programme to extend settlement hours towards near-24/7 operation.

RT2 has now been live for a year, following an upgrade programme rightly praised by the National Audit Office and Public Accounts Committee – bodies not known for easy praise![14] And since even before that, a payment system using RTGS' omnibus account functionality to settle the sterling cash leg of tokenised transactions with a tokenised representation of central bank money has been live in the UK since 2023[15].

I often describe RT2 as a 'parked Ferrari' when it comes to tokenisation. It makes it possible to settle tokenised transactions directly in sterling central bank money. We confirmed our commitment to live delivery of this functionality, targeted for 2028. This will be our 'synchronisation service', enabling the conditional movement of a wider set of assets and transaction types, including on DLT, against movements in central bank money held in RTGS accounts. We are testing this with 18 firms in our Synchronisation Lab, which went live in May, across use cases

including settlement of house purchases, tokenised securities and FX. So that Ferrari is out on a test drive now, and will be racing round the City very soon.

This builds on earlier experimentation before RT2 launched. In Project Meridian, with the BIS Innovation Hub and HM Land Registry in 2023, we showed how synchronisation could improve house purchases: funds in RTGS could move automatically at the same time as ownership is recorded on a digitised title deed, reducing the need for costly and risky chains of intermediaries – and the nervous wait while the removal van idles outside[16].

Synchronisation also supports our multi-asset, multi-currency vision. Our follow-up projects last year - Meridian Securities, and Meridian FX with the ECB – showed how it could enable atomic settlement against sterling central bank money of tokenised securities and tokenised central bank money in other currencies[17]. We are now exploring the technology with the Bank of Thailand – for whose currency synchronisation can offer a PvP settlement option not currently available in existing market infrastructure – as well as with the Monetary Authority of Singapore[18].

RT2 also lets us work with other central banks and the private sector on how tokenisation could deepen the UK's multi-currency role in global finance. In the BIS's Project Agora, with six other major central banks and more than 40 private-sector firms, we are exploring how tokenised deposits and central bank money can support crossborder payments, particularly for financial institutions and corporates engaged in international trade[19]. A report will showcase the prototype and set out next steps.

Finally, we have just launched a consultation on how to extend RTGS settlement hours towards near-24/7 operation over the coming years[20]. That would support settlement in central bank money against tokenised asset ledgers that could themselves run 24/7. It would also improve crossborder payments by increasing RTGS' overlap with other national payment systems.

We are already on track next year to extend RTGS settlement hours from 12 to 16½ hours each working day. We are now seeking feedback on moving after that to Sunday and some bank-holiday settlement, and to 22 hours a day, by early next decade. We are also seeking views on going further in the longer term, to 22x7 or near-continuous 23.5x7 operation. We are keen to hear from industry about the most valuable use cases so we can chart the right course.

Private settlement assets

Central bank money is not needed for all settlement today, and it will not be needed for all settlement in future. That is why robust, privately issued money – both tokenised deposits and regulated stablecoins – will likely play an ongoing role in tokenised markets.

We are therefore working to expand the range of settlement assets in the Digital Securities Sandbox to include not only tokenised deposits, as today, but also regulated stablecoins in sterling and foreign currencies. We will soon publish our approach to the stablecoins permitted for use in the DSS, shortly after publication of our draft rules for systemic sterling stablecoins.

The PRA guidance published yesterday on banks' issuance of tokenised deposits and stablecoins also clarifies that UK banks can issue stablecoins for wholesale use, including in the DSS, where the risk of confusion between the protections for deposits and for stablecoins is less acute than it is for retail customers[21].

Ledger design

Finally, we are doing detailed practical work on how distributed ledgers should be designed to support payments and settlement.

In financial markets, DLTs must deliver settlement finality – legal certainty that a transaction is irrevocable and unconditional, so the outcome can be trusted. They must be sufficiently scalable to handle high volumes with low latency. Their operational and economic design must be resilient to manipulation by malicious actors.

And they must interoperate with other DLTs and non-DLT systems: consistent with our multi-asset, multi-currency vision, we do not want tokenised markets to emerge in ways that are incompatible with one another, impeding crossborder and cross-asset trading, and fragmenting liquidity.

This technology is evolving quickly, and so are the trade-offs involved in meeting those requirements with decentralised ledgers.

To inform our regulatory approach, and any use of these technologies by the Bank itself, we ran a DLT Innovation Challenge last year with financial institutions, technology firms and academics, and published a report on that work[22]. A deep practical understanding of these technologies and their implications will remain central to our work.

We are also closely engaged in the work of the Transatlantic Taskforce for Markets of the Future – and with the Monetary Authority of Singapore and other authorities on the so-called 'Global Layer 1' initiative, which is exploring common standards for DLT platforms.

Conclusion and next steps

As I have set out, the Bank – working with the FCA, Government and industry – has done, and will continue to do, a huge amount to support the responsible adoption of tokenisation in finance.

In that way, as technology evolves, we will deliver our vision of both a robust, multi-money retail payments system – offering trust in money, competition, choice and innovation – and a multi-asset, multi-currency wholesale ecosystem that builds on the UK's long-standing strengths as a global financial centre.

The crucial next step is for authorities, government and industry – with our new Digital Markets Champion – to build on these strong foundations and, in doing so, ensure UK finance can best serve households and businesses here and around the world. ■

Sarah Breeden is Deputy Governor, Financial Stability, at the Bank of England

Endnotes

1. Call for input: The future of tokenisation – a joint vision from the authorities for UK wholesale markets | FCA.

2. I spoke last month about the work we are doing, in an uncertain and unpredictable world at present, to address vulnerabilities in the financial system: This time is different - Speech by Sarah Breeden | Bank of England.

3. I spoke more about this work in February: Talking 'bout next generation - speech by Sarah Breeden | Bank of England.

4. We demonstrated this and other retail payment use cases for tokenised money in tech experimentation we conducted with the Bank for International Settlements' Innovation Hub in 2023: Project Rosalind: developing prototypes for an application programming interface to distribute retail CBDC.

5. Response to TSC report on AI in financial services, 1 April 2026.

6. Payments Vision Delivery Committee Update | Bank of England.

7. Strategy for future retail payments infrastructure - GOV.UK.

8. Bank of England launches consultation on regulating systemic stablecoins | Bank of England.

9. Letter from David Bailey, Charlotte Gerken and Rebecca Jackson | Bank of England.

10. For example, £8-13.1 billion for gilts and £17-28 billion for sterling corporate bonds. Table D, Guidance on the operation of the Digital Securities Sandbox | Bank of England.

11. Letter from David Bailey, Charlotte Gerken and Rebecca Jackson on the prudential treatment of tokenised assets, stablecoins, and other cryptoasset exposures | Bank of England. The PRA's implementation of the Basel Committee on Banking Supervision's standard for the prudential treatment of cryptoassets will follow the completion of the current targeted review, with which the PRA is closely engaged.

12. Principle 9, Principles for Financial Market Infrastructures (PFMI).

13. The Bank of England's approach to innovation in money and payments | Bank of England.

14. Bank of England successfully navigates complex modernisation of UK's critical payment system - NAO press release.

15. Bank of England publishes policy for omnibus accounts in RTGS | Bank of England.

16. Project Meridian: innovating transactions with synchronisation.

17. Project Meridian Securities | Bank of England, Project Meridian FX: exploring synchronised settlement in FX.
18. Bank of England, Monetary Authority of Singapore, and Bank of Thailand to explore synchronised FX settlement across borders | Bank of England, November 2025. The Thai Baht does not settle in the global PvP market infrastructure, CLS.
19. Project Agora: exploring tokenisation of cross-border payments.
20. Extending RTGS and CHAPS settlement hours – next steps towards near 24x7 settlement | Bank of England.
21. Letter from David Bailey, Charlotte Gerken and Rebecca Jackson | Bank of England.
22. DLT Innovation Challenge 2025: Final Report | Bank of England.

I would like to thank Michael Yoganayagam for assistance in drafting these remarks. I would also like to thank Andrew Bailey, David Bailey, Julia Black, Emma Butterworth, Victoria Cleland, Charlotte Gerken, John Jackson, Nick Mclaren, Mike Jones, Clair Mills, Sasha Mills, Simon Morley, Gwyneth Nurse, David Rule, Vicky Saporta, David Soanes, Nina Turnbull and Chris Woolard for their comments. This article is based on a speech given at City Week 2026, London, 19 May 2026.

Updating the Fed for the modern world

Christopher Waller emphasises the need for the Federal Reserve to modernise its operations to adapt to a changing world. This includes reducing costs, effectively managing risk, and delivering value to the American taxpayer

Whenever anyone hears the words 'Federal Reserve' they immediately think about monetary policy and the Federal Open Market Committee (FOMC) setting the federal funds rate. There is obviously tremendous media attention on those policy decisions, as there should be because they affect US households and businesses and financial markets around the world. But the FOMC only meets 16 days a year to set monetary policy, so what are we doing at the Fed the rest of the time?

The answer to that question is that we run a large and complex organization across 12 Federal Reserve Districts, with a heavy operations focus. So I want to talk about how we meet these operational responsibilities to give you a better understanding of the structure of the Fed and what we do each day. As I will explain, there were and remain good reasons for the Fed's decentralized structure, which is mandated under the 1913 Federal Reserve Act. It is an important enabler in carrying out our many vital responsibilities, which affect virtually everyone in every corner of America.

But that doesn't mean the Fed's operations should not change to reflect a changing world. As the Board member responsible for leading the oversight of Federal Reserve operations on behalf of my colleagues, I believe the Federal Reserve needs to be continuously oriented toward modernizing how it operates—reducing costs, more effectively managing risk, and delivering the best possible value to the American taxpayer. And that has been my objective since I became the member of the Board of Governors responsible for Reserve Bank oversight.

To explain why that matters and what it has meant in practice, I will start with a brief overview of the structure of the Fed and describe how its operations have evolved over time, including over the last few years under my direction. I will then address two questions that I believe are critical for thinking about how the Federal Reserve should organize its work in the 21st century.

First, which Fed activities are intrinsically local, and conducted for the benefit of an individual Federal Reserve District? Second, which activities are conducted on behalf of the Federal Reserve System as a whole, with attendant opportunities to exploit specialization, economies of scope, and economies of scale? In short, what *needs* to be done at a Reserve Bank and what can be done more efficiently elsewhere in the System?

We need a key shift in our approach to governance—we need to distinguish between decisions that need consensus for effective change and those where consensus becomes a hindrance to effective change

A short history of operations in the FRS

To begin with a quick orientation, the Federal Reserve System is composed of the Board of Governors in Washington, DC, the 12 regional Reserve Banks located across the country and the Federal Open Market Committee. I will focus solely on the Reserve Banks and not the Board or the FOMC.

All told, there are approximately 20,000 employees across the 12 Banks, with the vast majority focused on operations—implementing market operations, performing fiscal agent activities for the US Treasury, and running the Fed's payment systems, along with all the support and overhead functions like information technology (IT), human resources (HR), finance, and procurement that go along with operating 12 Reserve Banks.

The Federal Reserve was created as a compromise between those who recognized the need for a US central bank and those who were suspicious of concentrating such power in Washington or New York. The result was a decentralized system of 12 regional Reserve Banks with boards of directors drawn from the local business community.

Although ultimate oversight in many respects resides with federally appointed officials in Washington, from the beginning each Reserve Bank was a self-contained organization. Each provided services, including check processing, wire transactions, and cash distribution, to the commercial banks in the District that had elected to be members.

With membership in the Federal Reserve System, a bank received certain benefits and incurred certain obligations, notably to submit to regular examinations by the Reserve Bank in their District. Due to branching restrictions at the time, a member bank was in that District and that District only.

In addition to these services and oversight, each Reserve Bank also collected local economic information and data and did analysis of the local economy. Initially, the discount rate at each Bank was set locally to reflect local economic and credit conditions. At the beginning, everything a Reserve Bank did was "local"—no national functions were performed.

This decentralized approach made more sense when the economy and the banking system were much more regional in nature, but as finance and the economy became more national in scope, changes were needed. Statutory changes were made by Congress to the Federal Reserve Act in 1935 under which the presidents of the Reserve Banks took on a national role in setting monetary policy via the FOMC.

The discount rate was also 'nationalized' so that all Banks charged the same rate for lending to local banks. But after these changes, most Reserve Bank operations remained local. While monetary policy was conducted at the national level, bank supervision, payment system activities, and most other functions at Reserve Banks remained focused on serving its District.

Also characteristic of the early years were Reserve Banks that had large numbers of workers engaged in what were at that time highly manual and labour-intensive processes. Such work included processing paper checks, managing distribution of coins and currency, 'discounting' or providing commercial banks liquidity against a variety of instruments—often taking physical custody of this collateral to assure a security interest—and managing US Treasury securities.

In this era, Reserve Banks operated under a clear 'Bank first, System second' mindset. In rare instances that required more of a 'System' approach—for example, managing transactions between banks in different Federal Reserve

Districts—this coordination occurred through occasional meetings of the Conference of Presidents, an ad hoc group composed of the 12 Reserve Bank presidents.

A deeply embedded and long-standing common understanding of the decision making process for the Conference of Presidents was that the group could not force a Bank to do anything—everything had to be resolved by consensus.

This decision making process was consistent with the view that the Reserve Banks were essentially independent, private-sector, and governed by the local boards of directors rooted in the District and thus had the freedom to operate as they saw fit within the broad confines of the Federal Reserve Act.

Drivers of transformation

Over the decades, as technology changed and US financial sector regulation evolved, the external environment began to shift in important ways. As financial transactions became increasingly digital in the 1960s, the Fed developed new, nationwide electronic payment capabilities. Congress ended bank branching restrictions in the 1980s.

Regulatory changes allowed national banking organizations to emerge, a phenomenon which broke the one-to-one connection between a Reserve Bank and its member commercial banks. Commercial banks with operations across multiple Districts were not enthralled with needing to maintain relationships with multiple Reserve Banks, each of which offered slightly different mixes of services and slightly different pricing.

In 1981, Congress directed the Fed to recover the costs associated with its payment services through fees levied on both member and non-member banks, a requirement intended to level the playing field between the Reserve Banks and private-sector providers of payment services.

By the mid-1990s, the Reserve Banks had begun consolidating their payment services in response to those developments. Some key services were starting to be centralized in specific Districts with the establishment of 'product offices' to provide uniform services to banks nationally.

Over this same period, check volumes began to drop precipitously as digital payments gained steam and the private sector took market share from the Fed in check processing. The terrorist attacks on September 11, 2001, underscored the vulnerability of a payment system that still relied on leased airplanes to fly paper checks around the nation.

The digitization of paper checks followed the Check 21 Act in the early 2000s and led to a further reduction in the processing of physical checks. The result was that the Reserve Banks saw a significant reduction in operations and employment at their Branches, to the point of closing and selling some buildings.

Even at head offices, the automation of check processing and other labour-intensive payments work reduced manpower needs and employment. The era when most head offices and many Branches ran three shifts of check processing each business day ended.

On another front, as information technology advanced rapidly in the 1980s and 1990s, the Reserve Banks realized there were economies of scale to be achieved by centralizing information technology infrastructure into one

location that would operate on behalf of the entire system. It made no sense for each Reserve Bank to construct, operate, and maintain its own mainframe or, later, server farm.

Thus, in the early '90s the Reserve Banks created Federal Reserve Automation Services (FRAS, now referred to as National IT), to build and maintain a single common IT infrastructure. A FRAS director was named to manage this consolidated infrastructure but most decision authority remained at the individual Reserve Banks.

More recently, in 2021, Fed financial services were consolidated into a single national payment service line, with its own chief payments executive (CPE) who would oversee payment operations across 12 Reserve Banks. With the appointment of a CPE, and the increased authority of the chief information officer, the Fed had moved into a world where its arguably most critical operational responsibilities were managed at the System rather than the individual Bank level.

Another example of the Fed's gradual move toward centralization is in its role as fiscal agent for the Treasury, handling payments and securities issuance, auctions and redemptions, as well as providing other banking services. Most of this work as fiscal agent was spread around the Reserve Banks.

In 2014, Treasury's Bureau of the Fiscal Service began to largely consolidate fiscal agency work in St. Louis, Kansas City, and Cleveland while the Federal Reserve Bank of New York continued to manage US Treasury auctions and certain other activities that required direct market interactions.

Despite this gradual movement toward more centralization in payments, IT, and fiscal agency, many support functions, including HR, procurement, and finance are still run more or less separately at each of the 12 Reserve Banks. In my view, we have reached a point where we need to better exploit the efficiency and risk reduction

benefits of standardizing and probably centrally leading all of these functions. I believe there is significant opportunity for more improvement.

Two categories: what must be local and what no longer needs to be

At this point I want to return to the two questions I posed at the beginning. What Reserve Bank functions must be done locally, because they serve and must be tailored to the needs of a specific District, and which can be done anywhere to the benefit of the entire System?

Let's start with what activities are inherently District-oriented, consistent with the original intent of the Federal Reserve Act, namely that the US should have a central bank that reflects the needs of different regions and not be solely connected to Wall Street or Washington. These are the activities where geography still matters.

Clearly, some of the work that has always been carried out by different Districts in different ways remains appropriately local in approach and substance today. I see no reason to reduce the number of Reserve Banks or alter their geographic boundaries.

Each Bank president still has an independent voice at the FOMC on the appropriate course of monetary policy and that should continue. Each president's views are shaped by the research of the Bank's economists, its regional experts, the input from the Bank's board of directors, and the president's interactions with business leaders in the District. Each Bank president contributes that perspective to the discussion in Washington with his or her colleagues, which generates a view of the economy as a whole at the national level and thus what direction policy should take.

In addition to contributing to the development of monetary policy, each president engages with the business, financial, and nonprofit communities to understand local economic issues, and to position the Bank to serve as a convener of various interest groups to address local economic issues, such as labour force development, financial inclusion, and issues related to rural areas. These activities are enormously valuable to carrying out the Fed's mission, and they should continue.

Each Reserve Bank also still conducts supervision of state member banks and bank holding companies, relying on the regional knowledge and expertise of supervisors based in the District and on regional industries and economic trends. Local presence will continue to be important. This local expertise is also important when the Reserve Bank serves as a lender to depository institutions.

Market operations are concentrated in New York, in proximity to the securities dealers who facilitate the implementation of monetary policy through open market operations.

Now let's turn to a very different class of activities that are important to the System's overall operations and for which geography does not matter.

These functions are increasingly platform-based, technology-driven, and scale-sensitive. The list includes HR systems, payroll and benefits administration, finance and accounting, procurement, and vendor management, as well as the payments, IT, and fiscal agency work.

These functions are not delivered better or more efficiently with geographic dispersion. Nor are they unique to a district. They improve with integration, scale, and standardization. With that comes lower operating costs, risk reduction, and greater savings for the American taxpayer.

With these functions our philosophy must be 'System first, Bank second'. This is the message I have been delivering to the Reserve banks the last three years in terms of how our operations need to be organized and managed.

The inflection point: why this moment is different

You may be asking, why am I bringing this up now? Haven't the Reserve Banks consistently evolved to changes in the environment around them as I described earlier? Why can't this evolution continue organically? The answer is that I do not believe that this traditional approach will meet the moment, and the needs of the US economy, for several reasons:

First, the external environment has changed. Technology cycles are faster and more disruptive. Artificial intelligence is a coming storm that threatens to alter and, I believe, improve all organizations. The pace of technological change today means that the Fed does not have the time to sit back and ruminate about changes. If we are going to ride this wave, and not be drowned by it, we need greater agility to capture efficiencies and manage risks, such as cybersecurity and incorporating AI into our system processes.

Second, consolidating functions makes sense for competing in talent markets that are increasingly national and sometimes global. We will achieve greater efficiency through consolidation and also attract the best talent in finance, HR, and procurement by offering people the opportunity to work for a national organization, with greater responsibility and impact.

Finally, benchmarking against the private sector is unavoidable. We are significantly 'off-market' on IT costs, largely because of localized development of applications and procurement of software, and because of the complexity of our offerings across the Banks. We are not exploiting the available economies of scale or risk reduction benefit across a wider range of areas. Other large organizations have long faced financial pressure to standardize, centralize,

and, in some cases, outsource. One critical benefit from Reserve Bank boards of directors having private-sector CEOs among their members is the ability of these directors to point out where our costs are out of line and how we might improve both efficiency and performance.

A path forward: two models for operational modernization

As we consider the future framework for Reserve Bank operations, one thing is clear—we are not going to return to a world where everything is done locally. So, looking forward, I believe that two models for the further evolution of the Fed's operational footprint are worth considering.

The first is standardization with centralized System leadership. Under this model, the current physical footprint of the Reserve Banks remains largely intact, but each major support function—IT, HR, finance, procurement, vendor management, and facilities—is placed under a single senior leader who runs that function on behalf of the entire System.

That leader sets standards, makes enterprise-wide decisions, manages vendors, and is accountable for performance across all 12 Districts. Local staff remain in place but operate within a unified framework rather than 12 separate ones. System function leaders would operate within the existing Federal Reserve governance structure, reporting through Reserve Bank presidents and local boards, with the Board of Governors providing oversight.

This is not a reorganization that centralizes authority in Washington. It is one that empowers the System to act as one enterprise while preserving the governance architecture the Federal Reserve Act established. This model captures much of standardization—lower cost, reduced risk, and greater consistency—without requiring the more difficult work of physical consolidation.

The second model goes further. If an outside consultant were asked to design the Fed's operating system from scratch, I believe it would be a lot closer to this second model. It takes everything in the first model and adds physical consolidation across key functions.

Functions that do not need to be local—HR administration, payroll, finance and accounting, procurement, and certain IT operations—are concentrated in a small number of operations centres located in lower-cost cities or those that have a comparative labour skills advantage. Outsourcing certain activities should occur if the opportunity for cost savings warrants it. The specialized work that genuinely requires District presence remains in the Districts.

Everything else follows the economics. The System gains not only the benefits of unified leadership and standardized processes, but also the full economies of consolidated facilities and labour markets. As with the first model, the formal legal structure of the Federal Reserve remains unchanged. System function leaders report through Reserve Bank presidents and local boards, with the Board of Governors providing oversight consistent with its statutory role.

What must change for this approach to succeed is not the Fed's structure but its long-held expectation that every significant operational decision requires consensus across 12 institutions. This second model is the one that large, well-run organizations—both public and private sector—have largely converged on, and it represents the more complete realization of what operational modernization can achieve.

Either model represents a meaningful step forward. But it should be said plainly: the first is a waypoint, not a destination. The full benefits—in cost, in resilience, in cybersecurity, and in talent—are probably realized only under the second approach. An obvious implication of this second model is that some Reserve Banks may face lower

levels of employment in the future. As happened with the closing of Branches when check clearing went away, I believe we will need to rethink the physical footprint of the Reserve Banks going forward.

Both models also require a shift in how operational decisions are made. A System in which senior leaders run enterprise-wide functions requires genuine delegation of authority—more authority than most Reserve Bank first vice presidents exercise today. Decisions about HR administration, IT architecture, procurement strategy, and facilities standards need to be made at the System level and not decided district by district.

That requires not just delegation of authority but a genuine shift away from consensus-based operational decision making. The decision making model, based on debate and consensus, that serves us well in the Board Room when developing monetary policy is not ideal when it comes to running our operations. A leader of a System function who must secure agreement from 12 quasi-independent institutions before acting cannot be an effective leader.

I believe we need a key shift in our approach to governance—we need to distinguish between decisions that need consensus for effective change and those where consensus becomes a hindrance to effective change.

Closing: preserving the federal design by modernizing the machinery

The punchline of this speech is that we need to do more to centralize our operations into national lines of business and move away from having individual Reserve Banks managing operational infrastructure from a Bank mindset instead of a System mindset.

We need to have strong leadership and governance of these national business lines, and this does not mean it can always be accomplished through a consensus of 12 Reserve Bank presidents. Inefficient governance and overlapping lines of authority lead to cost inefficiencies and unnecessary risk.

On the other hand, I believe we have an opportunity to leverage scale and our talent across the System to produce better outcomes for US households and businesses.

Decentralization is a strength of the design of the Federal Reserve—but only when it reflects the genuine strengths of regional differentiation, not fragmentation for its own sake. Autonomy is a virtue—but not when it produces costly duplication that serves no one. We owe this to the American people we serve. Tradition deserves respect—but not when it stands in the way of necessary change.

To leave you with a final takeaway, operational excellence at the Federal Reserve depends on our willingness to standardize what should be standardized and centralize what should be centralized, so that we can strengthen what must remain distinctly regional to meet the needs of a large and heterogenous country. This is an important conversation and I appreciate the constructive engagement of all. ■

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The views expressed here are my own and are not necessarily those of my colleagues on the Federal Reserve Board or the Federal Open Market Committee. This article is based on a speech delivered at The Brookings Institution, Washington, DC, April 21, 2026.