

WORLD COMMERCE

REVIEW

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ANDREW BAILEY
DISCUSSES THE GLOBAL
ECONOMY AND HOW TO
SUSTAIN GROWTH AND
FINANCIAL STABILITY

PATRICK MINFORD
ARGUES THAT THE **UK'S**
ECONOMIC STAGNATION
IS CAUSED BY DAMAGING
GOVERNMENT POLICIES

MATTHEW KILCOYNE EXAMINES
DIGITAL SOVEREIGNTY
AND THE ECONOMIC RISKS
OF UNCOORDINATED
FRAGMENTATION

THE GLOBAL TRADE AND FINANCE PLATFORM

FOREWORD

Lessons from history

The lessons afforded by history are seldom straightforward, yet they demand our careful consideration if we are to comprehend the trajectory of the contemporary West. The Industrial Revolution, intertwined with the intellectual ferment of the Enlightenment, constituted a profound rupture with preceding eras. These twin forces propelled Western societies from conditions of relative stasis and pronounced inequality towards the dynamic, materially prosperous order we recognise today. Capitalism, in its successive iterations, has demonstrably elevated living standards across the globe, drawing billions in the developing world from destitution towards modest affluence. Left untrammelled, its capacity to generate wealth and enhance human welfare remains formidable.

Yet the post-1989 moment, heralded by the fall of the Berlin Wall, engendered a triumphalist narrative—most memorably articulated in Francis Fukuyama's thesis of the 'end of history'—wherein liberal democracy appeared destined to become the universal telos of political evolution. In this vision, commerce and trade would supersede the archaic bonds of nationhood; a rules-based international order would supplant the pursuit of narrow national

interest; borders would dissolve, and a cosmopolitan citizenry would emerge as sovereign of a borderless world. The West, in embracing this teleology with near-dogmatic fervour, committed itself to an ideal of unfettered free trade. Meanwhile, certain states—often non-Western—pursued mercantilist strategies, shielding domestic industries and subsidising strategic enterprises. The consequence was a profound deindustrialisation across much of Europe and North America: millions of working- and middle-class employments were expatriated, and control over vital supply chains ceded to both adversaries and economic rivals.

Concurrently, national sovereignty was partially outsourced to supranational institutions, even as many Western polities expanded expansive welfare architectures at the expense of robust national defence capabilities. This occurred against the backdrop of rapid military modernisation by non-Western competitors, who have shown little hesitation in deploying hard power to advance their geopolitical objectives.

More recently, the imperative of the green transition has engendered energy policies that, in their present configuration, risk impoverishing societies through elevated costs and diminished reliability. Strategic rivals, by contrast, continue to exploit abundant hydrocarbon resources—oil, coal, and natural gas—to underpin industrial vitality and growth.

One must pose the question squarely: whence this Western divergence? Modern prosperity, the extension of individual rights now regarded as normative in the West, and the very possibility of sustained economic advancement have historically rested upon the harnessing of abundant, affordable energy. Without reliable and inexpensive energy, growth falters; absent growth, economic—and ultimately political—sovereignty erodes.

In the United States, the expansion of domestic oil and gas production, buttressed by policies associated with the Trump era, represents an attempt to reclaim elements of geopolitical and economic autonomy lost through earlier

outsourcing. The premise is straightforward: inexpensive energy restores the foundations for innovation-driven growth and industrial resurgence.

Artificial intelligence emerges as the quintessential technology of the twenty-first century, yet its exponential development is voracious in its appetite for energy. The European Union confronts a stark dilemma: with electricity costs roughly double those prevailing in the United States and China, how can it aspire to genuine economic sovereignty? Such a disparity risks nothing less than sovereign self-sabotage.

As intelligence proliferates, conventional metrics of productivity—man-hours, say—will yield to new measures: tokens per watt, or the quantum of computational intelligence purchasable per kilowatt-hour. In this emerging paradigm, intelligence will command twice the effective cost within the EU compared with its American or Chinese counterparts. Europe may thus find itself compelled to import intelligence from foreign cloud infrastructures, further eroding autonomy.

Authentic sovereignty for Europe demands a decisive reorientation: a commitment to dedicated, low-cost power generation sufficient to compete on equal terms. The critical issue is whether European institutions—and electorates—possess the resolve to confront the requisite trade-offs. History suggests that such choices are rarely painless, but the alternative may prove costlier still. ■

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The world today

The global economy has shown resilience despite heightened uncertainty, supplyside shocks, and geopolitical risks. Andrew Bailey says that sustaining growth and financial stability will require innovation, openness, international cooperation, and strong global institutions

will start by drawing out the key points from the latest update of the IMF World Economic Outlook. The good news is that the world economy has been remarkably resilient in the face of much higher policy uncertainty. Although this uncertainty, including the impact of tariffs, has weighed on the level of activity, and accepting that there is varying momentum of economic activity across countries and sectors, the world economy has shown an impressive ability to adapt to the shifting landscape.

Inflation has not risen markedly in the last year, though the cost of living (which is an issue of price levels relative to income levels) remains an important concern in quite a few countries.

Alongside this resilience of the world economy, global financial conditions have been accommodative, despite episodes of volatility and rising sovereign yields. An important part of this story has been equity valuations in the technology sector, and particularly in the AI part.

Overall, market conditions could have been much worse given the backdrop. That they have not been so reflects I think a number of factors at work. First, markets have become cautious in their reactions since not all of the initial announcements of policy shifts have been followed through to the word, and on occasions the impact of the announcement on economies and financial markets has not been as initially predicted.

Second, markets are cautious to trade geopolitical risk when some of the traditional safe haven assets are close to the epicentre of the risks themselves and exhibit close correlations to risky assets, thus negating the safe haven protection.

Third, we have seen evidence of fear of missing out, backed by arguments along the lines of this time is different, for instance because of the expected productivity benefits of AI. The net result is a risk of some complacency in financial markets.

The IMF caution in their update that risks to the world economic outlook are tilted to the downside. Four reasons for this can be drawn out. First, there could be a significant escalation of geopolitical tensions. Second, and closely aligned, there could be further disruption to the fragile balance of trade policy. Third, fiscal vulnerabilities could emerge against a context of elevated public debt levels. And fourth, expectations of AI driven productivity gains could be disappointed.

I think this summary from the latest WEO fairly describes the current state of the world economy and the risks. Let me now move on to describe the more structural economic backdrop that conditions both the current situation and where it goes from here. I am going to cover five broad areas, so necessarily it will be brief.

In the current context of slower growth, we must focus on what is needed to raise potential growth rates, and thus on the role of innovation including obviously AI and robotics

The first is the change in the nature of the economic shocks that we have been facing. These have been larger supply side shocks, going back at least to the global financial crisis and then more recently Covid, the impact of Russia's appalling invasion of Ukraine, and tariffs.

These have been much larger shocks than those that were seen in the preceding period of time. And, they have been supply-side shocks. On the whole, our macroeconomic frameworks are less well equipped to deal with supply-side than demand-side shocks.

The second broad area of backdrop that I will set out concerns the deeper structural parameters of many of the advanced economies. Over the last fifteen years, the potential growth rate of our economies has declined. For the UK, as an illustration, the decline has been from an average of around 2½% p.a. over the twenty years before that to around 1½% in the last fifteen years. The largest contribution to that decline has come from productivity growth.

Productivity growth has had a pattern of long cycles since the Industrial Revolution. To borrow from the economist Joseph Schumpeter's phraseology, industrial development involves change that occurs in "*discrete rushes*" but "*separated by spans of comparative quiet.*" The key idea here is that innovation and diffusion are at the heart of the growth process known as creative destruction. Cumulative innovation matters, as do clear property rights, and there is a positive role for public policy and institutions to support innovation.

The destruction point is that new innovation makes former innovation obsolete. A key here is the nature of the innovation which comes in rushes – so-called General Purpose Technology. The essence of GPTs – think steam engines, electricity, ICT/the internet – is that they enable innovation very broadly across our economies.

However, there have also been longish periods between waves of innovation when growth has been slower – the late 19th century in the UK was such a period. I think for the last fifteen years we have been in such a slower phase, as the growth effects of ICT and the internet matured.

The third broad area of structural economic backdrop comes from the common feature of advanced economies, and some others too, of the average ageing of the population and the falling replacement rate. This creates lower economic growth by reducing labour supply and putting more pressure on fiscal positions.

I would add that while the economics of ageing populations has been an issue much discussed and assessed in academic and policy circles, I am not persuaded that the significance of it is properly understood in the wider debate.

The fourth broad area concerns trade and global imbalances. Before Schumpeter gave us the theory of creative destruction, the classical economists gave us the trade-based model of growth. Adam Smith set out how trade facilitated the division of labour which became a basis for supporting technological innovation and growth. A reversal of trade openness has negative growth effects. And those effects are likely to be larger for more open economies, simply because the gains and losses from trade are larger for more open economies.

The fifth – and you will no doubt be pleased to hear last – broad area concerns the financial system. In this respect, I am speaking wearing both of my hats, as Governor of the Bank of England and as Chair of the Financial Stability Board. Over the period since the financial crisis, we have seen profound changes to the financial system, necessarily so given what happened then.

The system has undoubtedly become more robust, and so has been able to absorb the big supply side shocks of recent years well. There has been a relative shift in the balance of financial intermediation from banks to non-banks.

But the banking system remains a crucial source of credit to support real economic activity and the crucial source of liquidity and funding, including to the non-bank financial world. Banks remain unique in the private sector as the holders of most of the stock of money in the system (the other part is with central banks).

Alongside this, there have been profound changes in core government debt markets, the rise of so-called private asset markets, and innovations which seek to broaden the scope of private sector money. These are big changes.

Having covered the canvas with paint, I am going to use the rest of my time to look a little more into the future, focusing on two of the areas I have painted – productivity and imbalances.

I will start with productivity. I mentioned that the creation part of innovation has in the past been associated with General Purpose Technology. The obvious question then is what comes next? What is the next GPT, and when will it arrive on the scene? The best guess is AI and robotics (both separately and in combination).

I am an optimist on the potential for AI and robotics to move the dial on productivity, and thus economic growth. But I like to think I am a realistic optimist. My impression is that we have made more progress so far applying AI to well-defined task-based work, rather than more ambitious goals, which I don't find surprising¹.

Also, growth via innovation and productivity enhancement takes time, it isn't a quick fix. This is a lesson of economic history, which we can see, for instance, in the introduction of steam engines, electricity, and more recently ICT.

An important question is how will AI and robotics influence the labour market and jobs? Recent work by my colleague Edward Egan has used four channels through which the effects may be seen:

- Productivity augmentation, increasing productivity by automating repetitive tasks, freeing labour up for other higher-value activities. If firms use these gains to expand production, this can increase the demand for labour in non-automated tasks.
- Displacement automation which will reduce the demand for labour in certain jobs
- Reinstatement via new tasks, where as seen in the past technology innovation creates new tasks that could not have been imagined before.
- Compositional reallocation, such that even if aggregate employment doesn't change much, AI is likely to reallocate jobs between sectors. Some industries might shrink, others grow, and affected workers will need to retrain to adapt their skills.

Clearly, the overall effect on employment will depend on the mix of these channels, which is as yet highly uncertain.

We may see displacement indirectly. For example, in the UK, in the last three years new online vacancies in the most AI-exposed roles have decreased by more than twice as much as in the least exposed group. But, on the positive side, there has been an observed significant increase in new tasks such as integrating AI tools into firms workflow processes².

Two points to conclude on productivity and AI. First, education and training in AI skills will be critical. Second, we shouldn't resort to oversimplified conclusions on the employment effects.

I will finish on imbalances in the world economy. In the period since the financial crisis, the headwinds to growth have made it harder to achieve domestic consensus to support international co-operation and openness. While it is true that openness supports growth and has reduced global poverty, it has had distributional consequences in economies, and there has been an undermining of domestic cohesion in many countries, which has created opposition to economic openness.

The effectiveness of the international financial systems depends on national support and license – it cannot operate in isolation. The goals of international co-operation must sit alongside domestic national policy objectives, but there also must be scope for the international goals to shape those domestic objectives.

It cannot be a one-way street and this principle must apply to all participants. It follows that there is a natural tension between economic globalisation and domestic objectives and that we must robustly define and tackle excessive imbalances.

The international financial system must be robust to many states of the world. This requires a considerable degree of flexibility in the design and operation of the system. Three lessons from history stand out for me here.

First, in the current context of slower growth, we must focus on what is needed to raise potential growth rates, and thus on the role of innovation including obviously AI and robotics. But we must not forget the contribution that economic openness will make to that growth, the important lesson from Adam Smith.

Second, today we continue to face the challenge of adjusting the system to a more multi-polar world, and where the shifting of the poles reveals tensions. One of the lessons of economic history is that such shifts in polarity inevitably strain the operation of the system. We have to be prepared for this.

But, my third lesson is that the record since Bretton Woods suggests that the International Financial Institutions – the IMF, the World Bank *et al* – have been pretty good at institutional recalibration.

One final point here. The question has been raised of whether the future lies more in so-called variable geometry, partnerships of the willing and aligned if you like. There may well be a role in other fields of public policy – indeed to some degree there always has been.

But, I would argue that this does not apply in the world of international finance where the benefits come precisely because national borders are not restrictive to activity. This is a strength of the system, but we have to balance this strength with effective tools that can assess and manage the resulting risks to monetary and financial stability. This is our job, and we must do it in a global institutional framework.

For the Financial Stability Board, this reinforces the importance of international standards to support global financial stability and a level playing field on which firms can compete, all of this supported by active surveillance for emerging risks and vulnerabilities.

Let me end on a personal note. We, of course, need strong collective and individual leadership. An important part of that is the International Monetary and Financial Committee. The IMFC advises the IMF on the international monetary and financial system. ■

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Endnotes

1. Daron Acemoglu, "The simple macroeconomics of AI" *Economic Policy*, January 2025, p13-58
2. Egan, E (2025) "Generative AI: degenerative for jobs?", *Bank Underground*.

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Europe and monetary sovereignty

Europe must not take its monetary sovereignty for granted in a world undergoing geopolitical and technological changes, says Piero Cipollone. Reducing excessive dependencies in payments and finance is key for resilience, competitiveness and economic security

Preserving monetary sovereignty has been a key objective of our single currency. And as guardian of the euro, the European Central Bank (ECB) makes a key contribution to Europe's independence. But while money is one of the most advanced aspects of European integration, we cannot take our monetary sovereignty for granted in the face of today's geopolitical and technological developments.

In a world where external threats are growing and dependencies are used as leverage, it is becoming increasingly obvious that Europeans can no longer outsource core functions that are critical to their security and prosperity. This is specifically true for payments and finance, where I will argue that our dependencies have become excessive.

To put it simply: if we lose control of our money, we lose control of our economic destiny. And we surrender a key attribute of sovereignty¹. Central banks are entrusted with issuing, on behalf of the sovereign, the only money that is legal tender. In the words of Jean Bodin, *"only he who has the power to make law can regulate the coinage."*²

Because it is backed by the sovereign, central bank money offers a monetary anchor to the financial system – for other forms of money to be trusted, they must be convertible into central bank money at par at all times.

So a key part of our mandate is to ensure that central bank money remains fit for purpose, supporting the smooth functioning of payment systems. At the same time, we are tasked with preserving the value of money by maintaining price stability. To fulfil this objective, we need to retain control of financing conditions in the economy. This also requires central bank money to continue to play a key role³.

Ultimately, monetary sovereignty requires ensuring that our currency remains relevant, so that European consumers and businesses can rely on it for both retail transactions – the purchase of goods and services – and wholesale transactions – the settlement of claims between banks.

The euro's relevance depends not only on sound macroeconomic policies – most notably an independent monetary policy aimed at preserving price stability – but also on the credibility, resilience and efficiency of the material and immaterial foundations of money. Payments and finance are the material part. Trust is the immaterial part⁴.

But these foundations are going through a profound transformation as a result of digitalisation and the emergence of new technologies. If we do not take a leading role in this transformation, we could end up at the whim of decisions made elsewhere. So, central bank money must evolve to retain its key role in payments and finance, and we need to act now to avoid excessive dependencies in these areas.

To ensure that Europe reaps the benefits of its Single Market, we need to overcome the fragmentation of European payment solutions. The digital euro will make this ambition a reality

Today, I will recall how our monetary union strengthens Europe's sovereignty. I will then argue that if we are to bolster our monetary sovereignty, we need to reduce existing dependencies in payments and finance and avoid developing new ones. Finally, I will contend that this would contribute to economic efficiency and support Europe's competitiveness.

How the euro strengthens Europe's sovereignty

Let me start by explaining how the euro underpins Europe's sovereignty. Sovereignty has been a thorny subject in the European debate because of the apparent trade-off between national sovereignty and European integration. But this reflects a fundamental misunderstanding. Centuries of wars between European powers have shown that if it comes constantly under threat from its neighbours, a European state's sovereignty is purely nominal.

How sovereign could such a state be if it could not protect the peace and security of its citizens? It was therefore clear to Europe's founding fathers that for national sovereignty to be real and not just nominal, some of it had to be pooled.

Sharing sovereignty on policies of common strategic interest was therefore the pre-condition – not the negation – of national sovereignty. But pooling key sovereignty attributes, such as establishing a European Defence Community, proved too sensitive after the Second World War⁵.

Another approach was therefore taken: Europe's sovereignty was built in the economic realm. Europeans pursued Robert Schuman's idea of merging economic interests so that war would be *"not merely unthinkable, but materially impossible."*⁶

As a result, Europe was gradually given key attributes of sovereignty in the economic sphere: first, the power to make laws to establish and regulate a Single Market, then the power to issue a single currency. This has been more successful than is often acknowledged. Not only have we had peace in Europe, but by avoiding destructive wars, Europe's economic wealth expanded at an unprecedented pace.

Aggregate per capita national wealth for France, Germany, Italy and Spain was essentially the same in 1950 as a century earlier. Since 1950, it has multiplied by 18. And in this same period, it increased from 37% to 83% of US per capita national wealth at purchasing power parity⁷.

Our single currency, the euro, has also strengthened the monetary sovereignty of euro area countries. In the years that preceded the establishment of the Economic and Monetary Union, the European economy was marred by exchange rate volatility. This undermined price stability and heightened uncertainty, dampening trade and investment in Europe.

European countries therefore attempted to keep exchange rates within narrow bands, which required them to replicate the monetary policy of the Bundesbank, which had the strongest track record in the pursuit of price stability.

As a result, other national central banks were de facto monetary policy takers, with little freedom on monetary policy decisions⁸. Even so, they repeatedly had to devalue their currencies, losing both the benefits of exchange rate stability and their sovereignty over monetary policy⁹.

Compared with these unstable fixed exchange rate regimes, the adoption of the euro made it possible to restore monetary sovereignty by sharing it at European level. All euro area national central banks now participate in

monetary policy decision-making within the ECB's Governing Council. Decisions are taken in the interests of the euro area as a whole¹⁰.

Moreover, sharing a single currency means benefitting from a currency with a potentially stronger international role and larger financial markets. The euro is the second most important currency in the international monetary system. Its share across a broad range of indicators stands at close to 20%, which is higher than the euro area's weight in global GDP¹¹.

And in the current economic context, there is an opportunity for the euro to assume a global stabilising role¹². When trade and geopolitical tensions rocked financial markets in recent months, the euro acted as a safe haven.

Greater use of the euro helps make the euro area less vulnerable to spillovers from foreign shocks. The use of the euro in trade invoicing, for example, reduces the pass-through of exchange rate shocks to domestic inflation. The international role of the euro also supports the transmission of our monetary policy.

In particular, the use of the euro in global finance increases the spillovers and spillbacks of domestic monetary policy impulses¹³. Our facilities to provide euro liquidity to non-euro area central banks support this role by addressing the risk of disruptions in euro-denominated funding markets outside the euro area.

This prevents disruptions in global funding markets from resulting in strong adverse effects on euro area financing conditions and thus impairing monetary policy transmission. As recently announced by President Lagarde, we have been preparing to broaden and facilitate access to our repo lines in response to greater global fragmentation and uncertainty¹⁴. The euro has therefore strengthened our monetary sovereignty from both a domestic and international perspective.

Addressing excessive dependencies in payments and finance

We nevertheless face new challenges as a result of geopolitical and technological developments. In a less stable world, external dependencies for critical economic functions can quickly turn into major fragilities¹⁵.

So we need to adapt to this new reality. As the central bank, we must ensure that external dependencies in payments and finance do not cancel out Europe's hard-earned monetary sovereignty. And we need to ensure that our currency, the euro, remains fit for purpose in the digital era, ensuring it retains its role internally¹⁶ and internationally¹⁷.

Digital retail payments

Currently, we face a major dependency in digital retail payments, where we rely to a large extent on a few non-European solutions and payment rails. Given our mandate to ensure the smooth functioning of payment systems, we cannot satisfy ourselves with a situation that puts their resilience at risk.

Card payments are a prominent example. International card schemes account for two-thirds of card transactions in the euro area. 13 out of 21 euro area countries do not even have a domestic card scheme. Even where such schemes exist, they need to co-badge with international card schemes or be added to international digital wallets to enable payments for the use cases they do not cover¹⁸ and for crossborder transactions within the euro area. At this point, we do not have a European solution that works throughout the euro area for all digital payments.

While worrying from a resilience point of view, this dependency might have been less of an issue in a less fragmented world. But that is not the world we live in. We can no longer afford to rely mainly on foreign solutions for a matter as critical as daily payments.

If Europeans can no longer pay, they are no longer in control of their money. And the economy is exposed to grinding to a halt suddenly. Even without reaching this point, such a dependency could be used as leverage against Europe's interests.

And this dependency comes with a price tag. European banks are already losing fees to international card schemes, and fees and data to big tech mobile payment solutions. This has the potential to generate a vicious circle whereby dominant foreign players increasingly control European transaction data, giving them a competitive advantage to offer payment and financial services, further deepening our dependencies. In parallel, the loss of fees makes European payment service providers financially weaker, reducing their ability to compete effectively.

Tomorrow, European banks could lose fees, data and deposits to stablecoins, which are already partnering with international card schemes to provide an alternative means of settlement to bank deposits. US dollar-denominated stablecoins could also start to gain a foothold in Europe, starting with retail crossborder payments – in e-commerce and tourist locations, for instance – or fringe use cases such as gaming, micro-payments and machine-to-machine payments. The risk could become even more serious if the issuers of these stablecoins were allowed to remunerate their token holders.

So we need to address our current dependencies in retail payments and reverse the tide. We have the capacity to do so. The central bank has the mandate to provide means of payment. This is what we do when we issue banknotes. And for many years, cash has not only helped unite Europe, it has also kept us in control of how we pay.

But Europeans are increasingly turning to digital payments. People continue to value and use cash, and we are fully committed to ensuring it remains widely available and accepted¹⁹ – we are in fact preparing to produce and issue a third series of banknotes, featuring new designs. But physical cash no longer covers all Europeans' needs.

For instance, more than one-third of day-to-day payments in the euro area are for online transactions, where cash cannot be used.

We thus need to complement physical cash with its digital equivalent, a digital euro. Although we are making technical preparations to issue the digital euro, we will only do so once the digital euro regulation has been adopted. The EU co-legislators are playing a key role in establishing and regulating the use of the digital euro²⁰.

A digital euro will ensure that Europeans have a European public option, based on European technology and European infrastructure, which makes it possible to pay digitally in all situations throughout the euro area.

Moreover, the digital euro will allow banks to offer their clients payment solutions that fulfil all their needs, avoiding the need for them to look elsewhere.

It will do so in two ways: first, by enabling European private payment solutions to co-badge with digital euro²¹, ensuring that their customers can even pay at merchants and for use cases they do not currently cover. Second, it will make it easier for these solutions to expand their coverage by using the digital euro open standards and acceptance network.

The digital euro will therefore make it much easier and cheaper for private initiatives to achieve pan-European reach and expand to e-commerce and in-shop payments. Since the digital euro will be legal tender, it will be accepted by all merchants that accept digital payments, thus creating an unparalleled acceptance network that interoperability alone cannot create and that European private initiatives will be able to leverage.

This will enable them to roll out their solutions more easily without needing to make large investments to convince merchants to adopt their own standards in stores and online, or being left to rely on proprietary standards owned by international card schemes²².

Let me emphasise here that this has nothing to do with protectionism. We remain open to foreign solutions. The digital euro will support a vibrant European market for digital retail payments, with more competitive players able to offer better services to consumers, but without the dependencies that put the euro area's economic security and monetary sovereignty at risk.

Digital finance

Let me now turn to a dependency that could emerge if we do not take timely action, which is in the realm of digital finance. Currently, wholesale transactions – high-value transactions and payments for securities between banks – are largely settled in central bank money²³.

But financial market participants are exploring the potential of new technologies, such as tokenisation and distributed ledger technology (DLT), to enhance efficiency. These technologies allow assets to be issued or represented digitally, making it possible to trade, settle and manage custody of these assets on a single platform, available 24/7, 365 days a year. And they enable the use of smart contracts to automate corporate actions and cash flows that today require multiple intermediaries and manual operations.

This paves the way for a new digital finance ecosystem that has the potential to transform finance as we know it. But if we are not quick to offer tokenised central bank money settlement, the risk is that this ecosystem will be built elsewhere or rely on settlement assets that are issued outside Europe and not denominated in euro. This would undermine our monetary sovereignty.

Take US dollar-denominated stablecoins, which currently account for 99% of the global stablecoin market and are dominated by two non-European issuers. If European tokenised finance and crossborder payments came to depend on such stablecoins, the role of the euro would be diminished.

We would, moreover, be relying on assets that entail liquidity, concentration, operational and fragmentation²⁴ risks, are mostly issued by non-banks, and are exposed to runs. Our payment infrastructure for wholesale transactions would be anchored outside Europe and shaped elsewhere. In a world where payment networks can be weaponised, this would be a risk to our economic security.

We are therefore preparing to issue tokenised central bank money for the settlement of digital asset transactions on DLT. This will ensure that participants in the digital finance ecosystem can natively settle their transactions using a risk-free, euro-denominated asset. In turn, it will protect Europe's monetary sovereignty and avoid fragmentation by offering a common anchor into which all private tokenised assets can be converted.

We are planning to offer a solution for settlement of DLT-based transactions in central bank money as early as the third quarter of this year. We have called this project 'Pontes' – Latin for 'bridge' – as it will act as a bridge between our traditional settlement infrastructure (T2) and DLT. At the same time, we are working with market participants to develop an integrated digital finance ecosystem in Europe.

This is our 'Appia' project²⁵. With this name, we wanted to evoke the idea of a journey by referencing one of the symbols of the road network that Romans built throughout Europe. Appia will be a learning journey that paves the way for the Eurosystem to design, together with market participants, a pan-European ecosystem based on DLT. It will ensure we can rely on a shared European ledger or a European network of interoperable platforms, where all roads lead to the euro.

As in the current system, central bank money will not crowd out private settlement assets such as stablecoins or tokenised deposits. Instead, it will exist alongside them, ensuring that they are interoperable and can be converted into central bank money, thereby supporting trust. This will underpin the integration and stability of Europe's digital finance ecosystem and ensure it has a euro-denominated settlement asset at its core.

In the coming weeks, we will publish a paper that will explain in greater detail how we will go about the Appia journey. And legislators could consider supporting this effort by exploring the possibility to establish a 28th legal regime for digital assets.

Global payments

The international role of the euro has taken centre stage in the economic policy debate of late. I have already alluded to the fact that our monetary sovereignty would benefit from a stronger role of the euro globally.

However, the emergence of US dollar-denominated stablecoins has given rise to new concerns about the euro's role in crossborder transactions. US dollar stablecoins aim to provide a digital dollar for global transactions, in addition to their current use as settlement assets in decentralised finance.

Stablecoins seem to be filling the gaps left by the retrenching of the 'correspondent banking' model in recent years. According to Swift data, active correspondent banking relationships declined by 29% between January 2011 and December 2022²⁶. Should US dollar-denominated stablecoins fill this gap, the euro's share of global export invoicing – which, at over 40%, is currently on a par with that of the US dollar²⁷ – could be put under pressure.

The Eurosystem has thus also taken action in this space. We are further expanding links between TARGET Instant Payment Settlement (TIPS) and other fast payment systems, taking advantage of the fact that there are about 100

such systems around the world. This will make it possible for ordinary people and businesses to make fast transfers from their bank account to any other account holder in a connected jurisdiction in a transparent and cost-efficient way.

Euro area countries are already connected with Denmark and Sweden in TIPS. Norway will follow in 2028 and Iceland has also expressed an interest²⁸. In addition, a bilateral link between TIPS and India's Unified Payments Interface will go live in 2027, and we are actively exploring similar opportunities with Switzerland, Brazil and Nexus Global Payments, a network which will connect fast payment systems from Malaysia, the Philippines, Singapore, Thailand, India and Indonesia.

Moreover, the Eurosystem, through Banca d'Italia, is supporting the central banks of several Western Balkan countries²⁹ in their efforts to develop a fast payment system modelled on TIPS. Once this 'TIPS clone' is operational later this year, it will be technically possible to link it with TIPS.

These links will increase the efficiency of correspondent banking by shortening settlement chains. And they will use the euro and currencies of linked jurisdictions as settlement assets, thereby reducing the role of third currencies. We are exploring how tokenised settlement assets could be used in this context to further enhance efficiency and monetary sovereignty³⁰.

The digital euro could also act as a connector. It is first and foremost intended for domestic use. But it is also being designed with international use in mind, based on an approach that respects the sovereignty of other countries³¹.

Financing innovation

But we should not forget traditional finance, where we face a problematic dependency when it comes to the financing of innovative companies.

Europe fails to provide innovative European firms with sufficient access to domestic funding sources. At present, the European venture capital market is still valued below €200 billion, compared with around €1 trillion for the United States. And European scale-ups raise 50% less capital on average than their Silicon Valley peers after ten years of operations, according to research by the European Investment Bank³².

European innovative firms are thus left looking elsewhere for funding, and often end up relying on US venture capital, which has been found to increase their probability of relocating to the United States³³. Barriers to expansion – in other words, the lack of a single market for innovative businesses in Europe – further increase the attractiveness of relocating to the United States, where they can more easily scale up³⁴.

In his report on European competitiveness, Mario Draghi noted that *“Between 2008 and 2021, close to 30% of the ‘unicorns’ founded in Europe – startups that went on to be valued over USD 1 billion – relocated their headquarters abroad, with the vast majority moving to the US.”*³⁵

This issue has attracted significant attention. Last year the European Commission announced its intention to develop a ‘28th regime’ for innovative companies as part of its Startup and Scaleup Strategy. This would introduce a harmonised, EU-wide corporate legal framework, making it easier for such companies to scale up and operate across the Single Market³⁶. Further recommendations have been made in two recent reports by European experts³⁷.

Fixing the issue would help Europe retain talent and technology, thereby boosting growth. It would also reduce the need for innovative firms to use non-euro-denominated funding sources or intermediaries whose lending rates are less sensitive to our policy rates. This would, in turn, support the effectiveness of our monetary policy transmission by giving us more control over financing conditions.

At present, ECB staff analysis points instead to a more muted channelling of monetary policy easing impulses to innovative firms, partly reflecting the limited depth of the euro area equity market. This is despite the fact that euro area households hold substantial savings, a significant share of which is invested abroad, as reflected in the euro area's significant current account surplus.

This points to an opportunity: deeper and more integrated capital markets could better support both bank and non-bank intermediation and help channel these funds into investment by euro area firms.

Recent evidence points to a disproportionate increase in lending from banks to safer borrowers since the start of our easing cycle in June 2024. This suggests that part of the easing is not reaching innovative sectors.

At the same time, euro area non-bank financial institutions are financing activities outside the euro area, including the direct financing of non-euro area corporates, particularly in innovative sectors. Strengthening domestic sources of funding for innovative euro area firms would therefore help ensure a more complete and direct transmission of our monetary policy.

Monetary sovereignty and economic efficiency

Let me now turn to the possible trade-off between monetary sovereignty and economic efficiency. Addressing excessive dependencies to bolster sovereignty has sometimes been presented as a risk management measure that comes at a price³⁸. I would instead argue that, in today's world, such an approach has the potential to increase economic efficiency.

Indeed, recent developments call for a reassessment of our concept of economic efficiency. We need to move beyond a static definition of efficiency as the cost per unit of output at a given time, and instead consider the

dynamic effects of economic decisions, including on resilience, innovation and competition. Lower costs in the short run might not be economically efficient if they expose Europe to major costs later.

As an example, deviations from the GDP growth trend in the euro area since 2019 can mainly be attributed to two shocks: the pandemic and the energy crisis linked to Russia's invasion of Ukraine. While the gap caused by the pandemic had almost fully closed by 2022, we still faced a 2% gap in 2025. Had we not been as dependent on Russia for energy, we would not have faced such a large and protracted cost.

Conversely, euro area GDP growth is now being bolstered by higher business investment, driven notably by investment in new digital technologies. This is expected to be further supported by government spending on defence and infrastructure, which could generate a 'sovereignty dividend'.

By increasing growth potential, higher investment could raise the euro area economy's speed limits: higher growth could be achieved without endangering price stability. So economic resilience matters, and it pays off over time.

The same applies to addressing dependencies in payments and finance, which undermine our monetary sovereignty. Addressing the dependencies I have outlined would strengthen the euro area's position in finance and technology markets. Incidentally, finance and technology explain most of the EU's productivity gap vis-à-vis the United States.

When abstracting for the information and communications technology (ICT) and financial sectors, the gap disappears. Strengthening Europe's ability to finance and retain its innovative companies, so that they scale up in Europe, would support our ICT sector. And ensuring that Europe can leverage the full extent of its market in digital payments and finance would strengthen Europe's financial sector.

When we instead allow our market to remain fragmented and dominated by a handful of foreign firms, competition suffers. Take the ICT sector. Market power dynamics and high fixed costs imply that companies that have invested heavily in intangible assets can deter entry more easily.

This concentrates gains among dominant firms and eventually weighs on aggregate productivity³⁹. Facilitating the financing of early intangible investments by European innovative firms is therefore critical.

When it comes to digital payments, the dominance of international card schemes has resulted in increasingly high fees for European merchants. And the strong dependency on these schemes for payments within the euro area means that non-European providers enjoy a significant share of the benefits of reducing internal trade frictions.

To ensure that Europe reaps the benefits of its Single Market, we need to overcome the fragmentation of European payment solutions. The digital euro will make this ambition a reality. It will reduce merchant fees, particularly for smaller merchants, by offering an alternative to dominant international payment solutions.

And it will save European banks money whenever a digital euro transaction replaces an international card scheme transaction, because they will no longer need to pay scheme and processing fees⁴⁰.

Similarly, as I mentioned earlier, our plan to interlink TIPS with other fast payment systems around the world will support faster and cheaper crossborder payments. By shortening correspondent banking chains, it will remove the current multiple layers of intermediaries that duplicate compliance checks, add costs and cause delays in crossborder transactions.

Conclusion

In establishing the euro, European countries regained their monetary sovereignty. And in an unstable world, this benefit offered by our single currency has only increased in importance.

With the euro, we share a key attribute of sovereignty. In the words of Robert Schuman, we have 'merged economic interests' when it comes to money. This underpins our unity, because what affects the euro affects all euro area countries, and vice versa⁴¹.

But we cannot be complacent. In a world where excessive dependencies can be used as leverage, preserving our monetary sovereignty requires bold steps to address the dependencies we had tacitly accepted in payments and finance until now. This is a fundamental aspect of what President Lagarde has called Europe's "*march to independence*."⁴²

When it comes to digital retail payments, digital finance, crossborder payments and the financing of innovative companies, we must ensure that we no longer depend excessively on the kindness of strangers⁴³. This does not mean closing our market. Rather, it means taking decisive action to integrate our European market and make it easier for European players to expand and compete across national borders⁴⁴.

In doing so, we will consolidate economic resilience, efficiency and security, while reinforcing our monetary sovereignty. ■

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Endnotes

1. For a detailed discussion of the interrelation between sovereignty and monetary sovereignty, see Bindseil, U and Senner, R (2025), "Revisiting national, economic and monetary sovereignty", September; and Villeroy de Galhau, F (2023), "[Monetary sovereignty in the 21st century](#)", speech at the Council of State Conference "Monetary sovereignty in the 21st century", Paris, 14 November.
2. Bodin, J (1576), *Six Books of the Commonwealth*.
3. Central bank money is a liability of the central bank and is currently issued in two forms: cash, which is widely accessible to the public, but not remunerated; and funds held by commercial banks on accounts at the central bank, which are remunerated. By setting interest on the money held on these accounts, the central bank steers other interest rates in the economy, thereby implementing its monetary policy.
4. See Visco, I (2021), "[Back to the future of money](#)", remarks at a panel discussion of the Andrew Crockett Memorial Lecture by Mark Carney, Bank for International Settlements, 28 June: "After all, physical, electronic or virtual, the efficiency and stability of what we call 'fiduciary money' is ultimately dependent on trust, on confidence – which indeed shares the same etymological root with 'fiduciary'. And this is ultimately what we have to preserve."; and Panetta, F (2025), "[Money and Trust: From the Renaissance to the Digital Age](#)", speech on the occasion of the external Governing Council monetary policy meeting, official dinner given by the Bank of Italy, Florence, 29 October.
5. The European Defence Community was not ratified in 1954. The need for European countries to strengthen their defence capacity to protect their collective security has recently led to a renewal of the debate on pooling sovereignty in this area. This could also strengthen the euro internationally. As President Lagarde has emphasised, "Trade and military power are important for establishing demand for an international currency." See Lagarde, C (2025), "[Earning influence: lessons from the history of international currencies](#)", speech at an event on Europe's role in a fragmented world organised by Jacques Delors Centre at Hertie School in Berlin, Germany, 26 May.
6. [Schuman Declaration](#), 9 May 1950. See also Visco, I (2023), "[Europe and Italy: prosperity in union and peace](#)", speech at the forum on "Europe: Peace, Protection, Prosperity", organised at the French Embassy in Italy.

7. [World Inequality Database](#) and ECB staff calculation.
8. As famously theorised by Mundell and Fleming in their “impossible trinity” (or monetary trilemma), it is not possible to simultaneously have a fixed foreign exchange rate, free capital movement and an independent monetary policy. See Mundell, RA (1963), [“Capital mobility and stabilization policy under fixed and flexible exchange rates”](#), *Canadian Journal of Economic and Political Science*, Vol. 29, No 4, pp. 475-485; and Fleming, JM (1978), *Essays on Economic Policy*, Columbia University Press, New York.
9. Draghi, M (2018), [“Europe and the euro 20 years on”](#), speech at Laurea Honoris Causa in Economics by University Sant’Anna, Pisa, 15 December.
10. Our comprehensive toolkit ensures the smooth transmission of monetary policy across the euro area. See ECB (2025), [An overview of the ECB’s monetary policy strategy](#), section 3.3.; and ECB (2025), [“ECB Monetary Policy Strategy Assessment 2025 – Workstream 2: Monetary policy tools, strategy and communication”](#), Occasional paper series, No 372.
11. ECB (2025), [The International Role of the Euro](#).
12. See Lagarde, C (2025), [“Turning openness into strength: the moment of the euro”](#), speech at Business France event “Business en Européens” in Paris, France, 7 October, and Lagarde, C (2025), [“Earning influence: lessons from the history of international currencies”](#), speech at an event on Europe’s role in a fragmented world organised by Jacques Delors Centre at Hertie School in Berlin, Germany, 26 May.
13. See Panetta, F (2020), [“Unleashing the euro’s untapped potential at global level”](#), introductory remarks at a meeting with Members of the European Parliament; and Coeuré, B (2019), [“Should the ECB care about the euro’s global role?”](#), VoxEU Column, 25 February.
14. At the Q&A session during the [press conference](#) on 5 February 2026, President Lagarde said: “while we are tied to the monetary purpose of what we do in terms of liquidity and we have to constantly assess the proportionality of what we do, it is a fact that we are looking at our liquidity framework and that the repo lines – to be distinguished from the swap lines – are in progress in terms of reframing them, opening up the access and making them more attractive to other national central banks outside the euro area and outside Europe. So this is in the works, and I hope to be able to announce a bit more in a few days.”

15. See Attinasi, M-G, Boeckelmann, L, Gerinovics, R and Meunier, B (2025), [“Unveiling the hidden costs of critical dependencies”](#), Economic Bulletin, Issue 5, ECB.
16. See Cipollone, P (2025), [“The transformation of money: technological disruption and the future of financial services”](#), guest lecture at the Frankfurt School of Finance & Management, Frankfurt am Main, 8 December.
17. See Panetta, F (2025), [“The struggle to reshape the international monetary system: slow- and fast-moving processes”](#), 2025 Whitaker Lecture at the Central Bank of Ireland, Dublin, 9 December.
18. For instance, domestic card schemes in Germany and Italy cannot be used to pay in ecommerce without co-badging with an international card scheme or adding the card to an international digital wallet.
19. For instance, in our opinion on the Legal Tender of Cash Regulation, we advocated for a clear prohibition of “no cash” practices. See [Opinion of the European Central Bank of 13 October 2023 on a proposal for a regulation on the legal tender of euro banknotes and coins \(CON/2023/31\)](#) and Cipollone, P (2025), [“Making euro cash fit for the future”](#), The ECB Blog, ECB, 4 August. We have also invited national legislators to protect the mandatory acceptance of euro cash. See, for instance, [Opinion of the European Central Bank of 22 January 2026 on limitations to cash payments \(CON/2026/3\)](#).
20. Pursuant to Article 133 of the Treaty on the Functioning of the European Union, “Without prejudice to the powers of the European Central Bank, the European Parliament and the Council, acting in accordance with the ordinary legislative procedure, shall lay down the measures necessary for the use of the euro as a single currency. Such measures shall be adopted after consultation of the European Central Bank.”
21. When European physical cards or digital wallets co-badge with digital euro, the corresponding schemes would be used wherever they are accepted, and the digital euro would be the fall-back solution wherever the private sector scheme is not accepted. See ECB (2025), [Fit of the digital euro in the payment ecosystem – Report on the dedicated Euro Retail Payments Board \(ERP\) technical workstream](#), October.
22. ECB (2025), [Fit of the digital euro in the payment ecosystem – Report on the dedicated Euro Retail Payments Board \(ERP\) technical workstream](#), October.

23. This is in keeping with the principles for financial market infrastructures. See Bank for International Settlements (2012), [Principles for financial market infrastructures](#), April: "Principle 9: Money settlements. An financial market infrastructure should conduct its money settlements in central bank money where practical and available."
24. If tokenised payments and finance rest on fragmented pools of private settlement assets, liquidity can splinter and assets cannot be traded across platforms. Market participants may need to hold multiple stablecoins just to pay different counterparties.
25. Cipollone, P (2025), ["The transformation of money: technological disruption and the future of financial services"](#), guest lecture at the Frankfurt School of Finance & Management, Frankfurt am Main, 8 December.
26. Committee on Payments and Market Infrastructures (2023), ["CPMI quantitative review of correspondent banking data"](#), Bank for International Settlements.
27. See Brüggem, A, Georgiadis, G and Mehl, A (2025), ["Global trade invoicing patterns: new insights and the influence of geopolitics"](#), [The international role of the euro](#), ECB, June. When euro area countries are excluded, the share of the US dollar and the euro was about 60% and 25% respectively in 2023.
28. See ECB (2024), ["Norway joins TIPS, adding Norwegian krone to Eurosystem's instant payment service"](#), press release, 29 November; and ECB (2024), ["Seðlabanki Íslands expresses an interest in joining T2 and TIPS"](#), press release, 9 September.
29. Albania, Bosnia and Herzegovina, Kosovo, Montenegro and North Macedonia.
30. Cipollone, P (2025), ["The transformation of money: technological disruption and the future of financial services"](#), guest lecture at the Frankfurt School of Finance & Management, Frankfurt am Main, 8 December.
31. When visiting the euro area temporarily, non-euro area residents would have access to the digital euro through a European payment service provider. Merchants outside the euro area may also be allowed to accept digital euro payments from euro area residents. Moreover, users outside the euro area could be granted permanent access to the digital euro, subject to an agreement between the EU and non-EU countries and a complementary arrangement between the ECB and the respective central banks. Appropriate safeguards would be put in place to avoid stoking currency

substitution in those countries. Moreover, like TIPS, the digital euro's design includes multi-currency enabling features that would allow non-euro area countries to use the digital euro infrastructure to offer their own digital currencies and facilitate transactions across these currencies. See Cipollone, P (2025), ["Enhancing cross-border payments in Europe and beyond"](#), speech at the Regional Governors' Meeting, Osijek, Croatia, 1 April.

32. European Investment Bank (2024), [The scale-up gap: Financial market constraints holding back innovative firms in the European Union](#), 24 July.

33. Weik, S, Achleitner, A-K and Braun, R (2024), ["Venture capital and the international relocation of startups"](#), Research Policy, Vol 53, Issue 7, September.

34. See European Investment Bank (2026), [Drivers of relocation by innovative EU startups and scaleups](#). The founders and chief executives of 440 firms that were founded in the EU and relocated abroad, mainly to the United States, cited access to capital, proximity to large and unified markets and regulatory simplicity as key reasons for moving. The United States is widely perceived as offering a more attractive environment in these respects, particularly when it comes to supporting companies beyond the early stages of growth.

35. Draghi, M (2024), [The future of European competitiveness – A competitiveness strategy for Europe](#), September.

36. European Commission (2025), [The EU Startup and Scaleup Strategy – Choose Europe to start and scale](#), 28 May. The intention of the 28th regime is to "provide a single set of rules for companies. It would include an EU corporate legal framework, based on digital-by-default solutions, and will help companies overcome barriers in setting up, scaling up and operating companies across the Single Market. To do so, it will simplify applicable rules and reduce the cost of failure, by addressing specific aspects within relevant areas of law, including insolvency, labour and tax law. It will explore the possibility of enabling companies to establish in Europe more rapidly, ideally within 48 hours."

37. See Kukies, J and Noyer, C (2026), [Financing innovative ventures in Europe – Recommendations to close the scaleup financing gap, deepen the Savings and Investments Union and strengthen Europe's competitiveness](#), January; and Angeloni, I and Cavallini, A (2026), [Feasible Steps to Finance Innovation in Europe: Six Proposals to Strengthen EU Capital Markets](#), Institute for European Policymaking, Bocconi University, 9 January.

38. Carney, M (2026), *Special address at the World Economic Forum, Davos, 20 January*.
39. De Ridder, M (2024), *“Market Power and Innovation in the Intangible Economy”*, *American Economic Review*, Vol. 114, No 1, pp. 199-251.
40. Cipollone, P (2026), *“The digital euro: strengthening Europe’s payments ecosystem”*, speech at the event “The digital euro in Cyprus”, Nicosia, 6 February.
41. See also Panetta, F (2022), *“Europe’s shared destiny, economics and the law”*, *Lectio Magistralis* on the occasion of the conferral of an honorary degree in Law by the University of Cassino and Southern Lazio, Cassino, 6 April.
42. Lagarde, C (2025), *“C’est le début d’une marche vers l’indépendance’ de l’Europe”*, podcast interview on *L’invité de 8h20*, France Inter, Radio France, 31 March.
43. Cipollone, P (2025), *“Harnessing the digital future of payments: Europe’s path to sovereignty and innovation”*, speech at the France Payments Forum event “Digital euro and the future of payments in Europe”, Paris, 15 May.
44. See also Letta, E (2024), *Much more than a market – speed, security, solidarity*; Lagarde, C (2025), *“From resilience to strength: unleashing Europe’s domestic market”*, speech at the 35th Frankfurt European Banking Congress, Frankfurt am Main, 21 November; and Georgieva, K (2026), *“Re-energizing Europe”*, remarks at the College of Commissioners Seminar on Competitiveness, Leuven, Belgium, 4 February.

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CBDC and monetary sovereignty



Calls for a digital euro increasingly invoke monetary sovereignty. Lucrezia Reichlin argues that an effective defence of monetary sovereignty will continue to depend on regulation, fiscal capacity, and the ECB's willingness to absorb risk when it matters

The European Central Bank's work on a digital euro has increasingly been framed as a matter of monetary sovereignty. In recent submissions to the European Parliament, a number of economists have argued that without a retail central bank digital currency (CBDC), Europe risks ceding control over its monetary system to foreign payment providers, Big Tech platforms, and private digital monies¹. These concerns deserve to be taken seriously. Yet, much of the current debate risks obscuring more than it clarifies.

This column makes two related claims. First, monetary history suggests that CBDC is not a necessary condition for preserving a public monetary anchor. Second, many sovereignty arguments rest on a category mistake: the conflation of money with payments.

The first claim follows directly from the historical record. Money has never been a purely public institution. Across centuries, it has taken the form of a hybrid arrangement, combining a publicly defined unit of account with privately issued instruments.

Medieval Europe relied heavily on bills of exchange issued by merchant banks; early modern trade was settled through clearing mechanisms rather than sovereign coin; and 19th century free banking systems were dominated by privately issued banknotes anchored by convertibility into specie (Spufford 2009, Sargent and Velde 2002, Gorton 1988). Stability did not hinge on universal access to public money, but on credible public backing and enforcement of par value.

The modern monetary system continues this tradition. Bank deposits – private liabilities – are the dominant form of money, supported by deposit insurance, regulation, and lender-of-last-resort facilities. Even cash, often portrayed as the paradigmatic public monetary instrument, has played a limited economic role and has rarely functioned as the

primary store of value (Goodhart 1988). Its apparent status as a civic institution reflects 20th century technology and habit more than any deep constitutional principle.

Recent financial crises reinforce this interpretation. In the global financial crisis, the euro area sovereign crisis, the COVID-19 shock, and the 2023 banking turmoil, stability was preserved not by flights into cash but by large-scale expansions of central bank balance sheets via issuance of reserves.

The case for CBDC as a prerequisite for monetary sovereignty is weaker than often claimed. History suggests that sovereignty ultimately rests on legal authority and public balance sheets, not on universal access to public money

Risk absorption occurred overwhelmingly at the wholesale level, with central banks intermediating liquidity and solvency support to private institutions. The decisive public function operated through balance-sheet backstopping rather than through retail access to public money.

Historically, access to central bank balance sheets has been broader than access to reserves. In the US, primary dealers gained access to facilities functionally equivalent to the discount window during crises – such as the Primary Dealer Credit Facility in 2008 and 2020 – despite not holding reserve accounts. Money market funds and other non-bank institutions were stabilised through dedicated facilities without ever receiving reserves directly.

A similar logic applies in the euro area. Access to the Eurosystem's balance sheet has long extended beyond institutions with regular access to reserves or standing facilities. During the global financial crisis and the sovereign debt crisis, the ECB absorbed risk primarily through banks, but also through a widening set of collateral frameworks, targeted longer-term refinancing operations, and emergency liquidity assistance (ELA), which allowed national central banks to provide liquidity to institutions that would not normally qualify as monetary policy counterparties.

More recently, market-wide interventions – such as the Pandemic Emergency Purchase Programme (PEPP) – stabilised a broad range of non-bank balance sheets without granting direct reserve access. As in the US, these arrangements illustrate that monetary sovereignty is exercised through discretionary balance-sheet expansion and crisis instruments, not through universal or permanent access to central bank money.

From this perspective, what matters for monetary stability and sovereignty is not retail access to central bank liabilities, but the capacity of the central bank to absorb risk and enforce par convertibility across private monies (Adrian and Mancini-Griffoli 2019, Reichlin 2025a, 2025b, 2025c).

Key issues for financial stability and monetary sovereignty arise in relation to privately issued forms of broad money, such as stablecoins. Stablecoins function as means of payment and stores of value for on-chain activity. It is at this level – where bank deposits currently dominate – that monetary competition will take place.

A lightly used, capped, and non-remunerated CBDC is unlikely to be the instrument that disciplines or displaces large-scale stablecoin adoption, particularly when stablecoins are embedded in global platforms and denominated in foreign currencies.

To the extent that stablecoins pose a challenge to monetary sovereignty, this challenge arises in the domain of broad money and payment networks. It is therefore more credibly addressed through regulation of stablecoins – in relation to their reserve backing - than through the introduction of a retail CBDC (Reichlin 2025b, 2025d).

The second claim concerns the structure of the sovereignty argument itself, and the way it frames the policy problem. Many calls for a digital euro implicitly equate monetary sovereignty with control over payment instruments and infrastructures. This is a conceptual error. Money and payments are related but distinct components within the monetary system.

‘Money’ refers to the settlement asset, and the unit of account – what has been transferred, and in what quantity, when payment has been made. ‘Payments’ refers to the means by which the transaction takes place – which might be an inter-bank transfer using existing banking infrastructure, or it might be a series of entries on a blockchain.

This distinction is not semantic. Europe can lose control over payment rails without losing monetary sovereignty, just as it can retain monetary sovereignty while relying extensively on private or foreign payment providers. The euro’s unit of account is defined and enforced by law; its value is stabilised by the ECB’s balance sheet; and par

convertibility across bank deposits is guaranteed by regulation and public backstops. None of these pillars requires the ECB to issue a retail CBDC.

Many of the concrete concerns raised in the sovereignty debate – dependence on foreign card networks, dominance of Big Tech wallets, data extraction through payment platforms – are therefore primarily payment system issues. They call for competition policy, regulation, interoperability mandates, and the development of European payment infrastructures. Addressing them through CBDC risks overloading a monetary instrument with objectives that properly belong to payments policy.

Seen in this light, the digital euro addresses a different, more institutional problem. In the euro area, monetary union without full fiscal integration creates a persistent legitimacy gap. As cash use declines, the visibility of public money diminishes, while crisis management increasingly relies on opaque balance-sheet operations. A digital euro can thus be understood as a symbolic and constitutional response to fiscal fragmentation, reaffirming the presence of public money in a digital economy.

This symbolic role should not be dismissed. Symbols matter in monetary unions. But it should not be overstated either. The deliberately constrained design of the digital euro – non-remuneration, holding limits, and intermediated distribution – signals that it is not intended to replace private money, enhance payment efficiency, or materially improve crisis management. Its contribution to sovereignty is therefore indirect and political rather than operational.

In conclusion, the case for CBDC as a prerequisite for monetary sovereignty is weaker than often claimed. History suggests that sovereignty ultimately rests on legal authority and public balance sheets, not on universal access to public money. Confusing money with payments risks misdiagnosing the problem and misallocating policy effort.

For Europe, the digital euro may play a useful symbolic role, but the effective defence of monetary sovereignty will continue to depend on regulation, fiscal capacity, and the central bank's willingness to absorb risk when it matters. ■

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Endnote

1. See, for example, the [open letter](#) from European academics to Members of the European Parliament, 11 January 2026.

References

Drian, T and T Mancini-Griffoli (2019), *"The Rise of Digital Money"*, IMF FinTech Notes 19/01.

Goodhart, C (1988), *The Evolution of Central Banks*, MIT Press.

Quinn, S and W Roberds (2014), *"How Amsterdam got fiat money"*, *Journal of Monetary Economics*.

Reichlin, L (2025a), *"Will Crypto Save the Dollar?"*, Project Syndicate, 31 January.

Reichlin, L (2025b), *"Europe Needs a Euro Stablecoin"*, Project Syndicate, 2 September.

Reichlin, L (2025c), *"Stablecoins Are Inevitable"*, Project Syndicate, 21 November.

Reichlin, L (2025d), *"The European Union should embrace decentralized finance and make it safe"*, *Bruegel Analysis*, 15 December.

Sargent, T and F Velde (2002), *The Big Problem of Small Change*, Princeton University Press.

Spufford, P (2009), *Money and Its Use in Medieval Europe*, Cambridge University Press.

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The sane insanity of digital sovereignty



Every major economy is now hedging against digital dependence. Matthew Kilcoyne examines digital sovereignty and the economic risks of uncoordinated fragmentation across global technology markets

Every major economy is now hedging against digital dependence. Europe plans to consciously decouple from American tech and even has EuroStack proponents demanding the Commission spend **€300 billion** building indigenous cloud and AI infrastructure, in fact, an entire new stack.

The United States restricts chip exports to protect its lead. China pours resources into semiconductor self-sufficiency. India mandates local data storage. Each move is individually rational—a reasonable response to genuine vulnerabilities. Collectively, they risk destroying the integrated digital economy that made these technologies valuable in the first place.

This is the sane insanity of digital sovereignty: policies that make perfect sense in isolation but threaten catastrophe in aggregate. We are watching a slow-motion prisoner's dilemma unfold across the global technology landscape, and no one seems able to stop it.

The fears are overblown

The sovereignty impulse responds to real dependencies. Europe relies on American technology for **roughly 90 percent of its cloud infrastructure**, according to Cristina Caffarra of the EuroStack Foundation. In 2024, US-based institutions **produced 40 notable AI models**; China produced 15; Europe produced three. US private AI investment reached **\$109.1 billion**—nearly 12 times China's \$9.3 billion. For policymakers watching these numbers, the conclusion seems obvious: without intervention, Europe becomes a backwater unable to have any say over its future.

But what exactly is the threat?

The US CLOUD Act gets cited endlessly as justification for European digital sovereignty. The 2018 law allows American authorities to compel US-based companies to provide data regardless of where it is stored. This sounds

alarming—but alarming for whom, and under what circumstances? The scenario sovereignty advocates fear is American technology companies being weaponized against European interests.

Yet the mechanism that prevents this is precisely the interdependence they want to sever: American cloud providers have billions of dollars in European revenue at stake. Microsoft, Amazon, and Google are not going to help the US government torch their largest export market. The mutual dependency is the protection.

More fundamentally, there is no viable alternative. Europe is not going to build competitive hyperscale cloud infrastructure from scratch. The EuroStack proposal calls for [€300 billion over a decade](#)—and even its advocates acknowledge this buys catch-up, not leadership.

The honest assessment is uncomfortable: Europe is dependent on American technology because American technology is better, and no amount of industrial policy will change that within any relevant timeframe

European cloud providers like OVHcloud and Deutsche Telekom's T-Systems exist, but they cannot match the R&D investment, talent pools, or economies of scale of American hyperscalers. The gap is not closing. It is widening.

And if not American technology, then what? Chinese? Huawei and Alibaba Cloud would be delighted to fill any vacuum European protectionism creates. If the concern is extraterritorial government access to data, China's National Intelligence Law makes the CLOUD Act look quaint. Trading American dependency for Chinese dependency solves nothing—except perhaps the career prospects of the consultants and politicians pushing the transition.

The honest assessment is uncomfortable: Europe is dependent on American technology because American technology is better, and no amount of industrial policy will change that within any relevant timeframe. The choice is not between sovereignty and dependence. It is between productive dependence on allies (however shaky that may seem right now) and destructive dependence on adversaries—or simply falling further behind while pretending otherwise.

How sovereignty measures actually work

Digital sovereignty initiatives share a common toolkit: procurement mandates requiring domestic providers, data localization rules preventing crossborder transfers, and subsidies for domestic champions. Each mechanism has its stated rationale. But strip away the security language, and what remains is protectionism by firms that cannot compete on merit.

The EuroStack initiative makes this explicit. Its framework proposes ['Buy European'](#) procurement rules with jurisdictional control as a non-negotiable prerequisite for strategic procurement. The stated goal is resilience. The actual effect is to exclude superior foreign competitors so that inferior domestic providers can win contracts they would otherwise lose.

This is not speculation. When the Dutch managed cloud provider Solvinity was **acquired** by American IT giant Kyndryl in November 2025, several Dutch government clients—including the Ministry of Justice and Security—expressed dismay. They had specifically chosen Solvinity to avoid American providers.

But Solvinity was acquired precisely because it could not compete independently. The market delivered its verdict: European cloud providers lack the scale to survive without either protection or acquisition. Procurement mandates do not fix this. They merely hide it. The correction is costly in due course.

The costs are concrete. The OECD estimates data localization measures **raise data management costs** by 15 to 55 percent. Procurement mandates exclude foreign competitors regardless of capability, meaning governments pay more for less. Subsidies for domestic champions distort investment toward politically favoured firms rather than technically superior ones. The beneficiaries are not European citizens but European technology executives who prefer guaranteed contracts to market competition.

Each jurisdiction implementing these measures forces others to respond in kind. When Europe mandates European cloud providers, it invites retaliation. When export controls restrict chip sales, they accelerate indigenous development programs that might otherwise never have been funded. The hedging creates the instability it was meant to prevent.

The golden goose accounting

The integrated digital economy is not merely convenient. It is the foundation of modern productivity growth.

McKinsey estimates that global data flows **raised world GDP** by approximately 3.5 percent over what would have occurred without them—equivalent to \$2.8 trillion annually. Digital trade has raised US GDP by 3.4 to 4.8 percent

while creating an estimated 2.4 million jobs. A 10 percent increase in internet penetration in exporting countries leads to a 1.9 percent increase in export volumes. These are not marginal effects. They represent the difference between stagnation and growth.

Joint research by the OECD and World Trade Organization [quantifies](#) what fragmentation would cost. Full data autarky—where all economies fully restrict their data flows—would reduce global GDP by 4.5 percent and cut exports by 8.5 percent. Even partial fragmentation along current trajectories would cost more than 1 percent of global GDP. These are not rounding errors. They represent trillions of dollars in forgone growth.

The benefits of integration are equally concrete. If all economies adopted [open data flow regimes](#) with appropriate safeguards, global GDP would grow by 1.77 percent and exports by 3.6 percent. Low and lower-middle income economies would see GDP increases exceeding 4 percent. Crossborder data flows enable smaller firms to access global markets, allow researchers to collaborate across borders, and let supply chains coordinate production efficiently.

The mechanism matters: digital services exhibit extreme economies of scale. The marginal cost of serving an additional user approaches zero. A cloud provider operating across 50 markets can spread infrastructure costs across billions of users; one restricted to a single market cannot. An AI model trained on global data outperforms one trained on a single jurisdiction's corpus. Fragmentation does not merely reduce efficiency—it makes certain capabilities economically impossible.

Consider the AI investment gap through this lens. Europe's three notable AI models in 2024 versus America's 40 reflect not just funding differences but market size differences. American AI companies can amortize development costs across 330 million domestic users plus global export markets. European companies facing fragmented

markets and procurement restrictions have smaller addressable markets, which means smaller sustainable R&D investments, which means inferior products, which reinforces the dependency that sovereignty measures were meant to address.

The game theory trap

Why don't rational actors simply cooperate? Because unilateral openness in a fragmenting world creates asymmetric vulnerabilities. If Europe maintains open procurement while America and China restrict theirs, European firms face competition at home while being locked out of foreign markets.

If America maintains open data flows while Europe and China localize, American companies bear compliance costs their competitors avoid. The first mover toward openness loses; the first mover toward restriction gains a temporary advantage.

This creates a ratchet effect. Each restriction justifies the next. American export controls on advanced chips to China justify Chinese semiconductor investment programs. Chinese semiconductor programs justify American restrictions on investment in Chinese technology. European concerns about American data access justify European localization mandates. European localization mandates justify American concerns about European protectionism.

The equilibrium toward which we are drifting is not sovereignty but mutual impoverishment. Each jurisdiction achieves nominal control over an increasingly inferior technology stack. The global frontier advances more slowly because innovation resources are scattered across duplicative national programs rather than concentrated at the cutting edge. Everyone loses except the advocates whose careers depend on the conflict.

The alternative path

The choice is not between naive openness and managed sovereignty. It is between uncoordinated fragmentation and coordinated frameworks that address legitimate concerns without destroying integrated markets.

The OECD's work on '[Data Free Flow with Trust](#)' provides a template. Regimes that combine open data flows with appropriate safeguards—privacy protections, security requirements, accountability mechanisms—generate better economic outcomes than either unregulated openness or restrictive localization. The challenge is building mutual recognition frameworks that allow data to cross borders while ensuring it receives adequate protection on arrival.

For procurement, the answer is interoperability requirements and security standards that any qualified provider can meet—not mandates based on corporate nationality. Legitimate security concerns about government access to sensitive data can be addressed through technical controls: customer-held encryption, operational isolation, and audit requirements. These achieve actual security rather than the theatre of excluding competitors under the guise of sovereignty.

For AI, the path forward is shared infrastructure rather than duplicative national champions. The computing resources required to train frontier models are so expensive that no single European country can afford them alone. The EU's InvestAI initiative aims to mobilize €200 billion and build AI gigafactories hosting 100,000 chips each—four times larger than current EU AI factories. But if these facilities prioritize national champions over open access, they will replicate the fragmentation problem at European scale.

A coordinated European computing infrastructure available to researchers and companies across the bloc could achieve scales competitive with American hyperscalers—if it is designed for shared access rather than national preference.

None of this is easy. It requires trust between governments that increasingly view each other as competitors. It requires domestic political constituencies willing to accept foreign participation in sensitive sectors. It requires international institutions capable of monitoring compliance and resolving disputes. But the alternative—uncoordinated fragmentation into incompatible technology blocs—is worse for everyone.

The stakes

We are not choosing between sovereignty and dependence. We are choosing between managed interdependence that preserves the gains from integration and mutually assured digital poverty that destroys them.

The at least €300 billion EuroStack proponents are pushing to see spent on duplicative digital infrastructures could, instead, in an expansive environment work to purchase real resilience: diversified supply chains, a tech stack far broader than current assumptions—including modalities and applications we have yet to imagine—solutions to longstanding challenges, interoperable systems, and shared governance of common infrastructure.

Spent on duplicative national champions protected by procurement mandates, it will purchase inferior technology at a higher cost while accelerating the fragmentation that makes everyone poorer.

The sane insanity can end. But it requires recognizing that individual rationality produces collective catastrophe, and that the only escape is coordination none of us can achieve alone. We can all win. Or we can all lose together. The current trajectory leads to the latter, and inertia will not change it. ■

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The end of the world order

The great powers are trashing the global rules-based order. Mark Carney argues that middle powers can maintain some sovereignty and control over their own destinies in a new era of superpower rivalries by working together to fight for their values

will talk about a rupture in the world order, the end of a pleasant fiction and the beginning of a harsh reality, where geopolitics, where the large, main power, geopolitics, is submitted to no limits, no constraints.

On the other hand, I would like to tell you that the other countries, especially intermediate powers like Canada, are not powerless. They have the capacity to build a new order that encompasses our values, such as respect for human rights, sustainable development, solidarity, sovereignty and territorial integrity of the various states.

The power of the less power starts with honesty. It seems that every day we're reminded that we live in an era of great power rivalry, that the rules-based order is fading, that the strong can do what they can, and the weak must suffer what they must.

And this aphorism of Thucydides is presented as inevitable, as the natural logic of international relations reasserting itself. And faced with this logic, there is a strong tendency for countries to go along to get along, to accommodate, to avoid trouble, to hope that compliance will buy safety.

Well, it won't. So, what are our options? In 1978, the Czech dissident Václav Havel, later president, wrote an essay called *The Power of the Powerless*, and in it, he asked a simple question: how did the communist system sustain itself?

And his answer began with a greengrocer. Every morning, this shopkeeper places a sign in his window: 'Workers of the world unite'. He doesn't believe it, no-one does, but he places a sign anyway to avoid trouble, to signal compliance, to get along. And because every shopkeeper on every street does the same, the system persists – not through violence alone, but through the participation of ordinary people in rituals they privately know to be false.

Havel called this *“living within a lie.”* The system’s power comes not from its truth, but from everyone’s willingness to perform as if it were true, and its fragility comes from the same source. When even one person stops performing, when the greengrocer removes his sign, the illusion begins to crack. It is time for companies and countries to take their signs down.

For decades, countries like Canada prospered under what we called the rules-based international order. We joined its institutions, we praised its principles, we benefited from its predictability. And because of that, we could pursue values-based foreign policies under its protection.

We are in the midst of a rupture, not a transition. Over the past two decades, a series of crises in finance, health, energy and geopolitics have laid bare the risks of extreme global integration

We knew the story of the international rules-based order was partially false that the strongest would exempt themselves when convenient, that trade rules were enforced asymmetrically. And we knew that international law applied with varying rigour depending on the identity of the accused or the victim.

This fiction was useful, and American hegemony, in particular, helped provide public goods, open sea lanes, a stable financial system, collective security and support for frameworks for resolving disputes. So, we placed the sign in the window. We participated in the rituals, and we largely avoided calling out the gaps between rhetoric and reality.

This bargain no longer works. Let me be direct. We are in the midst of a rupture, not a transition. Over the past two decades, a series of crises in finance, health, energy and geopolitics have laid bare the risks of extreme global integration. But more recently, great powers have begun using economic integration as weapons, tariffs as leverage, financial infrastructure as coercion, supply chains as vulnerabilities to be exploited.

You cannot live within the lie of mutual benefit through integration, when integration becomes the source of your subordination. The multilateral institutions on which the middle powers have relied – the WTO, the UN, the COP – the architecture, the very architecture of collective problem solving are under threat.

And as a result, many countries are drawing the same conclusions that they must develop greater strategic autonomy, in energy, food, critical minerals, in finance and supply chains.

And this impulse is understandable. A country that can't feed itself, fuel itself or defend itself, has few options. When the rules no longer protect you, you must protect yourself. But let's be clear eyed about where this leads.

A world of fortresses will be poorer, more fragile and less sustainable. And there is another truth. If great powers abandon even the pretence of rules and values for the unhindered pursuit of their power and interests, the gains from transactionalism will become harder to replicate.

Hegemons cannot continually monetize their relationships. Allies will diversify to hedge against uncertainty. They'll buy insurance, increase options in order to rebuild sovereignty – sovereignty that was once grounded in rules, but will increasingly be anchored in the ability to withstand pressure. This is classic risk management. Risk management comes at a price, but that cost of strategic autonomy, of sovereignty can also be shared.

Collective investments in resilience are cheaper than everyone building their own fortresses. Shared standards reduce fragmentations. Complementarities are positive sum. And the question for middle powers like Canada is not whether to adapt to the new reality – we must. The question is whether we adapt by simply building higher walls, or whether we can do something more ambitious.

Now Canada was amongst the first to hear the wake-up call, leading us to fundamentally shift our strategic posture. Canadians know that our old comfortable assumptions that our geography and alliance memberships automatically conferred prosperity and security – that assumption is no longer valid. And our new approach rests on what Alexander Stubb, the President of Finland, has termed “*value-based realism*.”

Or, to put another way, we aim to be both principled and pragmatic – principled in our commitment to fundamental values, sovereignty, territorial integrity, the prohibition of the use of force, except when consistent with the UN Charter, and respect for human rights, and pragmatic and recognizing that progress is often incremental, that interests diverge, that not every partner will share all of our values.

So, we're engaging broadly, strategically with open eyes. We actively take on the world as it is, not wait around for a world we wish to be. We are calibrating our relationships, so their depth reflects our values, and we're prioritizing broad engagement to maximize our influence, given and given the fluidity of the world at the moment, the risks that this poses and the stakes for what comes next.

And we are no longer just relying on the strength of our values, but also the value of our strength. We are building that strength at home. Since my government took office, we have cut taxes on incomes, on capital gains and business investment. We have removed all federal barriers to interprovincial trade.

We are fast tracking a trillion dollars of investments in energy, AI, critical minerals, new trade corridors and beyond. We're doubling our defence spending by the end of this decade, and we're doing so in ways that build our domestic industries.

And we are rapidly diversifying abroad. We have agreed a comprehensive strategic partnership with the EU, including joining SAFE, the European defence procurement arrangements. We have signed 12 other trade and security deals on four continents in six months. The past few days, we've concluded new strategic partnerships with China and Qatar. We're negotiating free trade pacts with India, ASEAN, Thailand, Philippines and Mercosur.

We're doing something else. To help solve global problems, we're pursuing variable geometry, in other words, different coalitions for different issues based on common values and interests. So, on Ukraine, we're a core member of the *Coalition of the Willing* and one of the largest per capita contributors to its defence and security.

On Arctic sovereignty, we stand firmly with Greenland and Denmark and fully support their unique right to determine Greenland's future. Our commitment to NATO's Article 5 is unwavering, so we're working with our

NATO allies, including the Nordic Baltic Gate, to further secure the alliance's northern and western flanks, including through Canada's unprecedented investments in over-the-horizon radar, in submarines, in aircraft and boots on the ground, boots on the ice. Canada strongly opposes tariffs over Greenland and calls for focused talks to achieve our shared objectives of security and prosperity in the Arctic.

On plurilateral trade, we're championing efforts to build a bridge between the Trans Pacific Partnership and the European Union, which would create a new trading bloc of 1.5 billion people. On critical minerals, we're forming buyers' clubs anchored in the G7 so the world can diversify away from concentrated supply. And on AI, we're cooperating with like-minded democracies to ensure that we won't ultimately be forced to choose between hegemonies and hyper-scalers.

This is not naïve multilateralism, nor is it relying on their institutions. It's building coalitions that work – issues by issue, with partners who share enough common ground to act together. In some cases, this will be the vast majority of nations. What it's doing is creating a dense web of connections across trade, investment, culture, on which we can draw for future challenges and opportunities.

The middle powers must act together, because if we're not at the table, we're on the menu. But I'd also say that great powers, great powers can afford for now to go it alone. They have the market size, the military capacity and the leverage to dictate terms. Middle powers do not. But when we only negotiate bilaterally with a hegemon, we negotiate from weakness. We accept what's offered. We compete with each other to be the most accommodating.

This is not sovereignty. It's the performance of sovereignty while accepting subordination. In a world of great power rivalry, the countries in between have a choice – compete with each other for favour, or to combine to create a third path with impact.

We shouldn't allow the rise of hard power to blind us to the fact that the power of legitimacy, integrity and rules will remain strong, if we choose to wield them together – which brings me back to Havel.

What does it mean for middle powers to live the truth? First, it means naming reality. Stop invoking rules-based international order as though it still functions as advertised. Call it what it is – a system of intensifying great power rivalry, where the most powerful pursue their interests, using economic integration as coercion.

It means acting consistently, applying the same standards to allies and rivals. When middle powers criticize economic intimidation from one direction, but stay silent when it comes from another, we are keeping the sign in the window.

It means building what we claim to believe in, rather than waiting for the old order to be restored. It means creating institutions and agreements that function as described. And it means reducing the leverage that enables coercion – that's building a strong domestic economy. It should be every government's immediate priority.

And diversification internationally is not just economic prudence, it's a material foundation for honest foreign policy, because countries earn the right to principled stands by reducing their vulnerability to retaliation.

So, Canada. Canada has what the world wants. We are an energy superpower. We hold vast reserves of critical minerals. We have the most educated population in the world. Our pension funds are amongst the world's largest and most sophisticated investors. In other words, we have capital, talent... we also have a government with immense fiscal capacity to act decisively. And we have the values to which many others aspire.

Canada is a pluralistic society that works. Our public square is loud, diverse and free. Canadians remain committed to sustainability. We are a stable and reliable partner in a world that is anything but. A partner that builds and values relationships for the long term.

And we have something else. We have a recognition of what's happening and a determination to act accordingly. We understand that this rupture calls for more than adaptation. It calls for honesty about the world as it is. We are taking the sign out of the window. We know the old order is not coming back.

We shouldn't mourn it. Nostalgia is not a strategy, but we believe that from the fracture, we can build something bigger, better, stronger, more just. This is the task of the middle powers, the countries that have the most to lose from a world of fortresses and most to gain from genuine cooperation.

The powerful have their power. But we have something too – the capacity to stop pretending, to name reality, to build our strength at home and to act together. That is Canada's path. We choose it openly and confidently, and it is a path wide open to any country willing to take it with us. ■

Mark Carney is Prime Minister of Canada

This article contains the full transcript of a [special address](#) delivered at the World Economic Forum's Annual Meeting 2026 in Davos. This transcript was produced using AI and subsequently edited for style and clarity. The edits do not alter the substance of the speaker's remarks.



Building a new Western century

For the last year there has been turbulence in the US-EU partnership. Marco Rubio argues that the new alliance should focus on advancing mutual interests and new frontiers, unshackling ingenuity, creativity, and the dynamic spirit to build a new Western century

We gather here today as members of a historic alliance, an alliance that saved and changed the world. When this conference began in 1963, it was in a nation – actually, it was on a continent – that was divided against itself. The line between communism and freedom ran through the heart of Germany. The first barbed fences of the Berlin Wall had gone up just two years prior.

And just months before that first conference, before our predecessors first met here, here in Munich, the Cuban Missile Crisis had brought the world to the brink of nuclear destruction. Even as World War II still burned fresh in the memory of Americans and Europeans alike, we found ourselves staring down the barrel of a new global catastrophe – one with the potential for a new kind of destruction, more apocalyptic and final than anything before in the history of mankind.

At the time of that first gathering, Soviet communism was on the march. Thousands of years of Western civilization hung in the balance. At that time, victory was far from certain. But we were driven by a common purpose. We were unified not just by what we were fighting against; we were unified by what we were fighting for. And together, Europe and America prevailed and a continent was rebuilt. Our people prospered. In time, the East and West blocs were reunited. A civilization was once again made whole.

That infamous wall that had cleaved this nation into two came down, and with it an evil empire, and the East and West became one again. But the euphoria of this triumph led us to a dangerous delusion: that we had entered, quote, *“the end of history;”* that every nation would now be a liberal democracy; that the ties formed by trade and by commerce alone would now replace nationhood; that the rules-based global order – an overused term – would now replace the national interest; and that we would now live in a world without borders where everyone became a citizen of the world.

This was a foolish idea that ignored both human nature and it ignored the lessons of over 5,000 years of recorded human history. And it has cost us dearly. In this delusion, we embraced a dogmatic vision of free and unfettered trade, even as some nations protected their economies and subsidized their companies to systematically undercut ours – shuttering our plants, resulting in large parts of our societies being deindustrialised, shipping millions of working and middle-class jobs overseas, and handing control of our critical supply chains to both adversaries and rivals.

We should be proud of what we achieved together in the last century, but now we must confront and embrace the opportunities of a new one – because yesterday is over, the future is inevitable, and our destiny together awaits

We increasingly outsourced our sovereignty to international institutions while many nations invested in massive welfare states at the cost of maintaining the ability to defend themselves. This, even as other countries have invested in the most rapid military buildup in all of human history and have not hesitated to use hard power to pursue their own interests. To appease a climate cult, we have imposed energy policies on ourselves that are impoverishing our people, even as our competitors exploit oil and coal and natural gas and anything else – not just to power their economies, but to use as leverage against our own.

And in a pursuit of a world without borders, we opened our doors to an unprecedented wave of mass migration that threatens the cohesion of our societies, the continuity of our culture, and the future of our people. We made these mistakes together, and now, together, we owe it to our people to face those facts and to move forward, to rebuild.

Under President Trump, the United States of America will once again take on the task of renewal and restoration, driven by a vision of a future as proud, as sovereign, and as vital as our civilization's past. And while we are prepared, if necessary, to do this alone, it is our preference and it is our hope to do this together with you, our friends here in Europe.

For the United States and Europe, we belong together. America was founded 250 years ago, but the roots began here on this continent long before. The man who settled and built the nation of my birth arrived on our shores carrying the memories and the traditions and the Christian faith of their ancestors as a sacred inheritance, an unbreakable link between the old world and the new.

We are part of one civilization – Western civilization. We are bound to one another by the deepest bonds that nations could share, forged by centuries of shared history, Christian faith, culture, heritage, language, ancestry, and the sacrifices our forefathers made together for the common civilization to which we have fallen heir.

And so this is why we Americans may sometimes come off as a little direct and urgent in our counsel. This is why President Trump demands seriousness and reciprocity from our friends here in Europe. The reason why, my friends, is because we care deeply. We care deeply about your future and ours. And if at times we disagree, our disagreements come from our profound sense of concern about a Europe with which we are connected – not just economically, not just militarily.

We are connected spiritually and we are connected culturally. We want Europe to be strong. We believe that Europe must survive, because the two great wars of the last century serve for us as history's constant reminder that ultimately, our destiny is and will always be intertwined with yours, because we know because we know that the fate of Europe will never be irrelevant to our own.

National security, which this conference is largely about, is not merely series of technical questions – how much we spend on defence or where, how we deploy it, these are important questions. They are. But they are not the fundamental one. The fundamental question we must answer at the outset is what exactly are we defending, because armies do not fight for abstractions.

Armies fight for a people; armies fight for a nation. Armies fight for a way of life. And that is what we are defending: a great civilization that has every reason to be proud of its history, confident of its future, and aims to always be the master of its own economic and political destiny.

It was here in Europe where the ideas that planted the seeds of liberty that changed the world were born. It was here in Europe where the world – which gave the world the rule of law, the universities, and the scientific revolution.

It was this continent that produced the genius of Mozart and Beethoven, of Dante and Shakespeare, of Michelangelo and Da Vinci, of the Beatles and the Rolling Stones. And this is the place where the vaulted ceilings of the Sistine Chapel and the towering spires of the great cathedral in Cologne, they testify not just to the greatness of our past or to a faith in God that inspired these marvels.

They foreshadow the wonders that await us in our future. But only if we are unapologetic in our heritage and proud of this common inheritance can we together begin the work of envisioning and shaping our economic and our political future.

Deindustrialisation was not inevitable. It was a conscious policy choice, a decades-long economic undertaking that stripped our nations of their wealth, of their productive capacity, and of their independence. And the loss of our supply chain sovereignty was not a function of a prosperous and healthy system of global trade. It was foolish. It was a foolish but voluntary transformation of our economy that left us dependent on others for our needs and dangerously vulnerable to crisis.

Mass migration is not, was not, isn't some fringe concern of little consequence. It was and continues to be a crisis which is transforming and destabilizing societies all across the West. Together we can reindustrialise our economies and rebuild our capacity to defend our people.

But the work of this new alliance should not be focused just on military cooperation and reclaiming the industries of the past. It should also be focused on, together, advancing our mutual interests and new frontiers, unshackling our ingenuity, our creativity, and the dynamic spirit to build a new Western century.

Commercial space travel and cutting-edge artificial intelligence; industrial automation and flex manufacturing; creating a Western supply chain for critical minerals not vulnerable to extortion from other powers; and a unified effort to compete for market share in the economies of the Global South. Together we can not only take back control of our own industries and supply chains – we can prosper in the areas that will define the 21st century.

But we must also gain control of our national borders. Controlling who and how many people enter our countries, this is not an expression of xenophobia. It is not hate. It is a fundamental act of national sovereignty. And the failure to do so is not just an abdication of one of our most basic duties owed to our people. It is an urgent threat to the fabric of our societies and the survival of our civilization itself.

And finally, we can no longer place the so-called global order above the vital interests of our people and our nations. We do not need to abandon the system of international cooperation we authored, and we don't need to dismantle the global institutions of the old order that together we built. But these must be reformed. These must be rebuilt.

For example, the United Nations still has tremendous potential to be a tool for good in the world. But we cannot ignore that today, on the most pressing matters before us, it has no answers and has played virtually no role. It could not solve the war in Gaza. Instead, it was American leadership that freed captives from barbarians and brought about a fragile truce. It had not solved the war in Ukraine. It took American leadership and partnership with many of the countries here today just to bring the two sides to the table in search of a still-elusive peace.

It was powerless to constrain the nuclear program of radical Shia clerics in Tehran. That required 14 bombs dropped with precision from American B-2 bombers. And it was unable to address the threat to our security from a narco-terrorist dictator in Venezuela. Instead, it took American Special Forces to bring this fugitive to justice.

In a perfect world, all of these problems and more would be solved by diplomats and strongly worded resolutions. But we do not live in a perfect world, and we cannot continue to allow those who blatantly and openly threaten our citizens and endanger our global stability to shield themselves behind abstractions of international law which they themselves routinely violate.

This is the path that President Trump and the United States has embarked upon. It is the path we ask you here in Europe to join us on. It is a path we have walked together before and hope to walk together again. For five centuries, before the end of the Second World War, the West had been expanding – its missionaries, its pilgrims, its soldiers, its explorers pouring out from its shores to cross oceans, settle new continents, build vast empires extending out across the globe.

But in 1945, for the first time since the age of Columbus, it was contracting. Europe was in ruins. Half of it lived behind an Iron Curtain and the rest looked like it would soon follow. The great Western empires had entered into terminal decline, accelerated by godless communist revolutions and by anti-colonial uprisings that would transform the world and drape the red hammer and sickle across vast swaths of the map in the years to come.

Against that backdrop, then, as now, many came to believe that the West's age of dominance had come to an end and that our future was destined to be a faint and feeble echo of our past. But together, our predecessors recognized that decline was a choice, and it was a choice they refused to make. This is what we did together once before, and this is what President Trump and the United States want to do again now, together with you.

And this is why we do not want our allies to be weak, because that makes us weaker. We want allies who can defend themselves so that no adversary will ever be tempted to test our collective strength. This is why we do not want our

allies to be shackled by guilt and shame. We want allies who are proud of their culture and of their heritage, who understand that we are heirs to the same great and noble civilization, and who, together with us, are willing and able to defend it.

And this is why we do not want allies to rationalize the broken status quo rather than reckon with what is necessary to fix it, for we in America have no interest in being polite and orderly caretakers of the West's managed decline. We do not seek to separate, but to revitalize an old friendship and renew the greatest civilization in human history.

What we want is a reinvigorated alliance that recognizes that what has ailed our societies is not just a set of bad policies but a malaise of hopelessness and complacency. An alliance – the alliance that we want is one that is not paralyzed into inaction by fear – fear of climate change, fear of war, fear of technology. Instead, we want an alliance that boldly races into the future. And the only fear we have is the fear of the shame of not leaving our nations prouder, stronger, and wealthier for our children.

An alliance ready to defend our people, to safeguard our interests, and to preserve the freedom of action that allows us to shape our own destiny – not one that exists to operate a global welfare state and atone for the purported sins of past generations. An alliance that does not allow its power to be outsourced, constrained, or subordinated to systems beyond its control; one that does not depend on others for the critical necessities of its national life; and one that does not maintain the polite pretence that our way of life is just one among many and that asks for permission before it acts.

And above all, an alliance based on the recognition that we, the West, have inherited together – what we have inherited together is something that is unique and distinctive and irreplaceable, because this, after all, is the very foundation of the transatlantic bond.

Acting together in this way, we will not just help recover a sane foreign policy. It will restore to us a clearer sense of ourselves. It will restore a place in the world, and in so doing, it will rebuke and deter the forces of civilizational erasure that today menace both America and Europe alike.

So in a time of headlines heralding the end of the transatlantic era, let it be known and clear to all that this is neither our goal nor our wish – because for us Americans, our home may be in the Western Hemisphere, but we will always be a child of Europe.

Our story began with an Italian explorer whose adventure into the great unknown to discover a new world brought Christianity to the Americas – and became the legend that defined the imagination of our pioneer nation.

Our first colonies were built by English settlers, to whom we owe not just the language we speak but the whole of our political and legal system. Our frontiers were shaped by Scots-Irish – that proud, hearty clan from the hills of Ulster that gave us Davy Crockett and Mark Twain and Teddy Roosevelt and Neil Armstrong.

Our great midwestern heartland was built by German farmers and craftsmen who transformed empty plains into a global agricultural powerhouse – and by the way, dramatically upgraded the quality of American beer.

Our expansion into the interior followed the footsteps of French fur traders and explorers whose names, by the way, still adorn the street signs and towns' names all across the Mississippi Valley. Our horses, our ranches, our rodeos – the entire romance of the cowboy archetype that became synonymous with the American West – these were born in Spain. And our largest and most iconic city was named New Amsterdam before it was named New York.

And do you know that in the year that my country was founded, Lorenzo and Catalina Geroldi lived in Casale Monferrato in the Kingdom of Piedmont-Sardinia. And Jose and Manuela Reina lived in Sevilla, Spain. I don't know what, if anything, they knew about the 13 colonies which had gained their independence from the British empire, but here's what I am certain of: they could have never imagined that 250 years later, one of their direct descendants would be back here today on this continent as the chief diplomat of that infant nation. And yet here I am, reminded by my own story that both our histories and our fates will always be linked.

Together we rebuilt a shattered continent in the wake of two devastating world wars. When we found ourselves divided once again by the Iron Curtain, the free West linked arms with the courageous dissidents struggling against tyranny in the East to defeat Soviet communism. We have fought against each other, then reconciled, then fought, then reconciled again. And we have bled and died side by side on battlefields from Kapyong to Kandahar.

And I am here today to leave it clear that America is charting the path for a new century of prosperity, and that once again we want to do it together with you, our cherished allies and our oldest friends.

We want to do it together with you, with a Europe that is proud of its heritage and of its history; with a Europe that has the spirit of creation of liberty that sent ships out into uncharted seas and birthed our civilization; with a Europe that has the means to defend itself and the will to survive.

We should be proud of what we achieved together in the last century, but now we must confront and embrace the opportunities of a new one – because yesterday is over, the future is inevitable, and our destiny together awaits. ■

Marco Rubio is the United States Secretary of State

This article is based on [remarks](#) delivered at the Munich Security Conference, Hotel Bayerischer Hof, Munich, Germany, February 14, 2026.

Defining the new strategic direction

The EU needs a new trade policy strategy. Ignacio García Bercero writes that a turbulent January exposed EU trade strengths and fissures, demanding rapid anti-coercion action and smarter leverage of trade deals

There are weeks in which decades happen. European Union trade policy has been through just such a week. Some developments have been positive for the EU, such as the [robust reaction](#) to coercive threats from the United States over potential tariffs related to President Donald Trump's desire to acquire Greenland, and the 27 January conclusion of a free trade agreement (FTA) between the [EU and India](#), which eliminates or substantially reduces tariffs on more than 97% of trade.

But other developments have raised questions about the EU's commitment to an open trade policy. The European Parliament decided on 21 January to refer the EU's FTA with the Mercosur bloc to the EU Court of Justice for an opinion on whether the deal [breaches](#) the EU treaties. The EU has also suggested linking non-discriminatory most-favoured nation (MFN) treatment [to reciprocity](#). This appears to question the basic principle on which the international trade system is constructed.

How should these developments be understood? A Gramscian interregnum may be underway and the old order based on US hegemony is not coming back. A new strategy for EU trade policy is thus needed based on a realistic assessment of the likely global trading environment in the next decade.

In trade and economic terms, the EU is the equal of the US and China and can shape the global trading system. But its capacity to exercise influence hinges on its readiness to invest in alliances with the like-minded and with the major emerging economies with which it has now concluded trade agreements.

Based on the late-January flurry of trade-related developments, three points should be kept in mind in re-evaluating the EU strategy. First, for at least the next three years but likely for longer, the US and China will manage their trade relations outside a rules-based framework and may seek to coerce others.

In its trade relations with the two big powers, the EU must combine pragmatism with firmness against threats. The crisis over Greenland has shown the paramount importance of rapidity of response, the need for the EU to be willing to deploy its Anti-Coercion Instrument (Regulation 2023/2675, ACI) – which gives the European Commission more power to respond to trade threats – and the need for a plan on deterring escalation by the coercer.

The EU must develop a political narrative that explains why trade openness is essential to advance Europe's economic interests and values in a more fragmented world

Second, the EU's network of trade and investment agreements is critical to strengthen economic resilience and is the best geopolitical instrument in support of alliances to respond to global challenges. The EU will soon complete its network of comprehensive FTAs; it needs to identify how to leverage these agreements as building blocks for plurilateral or bilateral agreements.

Possible initiatives include: reinforcing the economic value for business of EU FTAs through a common protocol on rules of origin; enhancing supply-chain resilience and cooperation on economic security; facilitating investment in developing countries through new types of investment agreement to diversify overconcentrated supply chains; negotiating agreements on decarbonisation and elimination of overcapacity in steel and other sectors with hard-to-abate emissions; and promoting cooperation on regulation of the digital economy through digital agreements.

The ongoing dialogue between the EU and the [Comprehensive and Progressive Agreement for Trans-Pacific Partnership](#) could incubate some of these initiatives, although different groupings of countries should be considered, depending on the topic.

Third, the World Trade Organization still provides the common rules on which to build new alliances and agreements. The EU should not compromise its WTO or FTA commitments. The MFN rule is fundamental; it contributes to the simplicity and efficiency of tariff regimes and protects against power asymmetries.

However, the current rules do not provide sufficient remedies to respond to subsidies that contribute to overcapacity, or to promote diversification of overconcentrated supply chains. More targeted remedies are needed. The WTO needs to accommodate, and coexist with, different types of plurilateral agreement.

WTO reform needs to combine short-term objectives with a medium-term strategy that builds a broad coalition in support of fundamental reform. Further reflection is needed on how to achieve fundamental reforms while retaining the core principles underlying the trading system.

To further its trade interests, the EU must develop a political narrative that explains why trade openness is essential to advance Europe's economic interests and values in a more fragmented world. To start, it should identify why the economically and geopolitically valuable EU-Mercosur agreement should generate such divisions between EU countries and in the European Parliament. Applying the Mercosur agreement provisionally without the parliament's support would be counterproductive and would undermine the legitimacy of FTAs.

Instead, the European Commission, Council of the EU and European Parliament should seek a fast-tracking of the Court of Justice's opinion. This would allow more time for political discussion, with the objective of the FTAs with Mercosur, India and Indonesia entering into force early in 2027. ■

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This article is based on a [Bruegel First Glance](#).

The state of competition

Market power has increased across developed economies. Jan De Loecker and Pinelopi Koujianou Goldberg argue that policymakers must recognise the trade-offs in promoting scale, innovation, and competition, and acknowledge concerns that lie outside traditional antitrust mandates

Concerns about rising market power and declining business dynamism have become a central theme across advanced economies. Corporate profit margins, industry concentration, and equity valuations have all climbed, while firm entry, exit, and labour mobility have slowed. Labour's share of income has fallen and the gap between median and average earnings has widened. Although these patterns were first documented in the US, similar trends have since appeared across Europe and other high-income economies (Autor *et al* 2020, De Loecker and Eeckhout 2020, 2025).

The debate over the origins and implications of these trends has been shaped as much by ideology as by evidence. One camp insists competition is functioning well and that fears of market power are overstated. The other blames lax antitrust enforcement for an economy increasingly dominated by powerful incumbents. Neither narrative captures the full picture. Measurement challenges in concentration ratios and mark-ups are real, but the broad empirical patterns are too stark to ignore. The more important question is how to interpret them.

A perfect storm: globalisation meets technological change

The past three decades of hyper-globalisation dramatically reshaped both product and input markets. Falling trade and logistics costs fostered global value chains in which firms could source, produce, and distribute on a worldwide scale. At the same time, technological advances — from automation to large-scale IT systems — shifted production towards high fixed costs and low variable costs.

Either force alone would have created substantial scale economies. Together, they produced a structural shift towards business models in which firms had to spread large, fixed costs across large markets in order to remain competitive. This naturally generated higher variable profit margins. But only firms capable of scaling — those with productivity advantages or specialised intangible assets — could fully exploit these gains.

Reallocation of market share toward more efficient firms fits the classic Schumpeterian account of creative destruction. But this process was also shaped by strategic investments in branding, marketing, and other intangible activities whose welfare implications are more ambiguous than those of technological innovation or free trade.

As vested interests increasingly shape the debate, the value of a clearer understanding of how globalisation, technology, regulation and financial markets jointly shape competitive outcomes is essential. Only then can policy respond effectively to the economic and political pressures created by concentrated economic power

Consolidation in many industries further reinforced the advantages of incumbency, sometimes justified as a response to perceived market power elsewhere in supply chains. Whatever the rationale, the result was a market structure in which dominance limited the extent to which falling costs were passed through to consumers.

The missing entrants

In a textbook setting, high margins should attract new competitors. Instead, business dynamism has waned. The same forces that created scale economies also raised barriers to entry: large upfront investment requirements, the central role of data and software, and network effects that reward early movers.

Market power, inflation, and inequality

The traditional role of antitrust policy has been to protect consumers from abuse of market power that leads to high prices. A central challenge today is that it is often difficult to argue that the new business models of recent decades have harmed consumers. Until 2021, inflation remained low, and the combination of global trade and technological advances consistently pushed prices down.

The key to understanding this pattern is that profit margins reflect the difference between prices and variable costs. Profit margins rose not because firms raised prices, but because variable costs fell — and those cost reductions were only partially passed through to consumers. Two examples illustrate this mechanism.

In our work on India's early-1990s trade liberalisation (De Loecker *et al* 2016), we show that tariff cuts on intermediate inputs lowered producers' costs, reduced consumer prices, and simultaneously increased firms' profit margins. Because cost savings were not fully passed through, firms captured part of the gains. We also found suggestive evidence that these higher profits helped finance product innovation.

This appears to be a win-win story: consumers benefit from lower prices, firms benefit from higher profits, and innovation accelerates. The problem arises only when one worries about relative standing — specifically, the shifting balance of power between global firms and the rest of the economy, which can have political repercussions.

A second example comes from Zara, one of the world's most profitable clothing retailers. Zara offers affordable apparel while enjoying high margins because its variable costs are extremely low, relying on several suppliers — especially labour — in low-wage countries. Again, consumers benefit from low prices, the firm benefits from high profits, and suppliers in poorer economies gain access to global markets that can help spur development.

The concern, however, echoes the first example: rising inequality between highly productive global firms and the rest of the economy, and between top earners and displaced workers in advanced countries.

Competition, concentration, and innovation

A frequent claim, particularly in Europe, is that high US concentration, supported by weak antitrust enforcement, has undermined American innovation. Yet this view sits uneasily with the evidence. The US remains far more dynamic than Europe – for instance, it is the birthplace of the current wave of artificial intelligence technologies.

Notably, the key breakthrough came not from an incumbent giant but from OpenAI — then a small, non-profit entrant — building on ideas developed, but not commercialised, inside Google. The fact that an upstart could scale rapidly in the US ecosystem suggests that high concentration and intense rivalry can coexist.

Today a handful of large players dominate AI, but competition among them is fierce. Meta's willingness to recruit aggressively from OpenAI highlights how rivalry within concentrated sectors can remain vigorous. Against this

backdrop, explanations for Europe's technological underperformance must extend beyond the simple question of antitrust stringency.

Beyond big tech: the rising concentration elsewhere

Public debate focuses heavily on large technology platforms, but consolidation extends far beyond Silicon Valley. Business-to-business markets, pharmaceuticals, healthcare services, and education have all experienced marked increases in concentration. These sectors attract less attention yet hold considerable economic weight and warrant greater scrutiny.

The role of financial markets

An underappreciated factor in transatlantic comparisons is the structure of US capital markets. American equity markets have assigned exceptionally high valuations to domestic firms, giving them both the currency and the confidence to acquire European start-ups before they mature into independent competitors. DeepMind, Skype, and Shazam are classic examples: each began as a European success story but was ultimately absorbed by a US tech giant rather than evolving into a homegrown global champion.

The 'Buffett indicator', which compares total stock market capitalisation to economic output, has climbed from around 50% in 1980 to roughly 200% today. These valuations reflect market depth, investor appetite and regulatory differences — not weak competition policy — but they shape competitive outcomes all the same.

The role of antitrust

Competition authorities are often cast as the villains of the story. But while enforcement mistakes are inevitable, it is difficult to argue that antitrust alone explains today's market structures. Agencies in the US and Europe have operated under significant resource constraints, often facing firms with far greater financial and legal capacity.

More importantly, many features of modern production — economies of scale, network effects, and data advantages — create concentrated market structures even in the presence of active enforcement.

Market power also emerges from the interaction of many well-intentioned policies. Trade liberalisation without strong domestic competition can leave economies with fewer, larger firms. Regulatory interventions can inadvertently raise entry barriers. Financial market structures can amplify incumbency advantages. In such a world, simple narratives — whether blaming globalisation, technology, or antitrust — fail to capture the underlying complexity.

These challenges do not diminish the need for antitrust. If anything, its importance is increasing. With many industries now dominated by a small number of firms, vigilant oversight of mergers, acquisitions, and exclusionary conduct is essential.

The rise of digital technologies and algorithmic systems raises the minimum efficient scale for entry even further. Regulatory frameworks—from licensing requirements to compliance burdens—can unintentionally entrench incumbents and should be scrutinised with this risk in mind.

The way forward

Economic policy now stands at a critical juncture. Policymakers must recognise the trade-offs inherent in promoting scale, innovation, and competition simultaneously. They must also acknowledge that many concerns attributed to competition policy—from labour market pressures to rising inequality — lie outside traditional antitrust mandates and are best addressed through different tools.

As vested interests increasingly shape the debate, the value of a clearer understanding of how globalisation, technology, regulation and financial markets jointly shape competitive outcomes is essential. Only then can policy respond effectively to the economic and political pressures created by concentrated economic power. ■

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References

Autor, D, D Dorn, L Katz, C Patterson and J Van Reenen (2020), *"The Fall of the Labor Share and the Rise of Superstar Firms"*, *The Quarterly Journal of Economics* 135(2).

De Loecker, J and J Eeckhout (2020), *"The Rise of Market Power and the Macroeconomic Implications"*, *The Quarterly Journal of Economics* 135(2).

De Loecker, J and J Eeckhout (2025), *"The Macroeconomics of Market Power"*, *Annual Review of Economics*, forthcoming.

De Loecker, J, P Goldberg, A Khandelwal and N Pavcnik (2016), *"Prices, Markups and Trade Reform"*, *Econometrica* 84(2): 445-510.

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AI risks for employers and employees

AI-powered transcription tools are increasingly used in the workplace. Aida Ponce Del Castillo argues in an analysis from data protection law and the AI Act that their deployment raises risks both for employees and employers

A I-powered transcription tools are increasingly used in the workplace. These products can join video conferences on various platforms like Zoom, Microsoft Teams, or Google Meet, record and transcribe conversations in real time, and synchronise with calendars and other applications. They are marketed as productivity enhancers; however, their deployment raises significant data protection and AI governance risks both for employees and employers.

This article takes Otter.ai as case study, drawing on EU data protection law and the AI Act. It also refers to the [US class action lawsuit against Otter.ai](#) to illustrate that these risks are not theoretical, already generating litigation that can affect many organisations.

How Otter.ai works

According to [Otter.ai's documentation](#), the service can join online meetings as a participant and provide live transcription. It automatically synchronises with Microsoft Outlook or Google calendars and can start recording without the user's action. Crucially, Otter.ai places responsibility on the account holder to obtain permission from other participants.

This means that one individual may trigger the recording or transcription of a meeting without the knowledge or consent of others. Importantly, all data recorded is [transferred, stored and processed](#) to servers in the United States.

Legal issues under the GDPR

Several provisions of the General Data Protection Regulation (GDPR) are directly engaged:

- **Legal basis:** Otter.ai operating model relies on one participant securing permission for all others. Under Articles 6 and 7 GDPR, this is not valid consent. Consent must be informed, specific, and freely given, which

cannot be achieved by delegation to a single meeting participant. Guidelines further stress that in the employment context, imbalance of power makes employee consent invalid.

- **Processing special categories of data:** meetings often involve trade union matters, HR issues, or health information. Processing such data is prohibited under Article 9 GDPR unless a narrow exemption applies.
- **Transparency:** Articles 13 and 14 GDPR require data subjects to be informed. A 'silent' transcription bot makes this impossible in practice.

This article takes Otter.ai as case study, drawing on EU data protection law and the AI Act. It also refers to the US class action lawsuit against Otter.ai to illustrate that these risks are not theoretical, already generating litigation that can affect many organisations

- **International transfers:** all data is transmitted to the US. Following Schrems II (C-311/18), such transfers are permissible only under the [EU–US Data Privacy Framework](#) or with supplementary safeguards. Given the sensitivity of workplace discussions, reliance on standard contractual clauses alone may not be sufficient.
- **Security:** automatic synchronisation with calendars and meeting software gives Otter.ai broad access to organisational systems, which the IT department might not be aware that such systems have been installed by individual users. Article 32 GDPR requires appropriate technical and organisational measures, which cannot be demonstrated where third-party AI tools access internal infrastructure without control.
- **Breach notification:** if meetings were recorded or transcribed without participants' knowledge, this may constitute a personal data breach under Articles 33 and 34 GDPR, triggering obligations to notify the supervisory authority and, in some cases, the data subjects.

Litigation risk: the Brewer v. Otter.ai case in California

Litigation risks are not confined to Europe. In August 2025, a class action complaint was filed in the US District Court for the Northern District of California ([Brewer v. Otter.ai, Inc., Case No. 5:25-cv-06911](#)). The plaintiff alleges that Otter.ai records and transcribes conversations of non-users without their knowledge or consent and uses this data to train its machine learning models.

The complaint states: *“Otter does not obtain prior consent, express or otherwise, of persons who attend meetings where the Otter Notetaker is enabled, prior to Otter recording, accessing, reading, and learning the contents of conversations.”* Brewer further alleges that as a non-Otter user, he had no reason to suspect that his conversational data would be retained and processed by the company.

Computerworld framed the lawsuit as part of a 'wider reckoning' for enterprise AI note-taking apps. The [legal claims include violations](#) of the Electronic Communications Privacy Act, the California Invasion of Privacy Act, and the Computer Fraud and Abuse Act, as well as common law privacy torts. Although these statutes differ from the GDPR, the factual allegations mirror the same concerns: lack of valid legal basis, improper reliance on third-party consent and opaque use of data for AI training.

For EU workplaces, this case illustrates the litigation exposure that arises when consumer-grade AI tools are deployed without robust governance. Under Article 82 GDPR, any data subject who suffers material or non-material damage has the right to compensation. Silent transcription of workplace meetings could easily generate such claims.

Implications under the EU AI Act

The AI Act under Annex III, classifies AI systems used for worker management and monitoring as high-risk (Article 6, Annex III). Otter.ai advertises 'sentiment analytics' and other productivity features. In a workplace setting, this would presumably fall into the high-risk category.

Under Articles 9–15 AI Act, such systems will be subject to strict risk management, transparency, and human oversight obligations. Organisations that deploy them will carry compliance responsibilities even when the provider is established outside the EU.

Organisational risks

Beyond the legal analysis, several practical risks are apparent:

- **Surveillance:** automatic transcription creates a record of every utterance. For employees, this is indistinguishable from constant monitoring. Research on [workplace surveillance](#) has already shown the (European Parliament Think Tank 2020).
- **Accuracy and bias:** [errors in AI transcription](#) can distort meaning, particularly for non-native speakers or those with speech impairments. Sponholz *et al* (2025) and Eftekhari *et al* (2024) demonstrate how mis-transcription introduces bias in research, which is equally damaging in workplace decision-making.
- **Security and misuse:** transcripts and recordings are stored in multiple locations, sometimes accessible to third parties. Once produced, such records may be repurposed or misused, including in litigation.
- **Accountability:** managing, editing, and validating transcripts requires additional resources. It also raises questions about responsibility for the accuracy of the record and the consequences of errors.

Recommendations

For EU organisations, the following governance approach is advisable:

- **Rely** on built-in enterprise tools only where a Data Protection Impact Assessment (DPIA) supports their use.
- **Adopt** an internal policy on the type of recording and transcription services, when they are necessary. Recording should be only with prior notice and explicit consent from all participants. Extend the policy to external meetings and seminars: participants must be informed and enable the right to opt out.

- **Block** consumer-grade transcription tools such as Otter.ai from connecting to internal systems.
- **Restrict** access, limited retention, and secure effective deletion.
- **Clear** prohibition on external transcription services without DPO and IT approval.
- **Consult** worker representatives and trade unions before introducing such technology, consistent with data protection by design under Article 25 GDPR and the AI Act's emphasis on human oversight and worker information.

Conclusion

Otter.ai demonstrates how easily consumer-grade AI tools can enter workplaces. Its features promise efficiency, but in practice they present legal non-compliance under the GDPR, high-risk classification under the AI Act, and significant organisational risks. The Brewer v. Otter.ai litigation shows that these risks are not speculative but already materialising in court.

As the European Data Protection Supervisor noted in its *Orientations for Generative AI (2024)*, public and private entities must “*place compliance and fundamental rights at the centre of digital innovation.*” Transcription and notetaking tools are no exception. ■

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What will AI mean for the labour market?



AI looks increasingly likely to become what technologists call a general-purpose technology. Michael Barr discusses the rapid evolution of AI and the potential impact of generative AI on the labour market and the economy

Artificial intelligence (AI)—and by this, I mean in particular the recent explosive growth of generative AI—looks increasingly likely to become what technologists call a general-purpose technology. General-purpose technologies such as the steam engine, electricity, and personal computers are characterized by widespread adoption, continual improvement, and a cascade of downstream innovations in new goods or services, production processes, and business structures¹.

In addition to the likelihood that AI becomes a general-purpose technology, it may also become an ‘invention in the method of invention’, something that increases the efficiency of research and development (R&D) and thus drives further innovation and the attendant benefits. Personal computers qualify here because their widespread adoption, continuous improvement, and many applications over the past 50 years or so exponentially expanded our ability to invent things.

And in the same way that computers were used to fundamentally improve the process of discovery in, for example, medicine, engineering, and physical sciences, generative AI and earlier forms of AI such as machine learning applications are already being used in R&D and yielding discoveries in domains such as drug discovery and materials science².

Periods of rapid technological change are often accompanied by anxiety about the economic and social consequences of automation. Although new technologies often create winners and losers in the short run, history shows that in the longer run innovation leads to broadly shared increases in productivity and living standards that tend to support economic growth and a healthy labour market. As with other general-purpose technologies, the long-run effects of AI are likely to be profoundly positive.

But in the short term, AI may deeply disrupt labour markets and harm some workers. The ultimate impact on workers will depend not only on the extent of the disruption and the length of time it takes for the long-term benefits to appear, but importantly on how we, as a society, navigate this transition.

In the past, the type of work that was most amenable to automation, whether by machines or computer software, were routine tasks that followed explicit, codifiable rules—rules that were written by people. AI models, on the other hand, learn by example: an AI model doesn't need to be told exactly how to accomplish a certain task, only provided with the right training data to infer patterns. Consequently, AI can learn how to complete complex, nonroutine tasks that require knowledge that is difficult or impossible for humans to codify³.

I expect that AI will have a transformative effect on the economy and affect a large share of workers in ways that will challenge the ability of the private and public sectors to accommodate this adjustment

Unlike a robot that follows necessarily human instructions to, say, bolt on a car fender over and over, this ability to implement complex tasks could vastly expand the set of tasks that AI is potentially capable of performing. That is especially true if one considers the integration of AI with other technologies such as robots, or cars. Moreover, agentic AI can accomplish more general goals with limited human supervision, mimicking human decision-making, reasoning, and implementation. Many economically valuable tasks can (or may soon) be feasible using AI⁴.

Developments in AI adoption

The capabilities of GenAI models have improved rapidly. In just a few years, we have seen AI models meet or surpass human performance on increasingly challenging benchmarks, including competition-level mathematics and PhD-level science questions⁵. Real-world applications abound. AI is already changing the speed of pharmaceutical drug discoveries, the efficiency of customer service, and the pace of computer coding, especially by the biggest tech firms themselves⁶.

The speed of AI adoption may be much faster than previous general-purpose technologies, boosting productivity growth, but also allowing less time for workers, businesses, and the economy to adapt to these changes.

As of December 2025, 17 percent of businesses in the US Census *Business Trends and Outlook Survey* (BTOS) report using AI in their business functions. While that may seem modest on the surface, the share is much higher among large firms and in tech-intensive sectors like information, finance and insurance, and professional and technical services.

In the BTOS, about 30 percent of businesses with more than 250 employees report using AI. A recent survey of mostly large firms by McKinsey found that 88 percent report that AI has been used in at least one business function⁷. The share using generative AI specifically rose from 33 percent in 2023 to 79 percent in 2025.

Adoption of generative AI among both individuals and businesses has been very fast by historical standards. A 2024 St Louis Fed paper estimates that generative AI adoption in the workplace following the release of ChatGPT in late 2022 was as fast as workplace computer adoption after the release of the IBM PC in 1984⁸. Actual use of generative AI in the workplace may be even higher than reported by businesses since there is some evidence of workers using AI tools without their manager's knowledge⁹.

That said, the depth of AI adoption at this point remains unclear. McKinsey found that most businesses using AI remain in the experimentation or piloting phases of adoption. Some firms that have experimented with AI abandoned these trials¹⁰. Like previous technology breakthroughs, effective use of AI will likely require fundamental changes in business practices and organization. Workers have to be retrained. Managers have to develop best practices. And obtaining the full range of productivity enhancements from new technology may require costly experimentation and further innovation.

The productivity gains from electrification in the early 20th century reflected not only how factories were powered but also changes in how they were designed¹¹. This process took decades to play out. Within firms, there is evidence from the manufacturing sector that productivity follows a J-shape after technology adoption: adjustment costs lead to short-run losses before firms that ride it out are able to realize larger, longer-run gains¹².

Within the Federal Reserve System, we have also been exploring the use of AI in our own operations and have established an AI program and governance framework for the use of AI technologies. One internal application of GenAI that shows considerable promise is technology modernization. Within clear guardrails, we are using GenAI tools to translate legacy code, generate unit tests, and accelerate cloud migration. So far, the result of this usage is faster delivery, improved quality, and an enhanced developer experience.

In one recent project updating hundreds of databases, AI tools helped cut the time to complete this type of work by 50 percent, detected and resolved 30 percent more issues during testing compared to previous migrations, and enhanced team focus on higher-value coding work. My sense is that these are the kinds of uses and the scale of success that many businesses are experiencing.

Implications for the labour market

Predictions about how generative AI will evolve, and in particular how it will affect the labour market, range from the utopian to the apocalyptic¹³. In previous speeches, I have outlined a couple of scenarios as a way to think through the potential effects of AI on the economy, including the labour market¹⁴.

But as is the case for AI's technological advances, the debate about the possible effects of AI evolves quickly, so I will briefly revisit these scenarios and then discuss how new research is starting to bring the initial and potential labour market effects of AI into focus.

Scenario of gradual adoption

Under a first scenario, AI proceeds like other general-purpose technologies, perhaps diffusing a bit faster. This leads to strong productivity growth, comparable to what we saw in the late 1990s and early 2000s, or maybe even stronger than that. As was the case during earlier technological advances, some occupations are displaced while new ones emerge, as AI is increasingly integrated into many existing roles.

But AI adoption occurs gradually enough that large and widespread joblessness is avoided. Unemployment might rise somewhat in the short term due to skill mismatch, but education and training choices adjust over time, and many workers successfully retrain and retain their jobs or find new ones. With strong productivity growth, the economy can sustain faster output growth and real wages rise.

Scenario of rapid growth in AI capabilities and adoption

Under a second scenario, AI capabilities grow exponentially and adoption is extremely rapid, ushering in a 'jobless boom'. AI agents replace or displace a range of professional and service occupations. Autonomous vehicles and robotics automate many manufacturing and transportation jobs, with labour increasingly concentrated in a few manual or highly skilled trades, or in roles where consumers put a premium on human interaction.

AI-centric start-ups with radically new business models displace firms that are unable to adapt, and layoffs soar, leading to widespread unemployment in the short run and declines in labour force participation over time, as a large share of the population is essentially unemployable. It is understandable why many people would fear such a future, and it would present profound social and distributional challenges.

With a vastly more productive economy, but much less demand for labour, society would have to rethink the social safety net to ensure that the gains from unprecedented economic growth are shared rather than concentrated among a small group of capital holders and AI superstars. And there would need to be profound changes in education, training, and workforce development.

We should be clear-eyed about how painful these changes could be for affected workers and how challenging it would be for the government and the private sector to successfully manage the fallout.

One thing that these two scenarios have in common is that AI's initial promise is borne out, and it transforms the economy—either gradually and in a more manageable way, or abruptly and to a much greater extent.

Scenario of stalled growth in AI capabilities and adoption

A third option is that improvements in AI capabilities stall, perhaps owing to the exhaustion of training data, a

shortage of electricity supply or distribution to satisfy the huge demands of data centres, or shortages of the capital required to build all this new infrastructure¹⁵.

One estimate is that AI investment will require the issuance of \$1 trillion in new debt over the next five years, and other estimates are even higher. With questions about whether demand will grow sufficiently to utilize this investment, some have drawn comparisons to the overinvestment in the dotcom era¹⁶. Timing mismatches in the investment and business integration process could lead to reduced realization of the potential of AI¹⁷.

The hard work of business process transformation takes time, which partly accounts for the J curve dynamics I mentioned earlier. Businesses that do not see immediate productivity improvements may lose interest. In a scenario of stalled growth in AI capabilities and adoption, some productivity improvements occur in easy-to-learn tasks, but AI proves incapable of completing hard-to-learn tasks or complex projects, or an AI bust occurs, abruptly ending needed investment. As a result, any boost that AI provides to aggregate productivity growth is modest and fades over time.

It is possible that in this scenario, AI still ends up widely adopted. As is the case for social media or smartphones, AI applications may still generate significant value for consumers and many businesses. In the workplace, it might look much like email or search engines do now—tools that are ubiquitous, even indispensable, but not necessarily revolutionary by themselves.

In a scenario where AI disappoints, the balance of risks shifts from the labour market to the financial sector. When anticipated demand falls short, the risk of financial stress increases, as happened following the expansion of the US railroad network in the late 19th century¹⁸. More recently, we saw these dynamics play out in a more limited way

with the overbuilding of fibre optic telecommunications in the early 2000s, which contributed to stress in bond markets¹⁹.

Of course, these are stylized scenarios, and facts on the ground may play out differently. Or different scenarios might come to pass in different sectors of the economy in different ways and at different speeds. But a scenario-based approach helps ground our thinking about these potential outcomes.

What have we learned about the effects of AI so far?

In judging the prospects for the range of outcomes reflected in these scenarios, or other plausible scenarios, we can start with what we have learned about the effects of AI so far. Of course, ChatGPT was released only a bit over three years ago, and we are still in the very early stages of generative AI diffusion. So far, however, research seems to be more consistent with scenario 1: AI as a normal early-stage general-purpose technology, though that doesn't necessarily rule out more extreme scenarios going forward.

Productivity

Let me focus on several aspects of the early economic effects of AI, starting with productivity. We have been in a period of elevated productivity growth for the past five years. This period of higher productivity growth began with the pandemic and the ensuing tight labour market, which led to investment in labour-saving technologies.

Moreover, new business formation surged and has remained strong. New businesses that survive tend to be more productive than incumbents, and competition from new businesses spurs innovation among incumbents as well. While it is possible that AI has contributed to this strength more recently, GenAI has had relatively modest penetration thus far.

Yet AI is very likely to have a profound positive impact on productivity growth in the long term. At the microlevel, there is increasing evidence that access to AI assistants improves worker efficiency, speed, and accuracy at various tasks²⁰.

Aggregating the aforementioned task-level evidence, one recent study estimated that AI could contribute between 0.3 and 0.9 of a percentage point to annual total factor productivity growth over the next decade²¹. The upper end of these estimates would make the productivity gains of AI comparable to those of internet communications technologies in the late 1990s, a period of strong productivity growth. Other studies point to much smaller or larger gains, underscoring how dependent these projections are on assumptions about the speed of technological progress and adoption of AI by businesses²².

But the forms these innovations will take and how long the benefits will take to accrue is hard to say. In 1987, for example, the economist Robert Solow famously quipped, “*You can see the computer age everywhere but in the productivity statistics.*” As it turned out, firms had to learn how to integrate this technology into their business practices in order to fully realize the economic potential of personal computing.

Of course, AI may also contribute to productivity growth not just by improving the efficiency of existing tasks, but also by increasing the efficiency of R&D. The potential of AI to boost the rate of innovation—to be an invention in the method of invention—is where we could see even greater economic benefits, though they may take some time to materialize²³.

Employment

So far, the literature suggests that while AI has yet to have a substantial effect on *aggregate* employment or unemployment, it may be starting to adversely affect some groups, in particular young people who are just starting

their careers in some sectors. On balance, this evidence so far is consistent with what we might expect under the gradual adoption scenario I previously described.

One study uses data from the payroll provider ADP and finds that early-career workers in occupations highly exposed to AI—such as software developers and customer service representatives—have experienced a decline in employment relative to other early-career workers in less exposed fields and experienced workers in the same line of work²⁴. Some other research reaches a similar conclusion using resume and job-posting data²⁵.

The long-run consequences of AI for recent cohorts of young workers is uncertain, but research shows that entering a weak labour market can have persistently adverse effects on workers' earnings. So, for these workers, the short run may have long-term consequences²⁶.

More broadly, rather than laying off workers, there is evidence that AI adoption is so far leading to re-allocation within firms. One paper finds that although AI does substitute for labour at the task level, overall employment effects are small, as workers shift their time to complementary tasks and firms expand employment elsewhere²⁷.

Consistent with this internal re-allocation, a recent survey by the New York Fed found that while some firms using AI did report reduced hiring plans and limited layoffs, a much larger share plan to retrain their existing workforce²⁸.

At the same time, we should be prepared for the possibility that there might be serious short-term disruptions in the labour market, even if the long-term gains to society could be quite favourable. The extent of disruption will depend in part on whether society undertakes the investments needed in new job creation, worker training, connecting workers to new jobs, and other efforts to mitigate adverse labour market effects. The historical record

on meaningful efforts to help workers in such a transition is not encouraging²⁹. In my judgement, now is the time for society to begin to consider how to address these potential disruptions, while AI adoption is in its early stages.

Income and inequality

As with employment, there is little evidence that AI has had a meaningful impact on wage growth or the distribution of income gains, at least so far. Going forward, the effect of AI on wages and the distribution of income will depend on factors including whether AI complements or substitutes expertise within jobs that continue to exist, how AI changes relative demand for high-wage occupations, and who owns AI capital.

On the one hand, research evaluating the effect of AI assistants in the workplace tends to find the largest productivity gains among the least-experienced workers³⁰. This suggests that AI could narrow gaps in productivity and wages. If AI facilitates worker learning, as some studies suggest, it might also help displaced workers to re-skill for new jobs, reducing the cost of job dislocation.

On the other hand, recent research finds that GenAI is more commonly used by younger, highly educated, and high-income individuals³¹. If high earners are better positioned to take advantage of AI, we could see wage inequality rise as the most productive workers pull even further ahead of their peers.

AI can also affect the wage structure by shifting demand for different occupations. Whereas technological progress has historically favoured occupations with higher wages and education requirements, one paper shows that AI has the potential to reverse this pattern, automating higher-paying information-based jobs while increasing relative demand for lower-paying jobs and those requiring less education, thus reducing aggregate wage inequality³².

As with our discussion of labour market disruptions, the effects of AI on inequality will depend in part on whether society undertakes the investments needed to mitigate adverse labour market effects. It is incumbent on us to begin thinking about these important questions now.

Implications of AI for monetary policy

I am also thinking about the implications of AI for monetary policy. If AI causes a large and long-lasting dislocation of workers, permanently reducing demand for many kinds of jobs, it could imply higher rates of unemployment, even when the economy is healthy and operating close to its potential.

Monetary policy is able to address cyclical conditions, like a downturn in the business cycle, but it cannot address the structural factors that determine the long-run rates of employment. While monetary policy is not suited to dealing with structural changes in the economy, it could be difficult for policymakers to assess in real time whether changes are structural or cyclical.

Moreover, some components of the labour market may face structural changes, while others may not. As I noted earlier, it will be important for society to deal with the consequences of any structural changes in the economy because of AI, and policies beyond the purview of the central bank would certainly be needed to address a structural rise in the natural rate of unemployment.

As a central banker, I see endeavouring to understand how AI is evolving and affecting labour markets as a crucial component of our work in the years ahead. I have noted that my base case foresees labour market disruptions as relatively short term, even if painful. Over the long term, the labour market would adjust in ways that create new jobs and augment the productivity of existing jobs, boosting real wages. But closely monitoring these developments and adapting, as needed, will be crucial.

In the event that GenAI results in a long-lasting boost to productivity growth, wages and economic activity could grow more than would otherwise be the case without putting upward pressure on inflation. At the same time, demand for capital would rise because of the strong business investment required to take advantage of the technology, putting upward pressures on interest rates, and household savings could fall due to expectations of stronger real wage growth and thus higher lifetime earnings, also putting upward pressure on interest rates.

All of this would imply a higher setting for the policy rate when the economy is at equilibrium, or what monetary economists call r^* . Indeed, last year I raised my long-term estimate of r^* modestly because of higher productivity.

Moreover, in the short term, investment in AI could be inflationary—for example, if electricity supply constraints from inefficiencies in the power grid collide with strong energy demand from the building of data centres. For all of these reasons, I expect that the AI boom is unlikely to be a reason for lowering policy rates.

Conclusion

I expect that AI will have a transformative effect on the economy and affect a large share of workers in ways that will challenge the ability of the private and public sectors to accommodate this adjustment. In the longer run, I expect AI will boost productivity and living standards, and it may even lead to new discoveries.

Society will need to be nimble and bold to reduce the pain of short-term dislocations for workers and to ensure that the benefits are broadly shared. Widespread AI adoption will very likely lead to dramatic and sometimes difficult changes in the way many of us work and live, but the long-term benefits could be even more dramatic. ■

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Endnotes

1. See Timothy F Bresnahan and M Trajtenberg (1995), "General Purpose Technologies 'Engines of Growth'?" *Journal of Econometrics*, vol. 65 (January), pp. 83–108.
2. See Martin Neil Baily, David M Byrne, Aidan T Kane, and Paul E Soto (2025), "[Generative AI at the Crossroads: Light Bulb, Dynamo, or Microscope?](#)" Finance and Economics Discussion Series 2025-053 (Washington: Board of Governors of the Federal Reserve System, July).
3. See David H Autor (2025), "Polanyi's Paradox and the Shape of Employment Growth," in *Re-Evaluating Labor Market Dynamics: A Symposium Sponsored by the Federal Reserve Bank of Kansas City* (Kansas City: Federal Reserve Bank of Kansas City, pp. 129–77).
4. Researchers typically measure exposure to AI at the occupation level by analyzing descriptions of job tasks and comparing them with assumptions about the tasks that AI might feasibly complete; see Kunal Handa, Alex Tamkin, Miles McCain, Saffron Huang, Esin Durmus, Sarah Heck, Jared Mueller, Jerry Hong, Stuart Ritchie, Tim Belonax, Kevin K Troy, Dario Amodei, Jared Kaplan, Jack Clark, and Deep Ganguli (2025), "Which Economic Tasks Are Performed with AI? Evidence from Millions of Claude Conversations," working paper; Tyna Eloundou, Sam Manning, Pamela Mishkin, and Daniel Rock (2024), "GPTs Are GPTs: Labor Market Impact Potential of LLMs," *Science*, vol. 384 (6702), pp. 1306–08; Ed Felten, Manav Raj, and Robert Seamans (2023), "How Will Language Modelers Like ChatGPT Affect Occupations and Industries?" working paper; Michael Webb (2020), "The Impact of Artificial Intelligence on the Labor Market," working paper.
5. See Nestor Maslej, Loredana Fattorini, Raymond Perrault, Yolanda Gil, Vanessa Parli, Njenga Kariuki, Emily Capstick, Anka Reuel, Erik Brynjolfsson, John Etchemendy, Katrina Ligett, Terah Lyons, James Manyika, Juan Carlos Niebles, Yoav Shoham, Russell Wald, Toby Walsh, Armin Hamrah, Lapo Santarlaschi, Julia Betts Lotufo, Alexandra Rome, Andrew Shi, and Sukrut Oak (2025), "[The AI Index 2025 Annual Report](#)," AI Index Steering Committee, Institute for Human-Centered AI, Stanford University (Stanford, Calif.: Stanford University, April).

6. See *Economist* (2026), "An AI Revolution in Drugmaking Is Under Way," January 5; Thomas Kwa, Ben West, Joel Becker, Amy Deng, Katharyn Garcia, Max Hasin, Sami Jawhar, Megan Kinniment, Nate Rush, Sydney Von Arx, Ryan Bloom, Thomas Broadley, Haoxing Du, Brian Goodrich, Nikola Jurkovic, Luke Harold Miles, Seraphina Nix, Tao Lin, Neev Parikh, David Rein, Lucas Jun Koba Sato, Hjalmar Wijk, Daniel M Ziegler, Elizabeth Barnes, and Lawrence Chan (2025), "[Measuring AI Ability to Complete Long Tasks](#)," METR, March 19.
7. See Alex Singla, Alexander Sukharevsky, Bryce Hall, Lareina Yee, and Michael Chui (2025), "The State of AI in 2025: Agents, Innovation, and Transformation," McKinsey & Company, November 5.
8. See Alexander Brick, Adam Blandin, and David J Deming (2024), "[The Rapid Adoption of Generative AI](#)," Working Paper Series 2024-027 (St. Louis: Federal Reserve Bank of St. Louis, September; revised October 2025).
9. See Conference Board (2023), "[Majority of US Workers Are Already Using Generative AI Tools](#)," press release, September 13.
10. See Kathryn Bonney, Cory Breaux, Cathy Buffington, Emin Dinlersoz, Lucia S Foster, Nathan Goldschlag, John C Haltiwanger, Zachary Kroff, and Keith Savage (2024), "[Tracking Firm Use of AI in Real Time: A Snapshot from the Business Trends and Outlook Survey](#)," NBER Working Paper Series 32319 (Cambridge, Mass.: National Bureau of Economic Research, April).
11. See Paul A David (1990), "The Dynamo and the Computer: An Historical Perspective on the Modern Productivity Paradox," *American Economic Review*, vol. 80 (May), pp. 355–61.
12. See Kristina McEleran, Mu-Jeung Yang, Zachary Kroff, and Erik Brynjolfsson (2025), "The Rise of Industrial AI in America: Microfoundations of the Productivity J-curve(s)," working paper.
13. See Mark A Wynne and Lillian Derr (2025), "[Advances in AI Will Boost Productivity, Living Standards over Time](#)," Federal Reserve Bank of Dallas, June 24.
14. For example, see Michael S Barr (2025), "[Artificial Intelligence and the Labor Market: A Scenario-Based Approach](#)," speech delivered at the Reykjavik Economic Conference 2025, Central Bank of Iceland, Reykjavik, Iceland, May 9.

15. For example, generation capacity aside, current inefficiencies in the US electrical grid may not permit sufficient power to go where it is needed for rapid AI deployment.

16. A notable difference now is that most of the large tech companies making these investments are hugely profitable, in contrast to many of the profitless companies of that earlier boom.

17. One warning sign that the speed of adoption may not match the speed of AI infrastructure deployment is in what some firms are reporting about the depreciation of their investments. While computer chips have historically been depreciated over three years, some firms have stretched the depreciation of AI chips to five years or more in their disclosures to shareholders.

18. In the early 1890s, bankruptcies at a number of prominent railroads, as well as businesses connected directly and indirectly to the railroads, contributed to a deterioration in the quality of bank loan portfolios. While this was not the trigger of the Panic of 1893, it was part of the backdrop that made the economy and the banking system more vulnerable; see Mark Carlson (2013), "Panic of 1893," in Randall E Parker and Robert Whaples, eds., *Routledge Handbook of Major Events in Economic History* (London: Routledge), pp. 40–49.

19. See Jeff Hecht (2016), "OSA Centennial Snapshots: The Fiber Optic Mania," *Optics & Photonics News*, vol. 27 (October), pp. 46–53. For more information on the dynamics of the dot-com bubble and the effects on the bond market, see Patrick Lenain and Sam Paltridge (2003), "[After the Telecommunications Bubble](#)," OECD Economics Department Working Papers No. 361 (Paris: Organisation for Economic Co-operation and Development, June). According to Lenain and Paltridge, "Several large firms—including Worldcom and Global Crossing—filed for bankruptcy under Chapter 11 in the United States and AT&T Canada undertook a similar proceeding. This led to a wave of defaults on telecommunications corporate bonds and contributed to the largest cycle of defaults on bonds since the 1930s" (Lenain and Paltridge, 2003, p. 8).

20. On writing, see Shakked Noy and Whitney Zhang (2023), "Experimental Evidence on the Productivity Effects of Generative Artificial Intelligence," *Science*, vol. 381 (6654), pp. 187–92; on customer service, see Erik Brynjolfsson, Danielle Li, and Lindsey Raymond (2025), "Generative AI at Work," *Quarterly Journal of Economics*, vol. 140 (May), pp. 889–942; on consultants, see Fabrizio Dell'Acqua, Edward McFowland III, Ethan Mollick, Hila Lifshitz-Assaf, Katherine C Kellogg, Saran

Rajendran, Lisa Kraymer, Francois Candelon, and Karim R Lakhani (2023), [“Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality \(PDF\)”](#), Working Paper 24-013 (Boston: Harvard Business School, September 22); on coders, see Sida Peng, Eirini Kalliamvakou, Peter Cihon, and Mert Demirer (2023), *“The Impact of AI on Developer Productivity: Evidence from GitHub Copilot,”* working paper; Kevin Zheyuan Cui, Mert Demirer, Sonia Jaffe, Leon Musolff, Sida Peng, and Tobias Salz (2024), *“The Effects of Generative AI on High-Skilled Work: Evidence from Three Field Experiments with Software Developers,”* working paper.

21. See Francesco Filippucci, Peter N Gal, and Matthias Schief (2025), *“Aggregate Productivity Gains from Artificial Intelligence: A Sectoral Perspective,”* working paper.

22. See Daron Acemoglu (2025), *“The Simple Macroeconomics of AI,”* *Economic Policy*, vol. 40 (January), pp. 13–58; and Michael Chui, Eric Hazan, Roger Roberts, Alex Singla, Kate Smaje, Alex Sukharveysky, Lareina Yee, and Rodney Zemmel (2023), *“The Economic Potential of Generative AI,”* McKinsey & Company (New York: McKinsey, June).

23. While AI may boost productivity growth relative to a counterfactual world without AI, this does not necessarily imply that AI will lead to productivity growth well above its long-run trend, as in the transformative scenario I described. Rather, as the growth effects of previous waves of innovation fade, new innovations, such as AI, might be needed just to keep productivity growth near its historical trend rather than slowing down.

24. See Erik Brynjolfsson, Bharat Chandar, and Ruyu Chen (2025), *“Canaries in the Coal Mine? Six Facts about the Recent Employment Effects of Artificial Intelligence,”* working paper.

25. See Seyed M Hosseini and Guy Lichtinger (2025), *“Generative AI as Seniority-Biased Technological Change: Evidence from U.S. Resume and Job Posting Data,”* working paper.

26. See Philip Oreopoulos, Till von Wachter, and Andrew Heisz (2012), *“The Short- and Long-Term Career Effects of Graduating in a Recession,”* *American Economic Journal: Applied Economics*, vol. 4 (January), pp. 1–29.

27. See Menaka Hampole, Dimitris Papanikolaou, Lawrence DW Schmidt, and Bryan Seegmiller (2025), [“Artificial Intelligence and the Labor Market,”](#) NBER Working Paper Series 33509 (Cambridge, Mass.: National Bureau of Economic Research, February; revised September 2025).

28. See Jaison R Abel, Richard Deitz, Natalia Emanuel, Ben Hyman, and Nick Montalbano (2025), [“Are Businesses Scaling Back Hiring Due to AI?”](#) Federal Reserve Bank of New York, Liberty Street Economics (blog), September 4.

29. See Lawrence F Katz (2025), [“Beyond the Race between Education and Technology \(PDF\)”](#), paper prepared for “Labor Markets in Transition: Demographics, Productivity, and Macroeconomic Policy,” an economic symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August 22.

30. See footnote 21.

31. See Jonathan Hartley, Filip Jolevski, Victor Melo, and Brendan Moore (2025), [“The Labor Market Effects of Generative Artificial Intelligence,”](#) working paper.

32. See Huben Liu, Dimitris Papanikolaou, Lawrence DW Schmidt, and Bryan Seegmiller (2025), [“Technology and Labor Markets: Past, Present, and Future; Evidence from Two Centuries of Innovation,”](#) Brookings Papers on Economic Activity, September 24.

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 New York Association for Business Economics, New York, New York, February 17, 2026.

AI and systemic risk



AI offers substantial benefits to society. Stephen Cecchetti, Robin Lumsdaine, Tuomas Peltonen and Antonio Sánchez Serrano discuss significant concerns regarding risks to the financial system and propose a mix of competition and consumer protection policies address these vulnerabilities

In recent months we have observed sizeable corporate investment in developing large-scale models – those where training requires more than 10^{23} floating-point operations – such as OpenAI’s ChatGPT, Anthropic’s Claude, Microsoft’s Copilot and Google’s Gemini. While OpenAI does not publish exact numbers, recent reports suggest ChatGPT has roughly 800 million active weekly users.

Figure 1 shows the sharp increase in the release of large-scale AI systems since 2020. The fact that people find these tools intuitive to use is surely one reason for their speedy widespread adoption. In part due to the seamless inclusion of these tools in existing day-to-day platforms, companies are working to integrate AI tools into their processes.

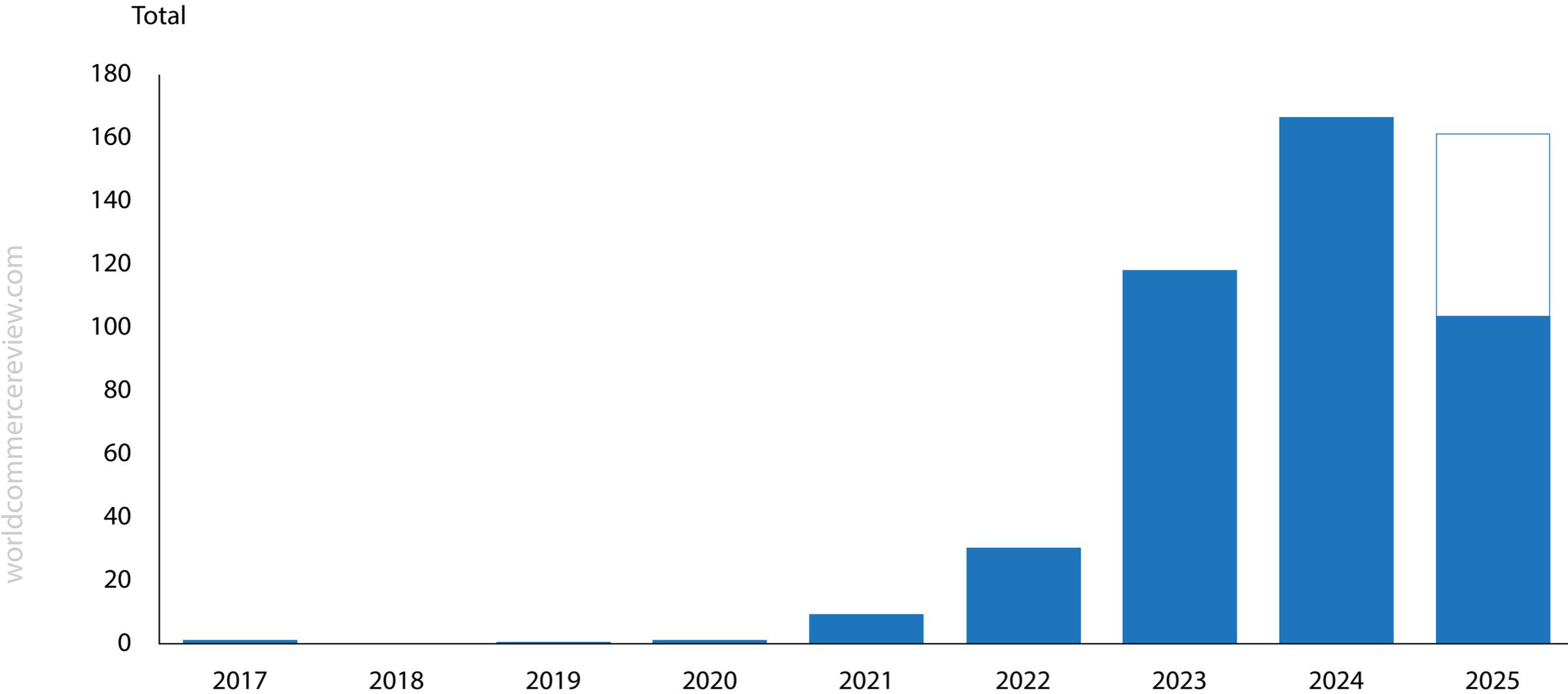
A growing literature examines the implications for financial stability of AI’s rapid development and widespread adoption (see, among others, Financial Stability Board 2024, Aldasoro *et al* 2024, Danielsson and Uthemann 2024, Videgaray *et al* 2024, Danielsson 2025, and Foucault *et al* 2025). In a recent report of the Advisory Scientific Committee of the European Systemic Risk Board (Cecchetti *et al* 2025), we discuss how the properties of AI can interact with the various sources of systemic risk. Identifying related market failures and externalities, we then consider the implications for financial regulatory policy.

The development of AI in our societies

Artificial intelligence – encompassing both advanced machine-learning models and, more recently, developed large language models – can solve large-scale problems quickly and change how we allocate resources. General uses of AI include knowledge-intensive tasks such as (i) aiding decision making, (ii) simulating large networks, (iii) summarising large bodies of information, (iv) solving complex optimisation problems, and (v) drafting text.

There are numerous channels through which AI can create productivity gains, including automation (or deepening existing automation), helping humans’ complete tasks more quickly and efficiently, and allowing us to complete

Figure 1. Number of large-scale AI systems released per year



Notes: Data for 2025 up to 24 August. The white box in the 2025 bar is the result of extrapolating the data to that date for the full year.
Source: World in Data.

new tasks (some of which have not yet been imagined). However, current estimates of the overall productivity impact of AI tend to be quite low.

In a detailed study of the US economy, Acemoglu (2024) estimates the impact on total factor productivity (TFP) to be in the range of 0.05% to 0.06% per year over the next decade. Since TFP grew on average about 0.9% per year in the US over the past quarter century, this is a very modest improvement.

We should emphasise that the global nature of AI makes it important that governments cooperate in developing international standards to avoid actions in one jurisdiction creating fragilities in others

Estimates suggest a diverse impact across the labour market. For example, Gmyrek *et al* (2023) analyse 436 occupations and identify four groups: those least likely to be impacted by AI (mainly composed of manual and unskilled workers), those where AI will augment and complement tasks (occupations such as photographers, primary school teachers or pharmacists), those where it is difficult to predict (amongst others financial advisors, financial analysts and journalists), and those most likely to be replaced by AI (including accounting clerks, word processing operators and bank tellers).

Using detailed data, the authors conclude that 24% of clerical tasks are highly exposed to AI, with an additional 58% having medium exposure. For other occupations, they conclude that roughly one-quarter are medium-exposed.

AI and sources of systemic risk

Our report emphasises that AI's ability to process immense quantities of unstructured data and interact naturally with users allows it to both complement and substitute for human tasks. However, using these tools comes with risks. These include difficulty in detecting AI errors, decisions based on biased results because of the nature of training data, overreliance resulting from excessive trust, and challenges in overseeing systems that may be difficult to monitor.

As with all uses of technology, the issue is not AI itself, but how both firms and individuals choose to develop and use it. In the financial sector, uses of AI by investors and intermediaries can generate externalities and spillovers.

With this in mind, we examine how AI might amplify or alter existing systemic risks in finance, as well as how it might create new ones. We consider five categories of systemic financial risks: liquidity mismatches, common exposures, interconnectedness, lack of substitutability, and leverage.

As shown in Table 1, AI's features that can exacerbate these risks include:

- Monitoring challenges where the complexity of AI systems makes effective oversight difficult for both users and authorities.
- Concentration and entry barriers resulting in a small number of AI providers creating single points of failure and broad interconnectedness.
- Model uniformity in which widespread use of similar AI models can lead to correlated exposures and amplified market reactions.
- Overreliance and excessive trust arising when superior initial performance leads people to place too much trust in AI, increasing risk taking and hindering oversight.
- Speed of transactions, reactions, and enhanced automation that can amplify procyclicality and make it harder to stop self-reinforcing adverse dynamics.
- Opacity and concealment in which AI's complexity can diminish transparency and facilitate intentional concealment of information.
- Malicious uses where AI can enhance the capacity for fraud, cyber-attacks and market manipulation by malicious actors.
- Hallucinations and misinformation where AI can generate false or misleading information, leading to widespread misinformed decisions and subsequent market instability.

Table 1. How current and potential features of AI can amplify or create systemic risk

		Sources of systemic risks				
		Liquidity mismatches and information sensitivity	Common exposure	Inter-connectedness	Lack of sustainability	Leverage and procyclicality
Existing features of AI	Monitoring challenges					
	Concentration, entry barriers					
	Model uniformity					
	Overreliance, excessive trust					
	Speed, difficult to stop					
	Opacity, concealment					
	Malicious uses, crime/terror					
	Hallucinations, misinformation					
	History constrained					
	Untested legal status					
Potential features of AI	Self-aware AI, loss of control					
	Complete reliance on AI					

Notes: Titles of existing features of AI are red if they contribute to four or more sources of systemic risk and orange if they contribute to three. Potential features of AI are coloured orange to show that they are not certain to occur in the future. In the columns, sources of systemic risk are coloured red when they relate to ten or more features of AI and orange if they relate to more than six but fewer than ten features of AI.

Source: Cecchetti et al (2025).

- History constraints where AI's reliance on past data makes it struggle with unforeseen 'tail events', potentially leading to excessive risk taking.
- Untested legal status in which the ambiguity around legal responsibility for AI actions (eg. the right to use data for training and liability for advice provided) can pose systemic risks if providers or financial institutions face AI-related legal setbacks.
- Complexity makes the system inscrutable so that it is difficult to understand AI's decision-making processes, which can then trigger runs when users discover flaws or behaviour is unexpected.

Capabilities we have not yet seen, such as the creation of a self-aware AI or complete human reliance on AI, could further amplify these risks and create additional challenges arising from a loss of human control and extreme societal dependency. For the time being, these remain hypothetical.

Policy response

In response to these systemic risks and associated market failures (fixed cost and network effects, information asymmetries, bounded rationality), we believe it is important to engage in a review of competition and consumer protection policies, and macroprudential policies. Regarding the latter, key policy proposals include:

- Regulatory adjustments such as recalibrating capital and liquidity requirements, enhancing circuit breakers, amending regulations addressing insider trading and other types of market abuse, and adjusting central bank liquidity facilities.
- Transparency requirements that include adding labels to financial products to increase transparency about AI use.

- ‘Skin in the game’ and ‘level of sophistication’ requirements so that AI providers and users bear appropriate risk.
- Supervisory enhancements aimed at ensuring adequate IT and staff resources for supervisors, increasing analytical capabilities, strengthening oversight and enforcement and promoting crossborder cooperation.

In every case, it is important that authorities engage in the analysis required to obtain a clearer picture of the impact and channels of influence of AI, as well as the extent of its use in the financial sector.

In the current geopolitical environment, the stakes are particularly high. Should authorities fail to keep up with the use of AI in finance, they would no longer be able to monitor emerging sources of system risk. The result will be more frequent bouts of financial stress that require costly public sector intervention.

Finally, we should emphasise that the global nature of AI makes it important that governments cooperate in developing international standards to avoid actions in one jurisdiction creating fragilities in others. ■

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References

- Acemoglu, D (2024), *"The simple macroeconomics of AI"*, NBER Working Paper No 32487.
- Aldasoro, I, L Gambacorta, A Korinek, V Shreeti and M Stein (2024), *"Intelligent financial system: how AI is transforming finance"*, BIS Working Paper No 1194.
- Cecchetti, S, RL Lumsdaine, T Peltonen and A Sánchez Serrano (2025), *Artificial intelligence and systemic risk*, Report of the ESRB Advisory Scientific Committee No. 16.
- Danielsson, J (2025), *"Artificial intelligence and stability,"* VoxEU.org, 6 February.
- Danielsson, J and A Uthemann (2024), *"Artificial intelligence and financial crises"*, working paper.
- Financial Stability Board (2024), *"The financial stability implications of Artificial Intelligence"*, November.
- Foucault, T, L Gambacorta, W Jiang and X Vives (2025), *Artificial Intelligence in Finance, The Future of Banking 7*, CEPR Press.
- Gmyrek, P, J Berg and D Bescond (2023), *"Generative AI and jobs: A global analysis of potential effects on job quantity and quality"*, ILO Working Paper No 96.
- Videgaray, L, P Aghion, B Caputo, T Forrest, A Korinek, K Langenbacher, H Miyamoto and M Wooldridge (2024), *Artificial Intelligence and economic and financial policymaking*, A High-Level Panel of Experts' Report to the G7, December.

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Better regulation in the EU needs a fresh start

A solid EU better regulation framework is undermined by gaps in coverage and quality, making consistent application and stronger oversight essential. Anne Bucher and Elizabeth Golberg discuss steps that could be taken to overcome these weaknesses

Executive summary

Despite having developed a comprehensive and highly rated regulatory policy system (so-called 'better regulation'), involving consultation, impact assessments, evaluation, inter-institutional commitment and independent oversight, the European Union continues to face criticism for the volume, complexity, costs and administrative burden of its laws. This raises the question of whether something is wrong with the better-regulation system, or whether the EU institutions have failed to adequately apply the system.

In fact, the system is robust but there are weaknesses in its application. There is no evidence that burden-reduction programmes or attempts to stem the ever-increasing flow of legislation have had desired effects. There are significant exceptions to the application of better regulation tools, including simplification efforts under the second Ursula von der Leyen Commission. Meanwhile, few assessments are conducted on legislative amendments approved by the European Parliament and the Council of the EU. The quality of assessments, particularly ex-post evaluations is wanting.

Several steps could be taken to overcome these weaknesses. On the ever-increasing flow, political control could be strengthened by a dedicated Better Regulation Commissioner, the development of new conditions for preparing new laws and adoption of systematic regulatory pauses at the end and beginning of each Commission term. On coverage, the Council and the Parliament need to conduct assessments of their amendments. This could be facilitated through an inter-institutional mechanism using the initial impact assessment's methodology. Given that they involve trade-offs and costs, some secondary legislation needs to be assessed in a proportionate manner.

The quality of assessments could be improved by establishing a centre (or centres) of analytical expertise. This would build and continuously update a robust evidence base for policy areas. It could help streamline the analytical

demands for impact assessments. Ex-post evaluations are key to improving the implementation of EU law. Externalising ex-post evaluations could improve their quality and facilitate better assessment of implementation gaps.

In an increasingly complex, volatile and polarised political environment, better regulation is essential. The tools need to be applied consistently to support the policymaking process.

Commission ex-post evaluations of legislation are weak, often ill-timed, of mixed quality and with questionable impact

1 Introduction

“The regulatory burden on European companies is high and continues to grow.... The [European] Commission has been working for years to reduce the ‘stock’ and ‘flow’ of regulation under the Better Regulation agenda. However, this effort has had limited impact so far. The stock of regulation remains large and new regulation in the EU is growing faster than in other comparable economies.”

This extract, from the report on European Union competitiveness produced in 2024 for the European Commission by former prime minister of Italy Mario Draghi (Draghi 2024), could have been written at any point in the last twenty-five years. The EU has long been criticised for producing too many ill-conceived, costly laws.

In addition, implementation of EU law is patchy, with EU countries slow to write EU law into national statutes and slow to comply with the law. Countries also often add additional requirements to EU law – so-called gold plating. All of this contributes to continued and growing concern about EU regulation and its dampening effect on investment and innovation in the EU (Draghi 2024; EIB 2025; Eurochambres 2025; Letta 2024).

In response, over the past quarter century, the Commission has prioritised ‘better regulation’ (ie. impact assessment, stakeholder consultation, evaluation, quality control) aimed at improving the quality of legislation and its implementation. Results have been mixed. In this context, European Commission President Ursula von der Leyen announced in 2025 a further set of ‘better regulation’ measures, involving simplification, reduction of administrative burden and regulatory budgeting (European Commission 2025a).

These actions may be worthy but they closely resemble previous initiatives¹. This begs the question of whether they will lead to the desired improvements, or whether a more radical shift in approach is needed. Answering this question requires an evaluation of the better regulation system to assess what has worked, what has not worked

and why. This paper sets out some ideas that could feed into such an assessment. It reviews the better regulation system (section 2), identifies shortcomings (section 3) and suggests how they might be overcome (section 4).

2 What is 'better regulation'?

Improving the quality of laws and reducing costs and red tape have been political priorities for the European Commission since the early 2000s². The Commission's regulatory policy approach aims to prepare and adapt EU policy and legislation with knowledge of its expected economic, environmental and social impacts, avoiding unnecessary burdens and minimising costs and red tape for citizens, businesses and public authorities.

To do this, different tools are applied at each stage of the policy cycle. Strategic planning is used to manage the flow of new initiatives, making sure that they are supported by impact assessment and ex-post evaluations (for amendments to existing law). Impact assessments set out options and analyse the economic, social and environmental impacts of proposed measures.

Ex-post evaluation keeps the stock of law under review, assessing it for effectiveness, efficiency, relevance and coherence. REFIT (Regulatory Fitness) exercises have been introduced to examine these aspects within and across policy areas. Stakeholders are consulted on both new and existing legislation via public or targeted consultations. Stakeholders can comment along the decision-making chain (European Commission 2021a).

Improving the stock of legislation has involved target-setting for the reduction of administrative burden (European Commission 2007), regulatory budgeting (European Commission 2021a), simplification and regulatory stress testing (European Commission 2025a). Expert groups have provided advice on burden reduction since 2007³. The complexity and volume of legislation is also reduced through withdrawals of proposals, repeals, codification (by

which all amendments of a law are incorporated into a single new act) and recasting (all previous amendments are incorporated in a new text when the law is amended).

Impact assessments and evaluations (including REFIT exercises) are subject to independent quality control by the Regulatory Scrutiny Board (RSB)⁴. The European Parliament and Council of the EU (at working-group level) also scrutinise the Commission's impact assessments to advise parliamentary committees and Council working groups when they discuss Commission proposals. The regulatory policy system has been evaluated by the European Court of Auditors (ECA 2018, 2020).

In finalising EU laws, the Council of the EU and the European Parliament have important roles to play in better regulation. Under an Inter-Institutional Agreement on Better Law Making in 2003, revised in 2016⁵, Council and Parliament committed to examining Commission impact assessments and conducting their own if they make significant amendments to Commission proposals. The institutions agreed that a systematic approach to evaluation is required, and that all new legislation should include provisions on monitoring and evaluation.

3 Why is the better-regulation system still perceived as falling short?

The Commission's regulatory policy system is complete in that the necessary policy development tools (impact assessment, consultation, evaluation, oversight) are in place and are highly rated⁶. Yet the Commission's application of better regulation has not managed to stem criticism of the flow (too voluminous), quality of assessments (variable) and management of the stock (large and sometimes incoherent) of EU legislation (Draghi 2024; Herby 2024; Kaufmann 2025; Letta 2024; Marcus 2024; Marcus and Sekut 2024). The following subsections outline some of the reasons why this might be the case.

3.1 The volume of legislation continues to increase

The number of EU laws has steadily increased. There are different ways to calculate the growing volume of legislation (total number of acts, total number of pages or words; Marcus, 2024; Herby, 2024). All metrics point to an increasing number of Commission proposals in each term and continued high rates of adoption of new laws. Under President Ursula von der Leyen, the Commission has opted for regulatory budgeting to control the flow, but the ever-increasing numbers of proposals shows that this has had no effect.

Table 1. Commission proposals and adopted acts under ordinary legislative procedure

Commission term	Proposals: basic acts	Proposals: amended acts	Withdrawals	Net proposals	Adopted basic acts	Adopted amended acts	Total adopted	Exp/R	Net balance adopted acts
2014-2019 (Juncker)	243	165	62	346	24	161	403	230	173
2019-2024 (von der Leyen)	252	210	23	489	244	191	435	239	196

Note: Exp/R = expired and repealed acts; Balance adopted = total adopted legislation less expired and repealed acts.

Source: Bruegel based on EURLEX.

Table 1 shows two measures of the net flow of legislation: 1) the number of Commission proposals less withdrawals, and 2) the number of adopted acts less repeals. Withdrawals and repeals are not keeping pace with new proposals and adopted acts, with the result that the net volume of legislation continues to increase.

Withdrawals are normally of proposals that stand no chance of being adopted, or that have been overtaken by events or supplanted by other legislative proposals and usually happen at the start of a Commission term, when the new executive decides whether to continue with unfinalised proposals made by the previous Commission (so-called discontinuity). Repeals are more numerous, usually of a housekeeping nature, covering decisions with a fixed period of validity.

Secondary legislation (delegated acts, which supplement or amend non-essential elements of EU laws, and implementing acts, which execute policy by establishing uniform conditions for applying the laws) is voluminous. The number of delegated acts has increased by even larger margins under the first von der Leyen Commission compared to that of President Jean-Claude Juncker (2014-2019).

This reflects a trend in the design of primary legislation towards prescriptive detail, with technical specifications being set out in subsequent delegated or implementing acts. This exacerbates the perception, especially among businesses, that EU rules are ever-increasing, detailed and costly (BusinessEurope 2022).

Table 2. Delegated and implementing acts under ordinary legislative procedure

Commission term	Delegated acts basic	Amended delegated acts	Total	Delegated acts exp/R	Balance delegated acts	Implementing acts basic	Amended implementing acts	Total	Exp/R	Balance adopted
2014-2019	309	312	621	62	559	2,728	1,778	4,506	1,032	3,474
2019-2024	350	584	934	222	712	3,058	2,073	5,131	2,215	2,916

Note: Exp/R = expired and repealed acts; Balance adopted = total adopted implementing acts less expired acts and repeals.

Source: Bruegel based on EURLEX.

3.2 Major proposals are increasingly accompanied by impact assessments but there are significant exceptions

In recent years, about 60 percent of Commission proposals that go through the ordinary legislative procedure⁷ have been accompanied by impact assessments (Table 3). However, proposals made during emergencies (including the war in Ukraine, COVID-19, spikes in illegal migration and financial crises), delegated and implementing acts, and legislative amendments escape the discipline. For example, during the COVID-19 pandemic (2019-2020) only 5 percent of Commission proposals were accompanied by an impact assessment (Council of the EU 2023).

Ironically, none of the recent simplification initiatives have been accompanied by an impact assessment (Box 1). This surprising disregard for the better-regulation rules, led to complaints to the European Ombudsman (2025), which has admonished the Commission for using the derogation from better-regulation requirements for urgent matters without proper justification and for failing to adequately consult internally and externally.

Few impact assessments have been done for delegated and implementing acts⁸. This is concerning given that, although technical, such acts can involve political judgement, trade-offs and costs (Robert 2019). The Commission itself has identified these acts as potentially contributing to overregulation (European Commission 2025a)⁹.

A major gap in application of better-regulation practice concerns amendments put forward and adopted in the EU co-decision process, in which the Council of the EU and the European Parliament debate and adopt legislation. Neither the Council nor the Parliament have managed to conduct more than a handful of assessments of their amendments to Commission proposals (Hiller 2024; Council of the EU 2023).

Adopted laws may thus have significant impacts not foreseen in the Commission's impact assessment. This, combined with choices made by EU countries in implementing EU legislation, can result in increased costs, unexpected impacts or incoherence between laws, which were not foreseen in Commission impact assessments.

Table 3. Commission proposals and impact assessments

Commission term	Commission proposals basic	Commission proposals amended	Impact assessments*
2014-2019	243	165	219
2019-2024	252	210	247

Note: * impact assessments reviewed by the RSB.

Source: Bruegel based on EURLEX.

3.3 The quality of analysis is variable

Impact assessments are the bedrock of the better-regulation system, shaping the quality of the Commission's legislative proposals. However, there are recurring problems in impact assessments (Box 1), with the RSB delivering negative opinions on about 40 percent of impact assessments submitted to the board (European Commission 2023). The RSB has identified problem definition and the assessment and comparison of options as major shortcomings. Proportionality is also an issue (European Commission 2023).

As for examining a range of options, it is important to note that the impact assessment process does not always start with a blank sheet of paper. The preferred policy option is often prescribed in either Council of the EU conclusions or European Parliament resolutions. The same limitation applies when the EU enters into binding international agreements that must be transposed into EU law. In both cases, options are circumscribed.

Box 1. Why the quality of impact assessments matters: the example of 'Omnibus I'

Some of the shortcomings in impact assessments were reflected in the preparation and aftermath of adoption of two EU corporate governance and reporting laws, the Corporate Sustainability Reporting Directive (CSRD, Directive (EU) 2022/2464) and the Corporate Sustainability Due Diligence Directive (CSDDD, Directive (EU) 2024/1760). Both were included in the European Commission's so-called Omnibus I package of February 2025¹⁰ – the term 'omnibus' describing a streamlining and simplifying of rules. This postponed the implementation of some provisions of the CSDDD by a year and amended the CSRD.

When these directives were proposed – the CSRD in 2021 and the CSDDD in 2022 – the proposals were supported by impact assessments. However, in both cases, the Regulatory Scrutiny Board warned of weaknesses in the impact assessments (European Commission 2021d, for CSRD, and European Commission 2022, for CSDDD), particularly:

- Weak justification of the need for legislation;
- Unclear content and unsubstantiated impacts;
- Proportionality issues, including a lack of analysis of impacts on SMEs, and of options other than legislation as a preferred instrument;
- Incoherence between legislation, such as non-aligned thresholds for reporting and due-diligence requirements, which make compliance costly, and the coexistence of sectoral and general legislation, resulting in overlaps and duplication of obligations;

- ‘Gold plating’ of international rules, ignoring the need for consistent EU and international reporting standards.

The initial CSRD proposal received a positive opinion with reservations from the RSB. The CSDDD went ahead despite receiving two negative opinions. With the Omnibus I package, the Commission responded to stakeholders’ demands for simplification. The amended CSRD would alleviate reporting requirements, exempt SMEs and other smaller companies, align the size threshold with that of the CSDDD and adopt a simpler reporting standard for large companies¹¹. The initial RSB opinion had identified these three issues as raising problems of proportionality and coherence of the proposal with other legislation.

In a review of the Omnibus I proposals, Marcus and Thomadakis (2025) acknowledged that the scope and coverage set out in the initial package may have been overly ambitious and disproportionate and welcomed corrections: *“the legislative proposal’s attempt to simplify compliance and to better align the three laws is directionally right, but a quick analysis in the absence of a proper impact assessment necessarily struggles to verify the appropriateness of the specific measures being put forward”* (Marcus and Thomadakis 2025, p54). The authors made a number of recommendations to make future decisions more robust.

The Commission in 2025 issued eight omnibus proposals overall covering various fields: sustainability, InvestEU, agriculture, small mid-caps and digitalisation, defence, digital, chemicals and environment¹². All were published after limited consultations and without an impact assessment for reasons of emergency and political importance.

This sidestepping of better-regulation rules has led to widespread criticism about the simplification agenda, including from academics (Alemanno 2025) and civil society via the European Ombudsman (2025). Analysis of the individual proposals points to serious concerns about quality issues in the proposed legislation¹³.

Quantification of costs and benefits, a concern often raised by stakeholders, is improving. However, the RSB indicates that on average only 40 percent of impact assessments estimate costs fully, while benefits are quantified even less (European Commission 2023).

More broadly, meeting the ever-increasing number of consultation and analytical requirements in the better-regulation system – one-in-one-out cost-benefit calculations, SME tests, competitiveness assessments, compliance with climate goals, digital-by-default, no net harm, strategic foresight, reality checks, stress testing – is challenging and resource intensive.

Impact assessments have become voluminous, easily running to hundreds of pages. The question arises of whether the quality of essential analytical elements has suffered because so many additional requirements have been added.

3.4 Efforts to improve the legislative stock are falling short

Commission ex-post evaluations of legislation are weak, often ill-timed, of mixed quality and with questionable impact on further policy development (European Commission 2024; ECA 2018). They lack evidence and relevant data and often have limited stakeholder input. The RSB scrutiny comes too late in the process to improve data collection or methodology. For amendments to existing legislation, the RSB (European Commission 2024) has indicated that only up to a third of ex-post evaluations are of sufficient quality to inform the associated impact assessment.

Even in the case of good ex-post evaluations, there is a hesitation to follow up on recommendations if they entail reopening discussions on laws (for example, environment, chemicals and food safety law) that were adopted following long, tense and divisive negotiations, or which are only in the process of being fully implemented.

More fundamentally, as EU countries and not the Commission are responsible for implementation, there is a tendency to give evaluation a low political profile and to resist calling into question the performance of legislation and programmes.

Stakeholders continue to highlight the inconsistencies and contradictions in different pieces of legislation across policy areas (BusinessEurope 2025). Fitness checks were introduced to look at coherence between pieces of legislation and policy fields (European Commission 2012). But the problem remains (European Commission 2021c).

The costs of EU law are significant¹⁴. Efforts to reduce costs through targets and regulatory budgeting have not brought desired relief for stakeholders and business. These exercises focus on estimated cost reductions embodied in Commission proposals. Such savings are not tracked and may or may not make it through the legislative process.

Furthermore, experience points to an additional difficulty of timing. Often, cost-reduction measures come into effect so long after their announcement and calculation that the beneficiaries do not feel or register the savings¹⁵. Furthermore, when reduction efforts focus on legislation in the pipeline, the results provide some relief in the sense that additional burdens are avoided. But such exercises do not directly tackle problems of the cost of existing laws.

4 Policy recommendations

Can the current better-regulation system deliver quality, timely analysis in an increasingly complex, multi-level governance context, subject to frequent crises? Yes, but changes are needed to meet the challenges of a complex policymaking landscape characterised by rapid technological change and volatility.

4.1 Recommendation 1: legislative flow

If the flow of legislation is to be reined in, the European Commission needs to make a high-level commitment to better

regulation, with a designated commissioner (Vice President for example) with the authority to exercise discipline and restraint in making proposals, simplify where possible and ensure coherence between policy areas.

The European Commission has the right of initiative and full discretion to decide on the volume of the flow of legislation. Political control of the flow requires a commissioner to be given a clear mandate by the president to control the flow, ensure quality proposals that are coherent across policy areas and manage the legislative stock.

So far, this responsibility has been an add-on to another portfolio (for example economy and productivity under the current Commission, inter-institutional affairs under the first von der Leyen Commission from 2019-2024).

Given the seriousness of the problem of regulatory overload, it would seem appropriate to have the responsibility for better regulation (from strategic planning through impact assessment, consultation, evaluation and implementation) in a dedicated single mandate.

To manage the flow, the responsible Commissioner could introduce new metrics and conditions for inserting proposals into the Commission Work Programme (eg. demonstrable results in implementation of existing legislation). S/he could be charged with reining in the use of secondary legislation and systematically assessing whether reliance on principles-based primary law with technical specifications set out in delegated and implementing acts is the best approach.

S/he could initiate a discussion on systematic application of the principle of discontinuity with the other institutions and on strengthening the existing practice of a regulatory/legislative proposal pause at the end and beginning of each Commission mandate.

Importantly, this Commissioner would be charged with examining whether regulation (often the default instrument) is the right approach to problem solving, or whether soft instruments or other approaches might be better options.

Finally, given that policy is made in a rapidly changing and uncertain world, the Commissioner could be charged with developing an adaptive approach to regulation, with shortened feedback loops, more consultations and real-time input from reviews and evaluations.

4.2 Recommendation 2: assessment throughout the legislative process

Set up an inter-institutional mechanism to assess amendments proposed during the co-decision process, to ensure methodological consistency with Commission impact assessments and to conduct post-adoption assessments.

Given the dearth of assessments of amendments to laws made by the Council and the European Parliament, there is a need not only for a reinforced commitment by all the EU institutions to better law making, but a new inter-institutional mechanism to translate this commitment into action.

This mechanism should assess the impact of amendments using the Commission's impact assessment methodology. It should also identify how the impacts of adopted laws differ from those foreseen at the proposal stage. This would also help in better informing EU countries when they make implementation choices. The mechanism could examine stakeholder comments on Commission impact assessments following their publication, to see if any revision of methodological approach is needed.

4.3 Recommendation 3: assessment of delegated and implementing acts

More systematic, but proportionate, assessment of the costs of delegated and implementing acts.

Delegated and implementing acts need to be better assessed, in a proportionate manner. Because of their technical nature and limited scope, there is no need to do full impact assessments or full cost-benefit analyses. Cost assessments should suffice.

Thought needs to be given to what might be an appropriate trigger for such an assessment. A quantitative monetary threshold could be used. Or, given that draft acts are published for feedback, the number of concerns raised during the consultation could prompt an assessment.

4.4 Recommendation 4: professionalisation through establishing a centre of analytical expertise

Establish an internal centre of analytical support as the dedicated centre for regulatory analysis (including cost/benefit, modelling and use of artificial intelligence) for all impact assessments and for validation of impact assessments and ex-post evaluation methodologies.

The quality of better-regulation outputs depends in part on the soundness of the methodology employed. The Commission faces increasing and insatiable demands to better calculate costs of proposals and of legislation in force. This has resulted in a spawning of new analytical requirements within the system – administrative cost calculations, cumulative cost calculations – aimed at meeting targets and complying with regulatory budgets.

Draghi (2024) suggested that one cost calculation method be used. But experience has shown that while some assessments lend themselves to standard cost/benefit analysis, others don't. The standard cost model, to which Draghi (2024), referred covers administrative costs which, while important, are a small portion of total costs (including compliance, one-off investment costs, payroll and taxes).

This raises the question of the usefulness of focusing regulatory policy efforts on the measurement and reduction of a small sub-set of costs and, indeed, whether it is useful at all to look at costs in isolation without measuring benefits.

Draghi (2024) also suggested that the choice of one methodology would make it possible to calculate the aggregate cost of EU legislation. However, given the differences in methodological approach across assessments combined with data issues, there is neither enough consistency nor accuracy to facilitate meaningful aggregation of either costs or benefits across policy areas¹⁶.

There is no methodological silver bullet. The use of standard tools, such as the administrative burden calculator, has stood the test of time. There have also been several successful cases in which impact assessments have been effective in informing policymaking and which could serve as models of methodological excellence (Box 2).

These show how major sensitive policy debates in the EU have benefited from extensive consultations and consistent and comprehensive analyses that accurately reflect policy trade-offs. There is a need to move away from ad-hoc evidence collection for specific impact assessments or ex-post evaluations. New ways should be explored to ensure quality and consistency between analyses, foster and maintain data and evidence bases, and introduce artificial intelligence tools.

Cases in Box 2 show the merit of centralising analytical work for major policy areas to develop and maintain a solid evidence base. The centre could develop baselines (using projections, market intelligence and scenarios), examine costs of inaction and collect evidence on implementation (systematic and continuous data collection, consolidation of consultation outcomes, use of AI tools).

Various possibilities for establishing such a centre could be explored: establishing a new centre (involving consolidation and grouping of resources in all the institutions dedicated to analytical tasks), reinforcing the role of the Joint Research Centre, and/or, using a framework similar to Science Advice for Policy by European Academies (SAPEA)¹⁷ to tap into complementary academic expertise.

4.5 Recommendation 5: streamlining and simplifying analytical requirements

The Commission should consolidate and streamline the various analytical requirements.

The capacity of Commission departments to cope with the ever increasing analytical and consultation demands within the better-regulation system is being seriously tested.

The creation of a centre for analytical support and the use of AI may assist in meeting these requirements. Nonetheless it is an open question as to whether the fundamental aim of these instruments – informing decision making – could be met in a more streamlined, effective manner.

Without sacrificing meaningful consultation or analytical rigour, some streamlining, consolidation and prioritisation of the requirements relative to the type of proposals under development could lead to qualitative improvements.

For example, in most cases, following an initial scoping, the number of realistic options is clear. The impact assessment could then zero in on the three original areas of focus: economic, social and environmental impacts. If the expectation is that intended action would have significant impacts on a particular sub-area of these areas (eg. on climate change, biodiversity, SMEs or competitiveness), further in-depth analysis of the specified area would be necessary.

Box 2. Examples of impact assessments based on a comprehensive and consistent analytical framework

Climate change

Europe has been among the climate policy leaders for several decades. Building consensus on climate change has been difficult and the consensus would not have been achieved without a convincing and transparent impact assessment process.

Since 2007, the European Commission has put in place a solid knowledge base combining a comprehensive set of quantitative instruments (European Commission, 2021b). These include a suite of general equilibrium models and sectoral models: a model for the macro linkages between energy and environment (GEM-E3), a model for energy (PRIMES) – including energy efficiency – for transport (PRIMES-TREMOVE), for land use and forests (GLOBI-OM-G4M), a model for the linkages between climate change and environment (GAINS) and a model for agriculture (CAPRI). All models are now available in the Modelling Inventory and Knowledge Management System (MIDAS) of the European Commission's in-house Joint Research Centre (JRC)¹⁸.

This suite of models guarantees consistency between greenhouse gas emission reduction targets, the market instruments to achieve them, efficient distribution of sectoral contributions and a fair distribution of efforts among EU countries. It relies on a common baseline, the EU reference scenario 2020 (European Commission 2021b), which projects economic and technology trends based on national policies.

It has been designed with and validated by EU countries. The analytical framework also provides time consistency of climate change policies since the framework was used throughout the years for the 2020 package, the 2030 package and the European Green Deal milestones, including the Fit for 55 package and climate neutrality by 2050.

The system has policy monitoring and evaluation provisions that require EU countries to assess in real time the outcome of national policies in relation to the objectives.

Climate change remains a divisive issue and the policy has not been successful in all areas. But overall, the EU has put in place ambitious packages, delivered on their objectives and implemented timely changes or new mechanisms to correct deviations from the agreed trajectory. The robustness of the analytical framework used for the impact assessment played a major role in this process¹⁹.

Common Agricultural Policy (CAP)

Similar developments have occurred in the CAP over the last 25 years. As with climate change, the need for a robust empirical foundation was driven by the heated debate about European support for agriculture. Efforts have focused on both ex-post evaluation and impact assessment. For the 2014–2020 programming period, a Common Monitoring and Evaluation Framework was established to organise harmonised and granular data collection.

This was complemented by a Performance Monitoring and Evaluation Framework (PMEF) for 2020–2027. Impact assessments for these two programming periods (European Commission 2018) could draw on various monitoring and evaluation exercises. As with climate change, a baseline calibrated against international scenarios was built on the basis of the European Agricultural Outlook (European Commission 2025b).

The Treaty objectives for the CAP are numerous, including increased productivity, improved standards of living for farmers, market stability, food security and affordability. Models have been used to illustrate various economic, social and environmental trade-offs. For 2020-2027, seven models²⁰ were combined to test various reform options, ranging from a global sectoral general equilibrium model (MAGNET) to specific tools for modelling soil quality

(IFM-CAP) and carbon and nitrate dynamics (CENTURY), as well as the national agricultural sectors of EU member states (CAPRI), a database containing 86,000 individual farm-level accounts (AIDSK). This work benefitted from the consolidated expertise of the JRC, Eurostat, the OECD and the United Nations Food and Agriculture Organisation.

Not all policy areas lend themselves to such modelling systems. But efforts on systematic data collection over time, scenario analysis, validated baselines with EU countries and international organisations, and internalisation of databases and tools are relevant practices that could make impact assessments and ex-post evaluations more robust. They also have organisational implications: they can mitigate the silo approach in policymaking; they also offer broad scope for collaboration across levels of governance: EU, national and international.

Importantly impact assessments should spell out the main policy trade-offs, such as competitiveness versus health benefits, and demonstrate how various options perform in these respects. Meaningful consultation should help to signal impacts that might have been overlooked. The aim is to avoid box-ticking exercises that cover all bases but do not provide adequate assessment of the most important impacts of the options under consideration.

That said, the drive for simplification of better-regulation procedures and practices should not result in institutionalisation of short cuts. Substituting rigorous impact assessment and related consultation with superficial assessments is not a solution.

4.6 Recommendation 6: externalisation of ex-post evaluations

Externalise ex-post evaluation by empowering an external body as a centre for evaluation²¹ expertise to carry out evaluations and to conduct, in coordination with Commission services, EU agencies and responsible member state authorities, ongoing monitoring and assessment.

The success of the better-regulation system is ultimately reflected in efficient and effective implementation of EU law. To understand problems of implementation, ex-post evaluation is of fundamental importance. It is only through examining performance of EU countries in terms of implementation that recommendations for improvement can be made.

Several current practices could be strengthened and adjusted to improve the quality of ex-post evaluations. For example, each Commission proposal should include an evaluation plan (including data collection methods and requirements) and an implementation strategy. The RSB should review these plans at the start of the process. EU countries should contribute to evaluations, for example, by evaluating some pieces of legislation as case studies.

Importantly, they should also identify and assess the costs of gold plating at national level, and initiate cost reduction efforts there. EU agencies could also be required to assess performance in their respective areas, following the example of the state of the environment reports produced by the European Environment Agency (eg. EEA 2025).

But given the political sensitivity of evaluations, a more radical change might be needed. While impact assessments are an integral part of the policymaking process and are better done close to the political level decision-making, ex-post evaluations might be better placed outside the institutions.

An external body could involve the different levels of governance and stages of implementation, take a multi-stakeholder perspective, better consider the inter-institutional responsibilities for legislation and avoid political influence in arriving at conclusions.

It could conduct stakeholder consultations to identify more accurately the stakeholders affected by legislation (central versus local authorities; citizens versus firms; SMEs) and engage with them to identify inconsistencies and incoherence across legislative areas to feed into evaluation planning.

It is fundamentally important that such an external body should be approved by, and have the support of, all EU institutions and that they agree to factor its findings and recommendations into their policy discussions. ■

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Endnotes

1. The first von der Leyen Commission (2019-2024) introduced regulatory budgeting and highlighted reduction of administrative burden and implementation as priorities (von der Leyen 2019). Simplification was a key priority for the Jean-Claude Juncker Commission (2014-2019). See Jean-Claude Juncker, 'Mission Letter to Frans Timmermans, First Vice-President, in charge of Better Regulation, Interinstitutional Relations, the Rule of Law and the Charter of Fundamental Rights', 1 November 2014.
2. See European Commission (2021a), pp. 8-9 for an overview.
3. In 2007, the Commission set up the High-Level Group of Independent Stakeholders on Administrative Burdens (Decision No 623/2007/EC), replaced by the REFIT platform (Decision C(2015) 3261) and in 2020 by the Fit for Future (F4F) platform (Decision 2020/C 163/03).
4. Under European Commission Decision C(2015) 3263 final on the establishment of an independent Regulatory Scrutiny Board.
5. Available respectively at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=oj:JOC_2003_321_R_0001_01 and https://data.europa.eu/eli/agree_interinst/2016/512/oj.
6. The 2025 OECD Regulatory Policy Outlook ranks the EU well above average on indicators of stakeholder engagement, regulatory impact assessment, ex-post evaluation and transparency (OECD, 2025).
7. Under the ordinary legislative procedure (OLP), applied to roughly 85 percent of all EU law, the European Parliament and the Council jointly adopt legislation. The remainder is adopted under special legislative procedure and pertains mainly to international agreements (including fisheries) and certain competition decisions adopted by the Council.
8. See Council of the EU (2023): "Out of these 598 delegated acts and implementing measures, 3 were accompanied by an IA (2 Commission implementing regulations, 1 Council implementing regulation)."
9. European Commission (2025b) indicated that 115 out of 430 empowerment decisions in the financial sector, and 57 out of 253 acts in the field of environment, were assessed as non-essential to the regulation and sometimes a source of regulatory burden.

10. See European Commission, [‘Omnibus I’](#), 26 February 2025.
11. At the time of writing, this proposal has not been finalised.
12. See Politico (2025) for a review of the proposals.
13. See, for instance, Martens (2025) for the digital omnibus.
14. EIB (2025) indicates that the time spent meeting EU regulatory requirements amounts to 1.1 percent of business turnover; 1.8 percent for SMEs. Eurochambres (2025) estimates the cost to business of the Green Deal to be €2 billion.
15. The first administrative burden reduction programme illustrated the problem. In 2007, the Commission set a 25 percent target, which was surpassed in 2013 with a total reduction estimated at €123.8 billion (or 27 percent). In a follow-up study, only five EU countries could provide requested data on the reductions and thus the study concluded that “the robustness of the conclusions is compromised by the lack of available evidence and data on the impacts of these measures on the ground” (ICF 2014).
16. Experience elsewhere, for example, in the United States, which has a cost/benefit system, shows that aggregate cost calculations are not fully accurate or conceptually sound. The US Office for Management and Budget (OMB) mentioned in its annual report for fiscal year 2023, “Aggregating benefit and cost estimates of individual regulations may produce results that are neither precise nor complete, nor, in some cases, conceptually sound” (OMB 2023, p.8).
17. SAPEA is a large group of European excellence academies and learned societies, which provides multidisciplinary scientific support to the scientific advice mechanism of the European Commission. It is supported by EU research funding. For more information, see European Commission, [‘Supporting policy with scientific evidence’](#), 1 July 2021.
18. European Commission, [‘Modelling Inventory and Knowledge Management System of the European Commission \(MIDAS\)’](#); undated.
19. See Delbeke (2024 pp.18-23): Jos Delbeke, Director General for climate policy in the European Commission from 2010 to 2018, has highlighted the role of impact assessments in preparing the ground for ambitious climate targets and shaping cost-effective and fair ways of reaching them.
20. See European Commission (2018 pp.87-92) for descriptions of the individual models.

21. Demertzis et al (2024) introduced the idea that ex-post evaluation should be external, somewhere between the European Parliamentary Research Service and ECA.

References

Alemanno, A (2025) *'The Omnibus Road to Constitutional Drift: How the Rise of Omnibus Legislation Undermines Procedural Integrity in the EU'*, *Verfassungsblog: On Matters Constitutional*, 12 November.

BusinessEurope (2022) *'Delegated Acts: Streamlining the Scrutiny'*, Position Paper, 6 October.

BusinessEurope (2025) *Reducing Regulatory Burden to Restore the EU's Competitive Edge*.

Council of the EU (2023) *'Impact assessment within the Council – 2023 annual report'*, 10082/23.

Delbeke, J (ed) (2024) *Delivering a climate neutral Europe*, Routledge.

Demertzis, M, A Sapir and J Zettelmeyer (2024) *'Memo to the Presidents of the European Commission, Council and Parliament'*, in M Demertzis, A Sapir and J Zettelmeyer (eds) *Unite, Defend, Grow. Memos to the European Union leadership 2024-2029*, Bruegel.

Draghi, M (2024) *The future of European competitiveness*, European Commission.

ECA (2018) *Ex-post evaluation of EU legislation: A well-established system, but incomplete*, Special Report 16, European Court of Auditors.

ECA (2020) *Law-making in the European Union after almost 20 years of Better Regulation*, Review 02, European Court of Auditors.

EEA (2025) *Europe's environment 2025*, European Environment Agency.

EIB (2025) *EIB Investment Survey 2025: European Union overview*, European Investment Bank.

Eurochambres (2025) *Economic Survey 2026*.

European Commission (2007) *'Action programme for reducing administrative burdens in the European Union'*, COM(2007) 23 final.

- European Commission (2012) *'EU Regulatory Fitness (REFIT): Results and next steps'*, COM(2012) 746 final.
- European Commission (2018) *'Impact assessment accompanying the document Proposals for a Regulation of the European Parliament and of the Council establishing rules on support for strategic plans to be drawn up by Member States under the Common agricultural policy...'*, SWD(2018) 301 final.
- European Commission (2021a) *'Better regulation: Joining forces to make better laws'*, COM(2021) 219 final.
- European Commission (2021b) *EU reference scenario 2020 – Energy, transport and GHG emissions – Trends to 2050*, Publications Office of the European Union.
- European Commission (2021c) *Regulatory Scrutiny Board Annual Report 2021*.
- European Commission (2021d) *'Regulatory Scrutiny Board opinion on a Proposal for the European Parliament and of the Council amending Directive 2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards sustainable corporate sustainability reporting'*, SEC(2021)164.
- European Commission (2022) *'Regulatory Scrutiny Board opinion on a Proposal for a Directive of the European Parliament and of the Council on Sustainable Corporate Due Diligence and amending Directive (EU) 2019/1937'*, SEC(2022)95.
- European Commission (2023) *Regulatory Scrutiny Board Annual Report 2023*, Publications Office of the European Union.
- European Commission (2024) *Regulatory Scrutiny Board Annual Report 2024*, Publications Office of the European Union.
- European Commission (2025a) *'A simpler and faster Europe: Communication on implementation and simplification'*, COM/2025/47 final.
- European Commission (2025b) *EU agricultural outlook 2025-2035*, Directorate-General for Agriculture and Rural Development.
- European Ombudsman (2025) *'Recommendation on the European Commission's compliance with 'Better Regulation' rules and other procedural requirements in preparing legislative proposals that it considered to be urgent' (983/2025/MAS – the "Omnibus" case, 2031/2024/VB - the "migration" case, and 1379/2024/MIK - the "CAP" case)'*.
- Herby, J (2024) *'EU regulatory volume has doubled since the Treaty of Lisbon'*, EPICENTER, 4 June.

- Hiller, W (2024) *European Parliament work in the fields of impact assessment and European added value: activity report for 2023*, European Parliamentary Research Service.
- ICF (2014) *ABR Plus Study, Final Report*, ICF Consulting Services Limited.
- Kaufmann, C (2025) *'Reframing simplification in support of a sustainable EU'*, Policy Brief 1, IDDRI.
- Letta, E (2024) *Much more than a market*, report to the Council of the European Union.
- Marcus, JS (2024) *'How to achieve better EU laws'*, Centre for European Policy Studies.
- Marcus, JS and K Sekut (2024) *'Simplifying EU law: a cumbersome task with mixed results'*, Analysis, 23 September, Bruegel.
- Marcus, JS and A Thomadakis (2025) *Reporting obligations, study requested by the JURI Committee*, European Parliament.
- Martens, B (2025) *'The European Union needs more than the digital omnibus to make digital services competitive'*, Analysis, 8 December, Bruegel.
- OECD (2025) *OECD Regulatory Policy Outlook 2025*, Organisation for Economic Co-operation and Development.
- OMB (2023) *Report to Congress on the Benefits and Costs of Federal Regulations and Agency Compliance with the Unfunded Mandates Reform Act*, US Office of Management and Budget.
- Politico (2025) *Burning through the rulebook: Europe's omnibus fever*, Politico Research & Analysis Division.
- Robert, C (2019) *The political uses of expertise in the EU decision making: the case of comitology*, report for the Greens/EFA Group in the European Parliament.
- Von der Leyen, U (2019) *A Union that strives for more: My agenda for Europe*.

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2025 and the path ahead

Regulators must foster a financial system that allows each bank to thrive and support a vibrant economy and financial system. Michelle Bowman discusses banking regulations, emphasising the importance of regulatory tailoring and the promotion of innovation

Throughout my now seven years as a member of the Federal Reserve Board, I have found that direct outreach with bankers has been the most effective way to learn about and understand your perspectives on improving the regulatory and supervisory frameworks, and on local banking and economic conditions.

It has now been seven months since I was appointed by President Trump as Vice Chair for Supervision. It is an incredible honour and a profound responsibility to serve in this role. Since I first joined the Board in November 2018, we have faced significant challenges in the banking system and in the economy.

Serving on the Board during this time has provided a unique perspective about the banking system and specifically this role, including how to effectively carry out its important responsibilities and promote the safety and soundness of the banking system.

Over the past seven months, I have implemented a comprehensive approach to pragmatic supervision and regulation. As we work to preserve safety and soundness, we must ensure the US banking system remains efficient, innovative, and accessible. This is especially important for the small and community banks that serve Americans across the country, including my hometown in Kansas.

Drawing from my own experience as a community banker and as the Kansas State Bank Commissioner, I have prioritized tailoring our approach to reflect the unique profiles of banks, refocusing our supervision on early detection and remediation of material financial risks and enhancing transparency in our processes. These risks are the core risks that truly threaten the viability and safety and soundness of institutions and the stability of the broader financial system.

The past seven years as a Governor have also profoundly shaped my approach to this role. They provided an invaluable, front-row perspective on the evolution of supervisory policy, the internal deliberations of the Board, and the real-world impact of our decisions on banks of all sizes.

I observed first-hand how certain regulatory and supervisory practices—which may be well-intended—can drift to focus on subjective, politicized, or tangential issues that divert our attention from the risks that materially impact safety and soundness and financial stability.

Supervision is a powerful instrument for promoting safety and soundness. It enables examiners to rigorously assess institutions and detect any material weaknesses requiring remediation

Leveraging these experiences allows me to explain not just *what* we are changing, but *why*—rooting reforms in observed outcomes rather than abstract theory. This approach bridges Washington policymaking with Main Street banking, ensuring that our supervisory and regulatory framework reflects lessons learned and prioritizes what truly matters for safety and soundness and financial stability.

Progress in supervisory and regulatory modernization

Since June of last year, we have significantly advanced on the agenda I laid out in my Georgetown University speech¹. While we have made a great deal of progress in just a few months' time, today, I would like to focus on a few of these priorities.

Beginning with properly targeted supervision. Supervision is a powerful instrument for promoting safety and soundness. It enables examiners to rigorously assess institutions and detect any material weaknesses requiring remediation. Every institution is distinct—with respect to its products and services, geographic presence, market position, and the specific risks it poses.

Supervision is one of our most valuable diagnostic tools. It requires a balanced approach, tough decisions, and reasoned judgement. What is the scope of the examination? Which risks should be prioritized? Are there new or emerging risks that require additional review? To be effective in promoting safety and soundness and US financial stability, supervision must focus on the most important risks—which are the core and material financial risks.

In late October 2025, for the first time, the Federal Reserve published supervisory operating principles designed to enhance supervisory transparency and accountability and sharpen our examination processes². These principles direct supervisory staff to identify and require early remediation of material financial risks.

The failure of Silicon Valley Bank (SVB) exposed critical flaws in our prior supervisory approach, which became an ever-expanding scope of unfocused activities that led examiners and the bank to overlook or downplay severe interest-rate and liquidity risks that triggered the bank's collapse and eroded broader public confidence.

As I have said a number of times in the past, significant lessons remain from the SVB episode, and we are committed to identifying and rigorously addressing them.

Turning back to the operating principles, since their introduction, we have made significant progress in their implementation, including through question and answer sessions with leaders and staff throughout the Federal Reserve System, both at the Board and the Reserve Banks; providing illustrative examples to demonstrate how they should be applied in different circumstances, which we will add to over time; hosting conversations and answering questions from Supervision leaders and staff; and soliciting feedback from regulated firms.

If we discover areas that should have been included but were not covered in the initial set of principles, or if we find that there is confusion or misunderstanding about how they should be applied we will refine our approach.

We have also made an important change to the LFI ratings framework that applies to the largest banks. The changes ensure that the 'well-managed' status of a firm is reflective of its overall ratings and risk, rather than disproportionately weighting a single supervisory component to drive this overall assessment of the firm. While this is an important step, we recognize that there is more work to be done on bank ratings frameworks, which I will discuss shortly.

We have also eliminated the use of 'reputational risk' in the supervisory process. In the past, this imprecise supervisory tool has been misused to prohibit politically disfavoured activities. And in furtherance of our focus on

core and material financial risks, we have rescinded the climate guidance that diverted supervisory resources away from risks that are material to the safety and soundness of banks.

This guidance forced institutions to devote excessive resources to collecting climate-related data from customers and prospective customers, and to forecast business risks beyond any reasonable or reliable forecasting window, potentially decades into the future—all to address risks that banks are already required to manage. In short, these climate principles did little to further our statutory objectives to protect safety and soundness and financial stability.

Banking inherently involves risk. The regulatory framework aims not to eliminate risk, but to ensure the safe and sound management of risk. With proper prioritization, regulators and examiners can foster robust risk management while enabling banks to innovate, grow, and serve their customers, communities, and the broader US economy.

Since the mortgage crisis more than 15 years ago, bank regulation has been implemented under an overly granular ‘more-is-better’ approach that has driven significant banking activity out of the regulated system and into less-supervised corners of the financial landscape. This framework is long overdue for a comprehensive review.

An unfocused, process-heavy approach to regulation and supervision leaves banks less able to support economic activity, displaces activity into unregulated sectors, and ultimately makes the overall financial system less safe and stable.

In recent months, we have introduced meaningful improvements, including publishing several proposals for public comment, and finalizing several critical reforms. We have proposed re-calibrating the community bank leverage ratio (CBLR) to the statutory minimum to provide greater flexibility to eligible community banks.

This would change the required level of capital for community banks electing the CBLR from 9 percent to 8 percent, a level that is still nearly double the required Tier 1 leverage ratio and preserves a strong capital foundation for these firms. The CBLR allows a community bank to choose to meet a single leverage capital requirement instead of the risk-based measures designed for larger banks.

In addition to meeting the statutory capital requirement, it enables more community banks to take advantage of the relief that Congress intended. We look forward to receiving comments and ultimately finalizing the proposed revisions.

We have also modified the enhanced supplementary leverage ratio (eSLR), returning it to its traditional role as a leverage-based backstop to risk-based capital requirements. In doing so, we are making real progress to enhance the stability of the US Treasury market by enhancing intermediation capacity for large bank-affiliated broker-dealers.

In addition, we are in the process of revising and enhancing the stress testing program to reduce year-over-year volatility, improve the reliability and accuracy of the models, and increase transparency. And in the coming days and weeks, the Board will announce additional regulatory changes to improve the fairness, transparency, and prioritization of the supervisory process.

The path forward: bank regulatory and supervisory reforms

While I hope that you are already seeing the benefits of these initial modernization efforts, there are a number of additional initiatives underway that will materially improve the bank regulatory framework for all sizes of banks—especially for community banks.

Improving supervision – memorializing changes in regulation

Staff will soon conclude several regulatory proposals that will guide our supervisory work. The first proposal would define what constitutes ‘unsafe and unsound’ practices for supervision and enforcement activities. The second removes ‘reputation risk’ from the supervisory process.

These proposals will largely align with the Federal Deposit Insurance Corporation (FDIC) and Office of the Comptroller of the Currency (OCC) proposals and are intended to demonstrate the Federal Reserve’s commitment to transparency, fairness, and efficiency, which are the core principles I have supported for many years.

Updating and indexing asset thresholds

Bank supervision and regulation applies based on the categorization of banks into ‘portfolios’, which are based on a combination of fixed statutory and regulatory thresholds. Many of these portfolios rely on only a single, fixed asset level, like the definition of a community bank at \$10 billion or a large bank at \$100 billion. This type of definition relies only on the bank’s asset size regardless of its activities, business model, or risk profile.

Among many other shortcomings, this approach does not account for economic growth and inflation over time. As a result, firms with stable growth, consistent business models, and no change in risk profile end up crossing asset thresholds and becoming subject to increasingly complex and burdensome regulatory requirements and supervisory expectations.

While asset thresholds for portfolios play a significant role in the supervisory process, there are a wide range of thresholds that impact banks across the regulatory and statutory frameworks. Looking ahead, we will reconsider these regulatory thresholds and will work to support Congress in updating thresholds that have become outdated and too low relative to the broader economy.

A simple solution would be to adjust thresholds by nominal GDP, which includes both economic growth and inflation. Doing so will result in a more robust and resilient system over time, proactively integrating indexed changes into the framework.

It may also be worth considering whether single-metric thresholds, like those based purely on asset size, are the most effective way to align statutory, regulatory, and supervisory requirements with the underlying risk of the activity, or whether a more nuanced approach may be appropriate. For example, a more nuanced approach could consider things like business model and risk profile as inputs.

I look forward to working with Congress and my regulatory colleagues to address these and other opportunities to update the regulatory framework. I also support taking a comprehensive approach to indexing statutory requirements broadly across all financial agency authorities.

Supervisory portfolios

In several speeches over the past few years, I have outlined considerations for a more effective approach to supervising community banks³. This would require better aligning our supervisory approach to the complexity and risk profile of smaller institutions.

Community banks should be subject to strict supervisory oversight, but it must be commensurate with their smaller size, simpler business activities, and the modest risks they pose to US financial stability. This could be accomplished by separating the community bank oversight program from those designed for larger and regional banks, focusing examiner attention on small bank risks and activities. This would also eliminate the temptation to 'push down' standards and expectations to community banks, that were designed for larger and more complex institutions.

Material financial risk

To avoid confusion, it may also be helpful to clarify what is meant by identifying material financial risks in the supervisory process. It does not mean focusing primarily on checking boxes in reviewing processes, procedures, and documentation, regardless of the assessment of risk. It also does not mean ignoring other aspects of the established supervisory programme.

As the supervisory operating principles note, focusing on material financial risks requires examiners to use reasoned judgment to prioritize through every stage of an examination. This begins with targeting in the pre-examination letter, the examination's scope of work, and differentiating between findings that meet the threshold of a matter requiring attention, and those that can be addressed through less formal means. The operating principles specifically reference supervisory observations for those matters that do not rise to the level of a violation but may be included in an examination report.

Reducing overlap in examinations

In conducting holding company supervision, the Federal Reserve is required by statute to rely 'to the fullest extent possible' on examinations performed by a subsidiary bank's primary state or federal supervisors.

In practice, complying with this requirement imposes significant limits on the Fed's supervisory activities. This applies to national banks regulated by the OCC and state non-member banks regulated by the FDIC and a state banking regulator⁴.

The requirement is designed to avoid redundant and burdensome examination processes. However, to be effective, the Fed must have confidence in the supervisory processes and outcomes of these OCC, FDIC, and state banking agency exams, which requires access to and a thorough review of examination reports and activities. Where it is not

possible to rely on or we do not have access to an exam or supporting documentation of supervisory activity, we may need to conduct our own review.

Reports of examination and supervisory ratings

Each bank examination concludes with a report of examination. This report documents exam findings including any supervisory observations or criticisms, and matters requiring attention (MRAs) or matters requiring immediate attention (MRIAs), if any are found during the exam. The report also includes the bank's supervisory ratings according to the CAMELS rating system⁵.

Exam findings and the inclusion of specific matters in the report can have serious consequences for the bank. In addition to directing how banks prioritize their efforts to remediate identified issues, the bank's CAMELS rating can influence whether the bank qualifies to receive favourable treatment of banking applications, affect the cost of FDIC insurance premiums, affect the cost of liquidity funding, and serve as an indication of bank management performance for its board of directors.

The supervisory operating principles emphasize that examination findings and reports must focus on material financial risk. We are currently implementing several initiatives to reflect this approach including: revisiting the standard for issuing MRAs and MRIAs; ensuring that CAMELS ratings reflect a bank's risk profile and financial condition, including that the 'M' for management is assessed on measurable factors; and reviving the use of non-binding supervisory 'observations', which identify matters of note that do not rise to the level of an MRA or MRIA.

Although supervisory observations are not 'binding' on the firm, in the sense that they do not require formal remediation, these informal communications are valuable for early identification of issues that may grow to become

potential concerns. They also encourage constructive communication and feedback between examiners and bank management.

Reporting and applications

Our work to modernize the frameworks also includes reporting and applications, especially for community banks. The obligation to provide data or other information, including through quarterly bank 'call reports' creates a disproportionate burden on community banks. Often, regulators and supervisors do not review the information and data that is submitted.

This presents an opportunity to revisit these data collections in a rigorous review that would ensure that each collection remains relevant and necessary for supervisory purposes, including whether there are lower-cost and less burdensome alternatives available.

This certainly is a departure from recent regulatory approaches, in which more is always better, but collecting *less* information can help us to ensure we are focused on collecting the right and most valuable information. Revisiting our long-standing processes will help us to understand whether we have struck the right balance. Refining our approach to data collection can make a meaningful difference in reducing burden while also maintaining robust oversight and high standards.

Like all banks, community banks often require regulatory approval to engage in some business activities and mergers, or to engage in new activities. The process of applying for regulatory approval has become uncertain, cumbersome, disruptive, and slow.

In some cases, application forms may not require a bank to submit the necessary information needed to evaluate an application. The application process may also include standards that make little sense when applied to community banks, like using restrictive screens for evaluating the competitive effects of mergers in rural and underserved communities.

In addition, the process often lacks specific action timelines necessary for business planning purposes. Mergers and acquisitions involve coordinating a number of time-dependent processes, including transaction closing and staffing related planning, and the process of scheduling technology integrations with specialized vendors. Missing deadlines can be costly for the institutions involved, and we are currently working to improve this process by addressing these and other challenges, especially for community banks.

Transparency

Finally, I would like to discuss transparency, which I see as a critical element of the regulatory and supervisory processes. Transparency in supervisory expectations is just as important as transparency in regulatory requirements, and yet it often receives the least scrutiny and attention.

In part, the lack of transparency for supervision results from information security rules and how they apply to communication between banks and examiners. These have been protected from public scrutiny under the broad categorization of 'confidential supervisory information' (CSI).

Labelling information as CSI results in significant restrictions on its disclosure—banks and bank employees are subject to criminal penalties if they disclose CSI without regulatory approval even if doing so would serve beneficial purposes for bank safety and soundness.

When banks share the latest information about fraud prevention among themselves—if some of the data is currently classified as CSI—the disclosure can be prohibited, even if sharing it could make all banks more resilient to emerging fraud risks.

Likewise, bank regulators dedicate a great deal of time and effort to reviewing bank cyber risk profiles and controls, and yet opportunities for collaboration and sharing can be limited by the fear that sharing CSI could result in criminal penalties.

These examples demonstrate how expansive the definition of CSI has become. The vague and over-broad definition and interpretation of CSI effectively prohibit constructive speech and information sharing.

In addition to limiting valuable uses of information sharing, the limits can also serve to shield abusive supervisory behaviours. To address these weaknesses, we are reviewing approaches to better define or create circumstances in which CSI can be shared, including through creating limited use cases exempt from the definition of CSI.

In another initiative to increase transparency, in December, we finally published a copy of the LISCC Operating Manual, which is one of the manuals used by Board and Reserve Bank staff to supervise the largest and most complex banks⁶.

We plan to release the remaining LISCC administrative manuals in the coming weeks and months. The public release of these manuals is just the beginning of our efforts to increase the transparency of our administrative processes.

We are working to identify other manuals and guidance to further enhance transparency and provide public accountability for our supervisory processes. Even though these documents are internally focused, they can give banks and the broader public insight into supervisory operations and expectations.

Closing thoughts

As we continue our work to modernize the bank regulatory framework and our supervisory approach, I look forward to engaging with our stakeholders for feedback. Informal conversations, round table discussions and attending conferences are helpful to achieve this goal. It also allows us to better understand the real-world consequences of our work. ■

Michelle W Bowman is Vice Chair for Supervision at the Federal Reserve System

Endnotes

1. Michelle W Bowman, [“Taking a Fresh Look at Supervision and Regulation \(PDF\)”](#) (speech delivered at the Georgetown University McDonough School of Business, Psaros Center for Financial Markets and Policy, Washington, DC, June 6, 2025).
2. See Board of Governors of the Federal Reserve System, [“Federal Reserve Board requests comment on proposals to enhance the transparency and public accountability of its annual stress test,”](#) press release, October 24, 2025.
3. See, eg. Michelle W Bowman, [“Community Banking: Looking Toward the Future \(PDF\)”](#) (speech delivered at the Community Bank Conference, hosted by the Board of Governors of the Federal Reserve System, Washington, DC, October 9, 2025); [“Thoughts on the Economy and Community Bank Capital \(PDF\)”](#) (speech delivered at the Kansas Bankers Association 2025 CEO & Senior Management Summit, Colorado Springs, CO, August 9, 2025); [“Taking a Fresh Look at Supervision and Regulation \(PDF\)”](#) (speech delivered at the Georgetown University McDonough School of Business Psaros Center for Financial Markets and Policy, Washington, DC, June 6, 2025); [“Community Banking \(PDF\)”](#) (speech delivered at The Robbins Banking Institute Lecture Series, Hays, KS, February 27, 2025); [“Brief Remarks on the Economy and Accountability in Supervision, Applications, and Regulation \(PDF\)”](#) (speech delivered at The American Bankers Association 2025 Conference for Community Bankers, Phoenix, AZ, February 17, 2025); [“Bank Regulation in 2025 and Beyond \(PDF\)”](#) (speech delivered at the Kansas Bankers Association Government Relations Conference, Topeka, KS, February 5, 2025); [“Brief Remarks on the Economy, and Perspective on Mutual and Community Banks \(PDF\)”](#) (speech delivered at the New England CEO Summit, Portsmouth, NH, January 31, 2025); [“Approaching Policymaking Pragmatically \(PDF\)”](#) (speech delivered at the Forum Club of the Palm Beaches, West Palm Beach, FL, November 20, 2024); [“Challenges to the Community Banking Model \(PDF\)”](#) (speech delivered at The 18th Annual Community Bankers Symposium, Chicago, IL, October 11, 2024); [“Building a Community Banking Framework for the Future \(PDF\)”](#) (speech delivered at the 2024 Community Banking Research Conference, St. Louis, MO, October 2, 2024).
4. 12 U.S.C. § 1844(c)(1)(B); (c)(2)(B).
5. Board of Governors of the Federal Reserve System, [“Uniform Financial Institutions Rating System,”](#) SR Letter 96-38 (December 27, 1996).

6. See Board of Governors of the Federal Reserve System, [LISCC Program Operating Manual \(PDF\)](#) (Board of Governors, April 2025).

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 to the California Bankers Association Bank Presidents Seminar, Laguna Beach, California, January 07, 2026.

The paradox of perfect supervision

A magnifying glass with a dark handle and a circular lens is positioned over a faint, semi-transparent image of a classical building facade with columns and a pediment. The background is a dark blue gradient.

Each financial crisis brings more financial supervision, more models and larger buffers – but still fragility persists. Jon Danielsson argues that resilience should be the organising principle of supervision, rooted in the basic idea that has long governed finance itself: diversification

Supervision is the process by which public authorities oversee financial institutions to ensure that they operate prudently and comply with regulations. It involves monitoring balance sheets and governance, curtailing undesirable risk-taking, keeping risk within acceptable limits, and using quantitative models to inform capital and liquidity buffers.

Officially, in both Europe and the United States, the aim of supervision is to ensure the safety and soundness of institutions, and the stability of the system as a whole. It is a demanding role, performed under public scrutiny and political pressure, with limited information and substantial uncertainty.

The limits of supervision

Supervision would likely work as intended if risks were known, measurable and stable, and if the system did not react to the act of supervision. None of this holds true in practice.

1. Risk measurement

Supervision focuses on risks that can be quantified, perhaps by using daily market, credit and liquidity measures. These measures largely capture routine fluctuations, not the events that truly matter: the probability of institutional failure, the likelihood of systemic crises or the build-up of instability in opaque corners of the system. Quantifiable risk tends to be the least important risk, and when we rely too much on such quantifiable risk in supervision, it can lead to complacency and the very outcomes supervision seeks to avoid.

When supervisors do their jobs well, it is almost axiomatic that dangerous risks emerge where they are not looking. By drawing attention to what is easily measured, supervision can create a false sense of control. The unmeasurable becomes unseen and hence ignored. When attempting to quantify the unmeasurable, we mistake precision for understanding – a classic McNamara fallacy.

2. Fallacy of composition

At the heart of modern supervision lies a fallacy of composition: if every institution is made prudent, the system will be safe. It is not so.

When a large shock occurs – perhaps a geopolitical crisis, a pandemic, or market panic – prudent institutions must reduce risks because regulations tell them to do so. That means selling into falling markets. These collective attempts at prudence become crisis amplifiers.

Supervision cannot eliminate crises. The system is too complex, too subject to endogenous amplification, and too uncertain for that. The goal should be to prevent shocks from cascading

The problem is structural. Most banks now use Basel III standard models, identifying the same risks in the same assets. When stress arrives, they run for the same exit because this is what the regulatory framework requires.

Actions that appear prudent in isolation become dangerous in aggregate. In the words of Milton Friedman (1953), “[t]he conditions for the optimum of the individual are not the conditions for the optimum of the group.”

3. Disclosure and the shifting of responsibilities

The push for ever more detailed rules not only standardises behaviour but also changes who carries the burden of judgement, as risk management is outsourced to the authorities. Banks disclose vast amounts of information to their supervisors, whereas the supervisors can only examine a small fraction of that information in real time.

That creates the illusion that supervisors could and should have identified the most serious risks ex ante. In reality, the almost infinite flow of information makes it impossible to know which signals matter at the time. Yet once a crisis has revealed where the danger lay, that same information can always be read backwards as if it had been obvious – the benefit of hindsight. The disclosure itself becomes grounds for blame, and responsibility is shared.

Endogenous risk

The prevailing supervisory logic is to identify and contain risks. Whereas this can make institutions safer by first approximation, it can also be counterproductive because it treats risk as exogenous.

Much financial risk is *endogenous* in the language of Danielsson and Shin (2003) and Danielsson *et al* (2009). It is the interaction of market participants that creates endogenous risk in the system. By contrast, exogenous risk arrives from outside the financial system: we are affected by it, but our actions do not cause or change it. Think of the asteroid that wiped out the dinosaurs 65 million years ago or COVID-19 in 2020.

The models that generally inform supervision assume that risk is exogenous. But in reality, supervision that tightly defines and targets specific risks causes institutions to cluster around the same models, metrics and responses. The system becomes synchronised: vulnerabilities emerge precisely because institutions behave alike, not because of anything intrinsic to the assets themselves. The result is endogenous risk.

Supervision thus reshapes the very risks it seeks to control, often for the worse. Each new rule alters incentives and encourages adaptation. The private sector adjusts rapidly, now aided by AI, exploiting gaps in supervisory coverage. Supervisors, by contrast, must negotiate consensus across jurisdictions – a slow, political process. The need for common standards pushes supervision towards the lowest common denominator: those risks easiest to define and measure internationally, but not necessarily the most dangerous.

This ratcheting effect increases costs without improving stability since it makes the system more uniform, more constrained and, paradoxically, more fragile.

Apply a basic principle of finance: diversification

The aim of supervision should be a system that remains stable even when individual parts fail. That requires shifting from risk-informed buffers to resilience. The key to resilience is variety in institutions, business models and responses to stress, as discussed in Goodhart and Wagner (2012), Vos and Beetsma (2016), and Danielsson (2024).

Diversification is one of the most successful principles in finance. It works for portfolios and should work for the financial system.

Policymakers already have the tools to promote diversity. Licensing and regulatory frameworks can encourage institutions with distinct business models, tailored to different markets and risk profiles, rather than pressing all

firms into a single mould. Proportional regulation can allow smaller or specialised institutions to operate without being forced into homogeneity.

Resilience also depends on judgement. Quantitative tools are essential, but they should inform rather than replace supervisory discretion. Experienced supervisors who can challenge models, interpret behaviour and recognise cultural shifts contribute more to stability than any uniform metric.

Conclusion

Supervision defines its mandate as ensuring safety, soundness, and stability. These are essential, but they are means rather than ends. The deeper purpose of financial regulation is to ensure that finance supports prosperity while robustly resisting failure.

Supervision cannot eliminate crises. The system is too complex, too subject to endogenous amplification, and too uncertain for that. The goal should be to prevent shocks from cascading.

The paradox of perfect supervision is that the more it seeks uniform control, the less stable the system becomes. Strength lies not in ever-greater measurement and control, nor in increasing liquidity and capital buffer, but rather in institutional variety, independent judgement, and acceptance that uncertainty cannot be regulated away.

A resilient system is one that withstands what we cannot foresee. ■

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References

Danielsson, J (2024), *[“Why so many crises happen when we know why they happen and how to prevent them”](#)*, VoxEU.org, 30 May.

Danielsson, J and HS Shin (2003), *“Endogenous risk”*, in *Modern Risk Management: A History*, Risk Books.

Danielsson, J, HS Shin and J-P Zigrand (2009), *[“Modelling financial turmoil through endogenous risk”](#)*, VoxEU.org, 11 March.

Friedman, M (1953), *“The methodology of positive economics”*, in *Essays in Positive Economics*, University of Chicago Press.

Goodhart, C and W Wagner (2012), *[“Regulators should encourage more diversity in the financial system”](#)*, VoxEU.org, 12 April.

Vos, S and R Beetsma (2016), *[“Stabilisers or amplifiers: Pension funds as a source of systemic risk”](#)*, VoxEU.org, 23 February.

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Leverage lies in marginal demand

Europe is the largest external holder of US federal debt. Paola Subacchi and Paul van den Noord discuss whether Europe's \$12.6 trillion holdings of US assets can be used as leverage if relations with Washington sour

ts position as the largest external holder of US federal debt – with roughly \$12.6 trillion exposure – could give Europe some financial leverage should relations with Washington deteriorate, as we saw happening with the case of Greenland. This question, which has recently popped up in some media outlets (Wigglesworth and Nangle 2026), arises naturally at a time when crossborder economic ties are increasingly entangled with geopolitical considerations.

In practice, however, Europe's US debt holdings offer little scope for strategic deployment as they are fragmented across jurisdictions and institutions, and efforts to weaponise them for political purposes would largely backfire.

Marginal demand and the limits of financial influence

The key analytical distinction is between existing asset positions and the behaviour of investors at the margin. Conflating the two obscures the mechanisms through which financial influence, if any, could plausibly operate.

Two qualitatively different dynamics are often treated as interchangeable. One involves gradual portfolio adjustment, as investors reduce the pace at which they add US assets, based on the expected risk–return balance. The other involves deliberate, coordinated action in which existing holdings are deployed as a bargaining chip. Only the former is economically and institutionally palatable. The latter lacks credibility and would entail substantial self-inflicted costs.

For this reason, arguments that infer leverage directly from the size of Europe's Treasury holdings misidentify the relevant mechanism. Influence does not stem from liquidating outstanding positions, which would be destabilising and value-destructive, but from shifts in future demand. The relevant choice is therefore intertemporal: whether to continue supplying marginal financing to the US over time.

The self-limiting nature of asset liquidation as policy instrument

Any attempt to extract influence through large-scale sales of US Treasuries would impose immediate losses on European holders. Rapid divestment would push yields higher, depress the valuation of remaining holdings, tighten global financial conditions, and generate spillovers into European sovereign and bank funding markets.

Europe's US asset holdings do not constitute a credible instrument of coercion as they are institutionally fragmented while large-scale divestment would be economically counterproductive

Because the losses would materialise quickly and disproportionately on the seller, liquidation lacks credibility as a strategic threat. Using the instrument would erode the balance sheet positions from which influence is presumed to arise. This explains why, historically, adjustments in reserve and portfolio composition have rarely taken the form of abrupt exits. Instead, they occur through reduced accumulation at the margin, gradual rebalancing, and slow substitution across assets.

Marginal financing, portfolio dynamics and constrained influence

The analytically crucial issue is not whether US sovereign debt can be transformed into an instrument of coercion, but whether foreign investors will continue to supply the incremental financing on which US fiscal dynamics depend. In Treasury markets, prices are set at the margin, making the behaviour of foreign buyers relevant over time.

From this perspective, Europe's strategic relevance lies not in any credible threat of liquidation, but as a source of ongoing demand. Changes in marginal demand affect yields, term premia, and exchange rate expectations, but only gradually.

This mechanism, however, limits the scope for turning holdings into leverage. Adjustments in flows occur slowly, as portfolios are reallocated over years, reflecting decisions by private institutions responding to returns, benchmarks, hedging costs, and liquidity requirements. Accordingly, Europe's existing stock of US assets cannot be mobilised effectively as leverage in a confrontation.

What China's experience really shows (and what it doesn't)

China's experience provides a useful benchmark. Over the past decade, adjustment occurred through a slower pace

of reserve accumulation and changes in the composition of foreign asset holdings, rather than through attempts to deploy Treasury holdings strategically (Ahmed and Rebucci 2025, Subacchi and van den Noord 2025).

Consistent with this approach, reported Chinese holdings of US Treasuries have declined to approximately \$700 billion, from a peak of around \$1.2 trillion in 2015. These figures likely understate total dollar exposure, given shifts within the broader state sector – including state-owned banks – and the use of offshore financial centres. Nevertheless, the central point remains: adjustment took place incrementally at the margin rather than through attempts to deploy the existing stock strategically.

The case for a gradual reduction in Europe's Treasury demand

Absent a credible financial instrument for strategic use, a more consequential issue concerns the sustainability of Europe's demand for US Treasuries. The question is whether continued accumulation remains economically justified in an environment of higher perceived default risk and a declining convenience yield amid increasing global fragmentation.

Foreign demand for US sovereign debt traditionally rests on three components: perceived safety, systemic convenience, and intertemporal returns. Evidence suggests that all three have weakened.

Concerns over safety are not about an imminent technical default, but about the normalisation of policy options once considered implausible, including selective default, political interference with debt servicing, and asymmetric treatment of foreign creditors, as suggested by Stephen Miran (2024), a current member of the Federal Reserve Board of Governors.

When positions are sizeable and investment horizons extend over long periods, even modest increases in perceived default risk can materially affect portfolio allocation. At higher default risk will sharply reduce foreign demand for US debt and puts upward pressure on yields (Subacchi and van den Noord 2026).

A second component is convenience. US Treasuries derive value not only from their credit characteristics, but also from their central role in a dollar-based trading and financial system. This convenience yield is contingent on openness. Trade restrictions, tariffs, and broader geoeconomic fragmentation weaken the transactional demand for dollar liquidity.

As trade becomes more regional and home bias increases, demand for dollar-denominated safe assets declines. Our work, reported in an earlier column (Subacchi and Van den Noord 2025), shows that increased home bias in trade – used as a proxy for fragmentation – significantly reduces foreign investors' demand for Treasuries, even when yields rise.

The third component is the intertemporal return trade-off. Historically, foreign investors have been willing to accept lower current returns on US debt in exchange for long-term stability, liquidity, and currency strength. That trade-off becomes less favourable when persistent fiscal expansion is combined with trade barriers and signals of limited concern for creditor interests. Higher yields may offer short-term compensation, but they also imply future adjustment through currency depreciation. Once exchange rate dynamics are incorporated, the long-run return advantage diminishes substantially.

Taken together, these considerations suggest that Europe's exposure to US Treasuries reflects choice rather than constraint. Continued accumulation is driven largely by private investors responding to yield differentials. However, yield should not be conflated with safety, nor short-term performance with intertemporal value. Therefore, the heyday of US debt as a safe investment may well be at risk.

Conclusion

Europe's US asset holdings do not constitute a credible instrument of coercion as they are institutionally fragmented while large-scale divestment would be economically counterproductive.

This does not imply stability of the current allocation. The interaction of trade restrictions and rising perceived default risk can materially weaken European demand for US Treasuries. These issues have become more relevant in light of fiscal and trade policy developments under the Trump administration, including proposals that raise the prospect of default or selective restructuring of US foreign liabilities.

If Europe's exposure to US assets declines, the adjustment is unlikely to occur through coordinated action. Instead, it would take the form of reduced net purchases, increased use of currency hedging, a rise in home bias within portfolios, and incremental reallocation toward euro-denominated safe assets. This is not leverage in a narrow sense, but it is the mechanism through which the global financial equilibrium would adjust.

The appropriate policy response is structural rather than tactical. Strengthening the depth and liquidity of euro-denominated safe asset markets, improving coordination in reserve and public asset management, and expanding the set of credible domestic investment options available to European savers should take priority (Landau 2025). Over time, such measures are likely to reshape the international financial equilibrium more effectively than reactive responses. ■

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References

Ahmed, R and A Rebucci (2025), *"A 'reverse conundrum' and foreign official demand for US Treasuries"*, VoxEU.org, 15 January.

Landau, J (2025), *"A world with no safe assets"*, VoxEU.org, 6 June.

Miran, S (2024), *A user's guide to restructuring the global trading system*, Hudson Bay Capital.

Subacchi, P and P van den Noord (2026), *"Could Europe continue to fund U.S. Federal debt?"*, working paper.

Subacchi, P and P van den Noord (2025), *"International trade suppression and the demand for US Treasuries"*, VoxEU.org, 11 April.

Wigglesworth, R and T Nangle (2026), *"Could Europe really leverage its \$12.6tn pile of US assets?"*, FT Alphaville, 19 January.

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Economic incoherence

The background of the slide features several stacks of gold coins, likely representing financial matters or economic issues. The coins are arranged in three main stacks of varying heights, with some individual coins scattered in the foreground. The lighting is dramatic, highlighting the texture and metallic sheen of the coins against a dark background.

EU member states may now exceed deficit limits if the borrowing finances defence. Paolo Surico proposes exempting innovation-related expenditure, rather than procurement, to raise long-run growth while maintaining fiscal responsibility and strategic autonomy

Europe's fiscal framework was designed to discipline public borrowing. Yet shocks from the pandemic and Russia's invasion of Ukraine have forced governments to stretch the rules. Under the revised Stability and Growth Pact (SGP), member states may exceed deficit limits if the borrowing finances defence.

Politically, the intuition is clear: security cannot wait. Economically, however, the exemption is flawed. Europe is relaxing fiscal rules for the least productive part of defence budgets while constraining the most productive: innovation.

The composition problem

The issue is not how much Europe spends on defence, but what it spends on. Around 40% of EU defence budgets go to personnel, more than one-third to goods and services, and only a small fraction to investment and R&D. Much procurement is imported.

Mejino-López and Wolff (2025) show that Europe's dependence on the US extends beyond equipment to high-tech systems, software, and associated maintenance. Consequently, a substantial share of borrowing permitted under the defence exemption leaks abroad, supporting US industry more than European technological capability.

By contrast, defence R&D — the component with the highest domestic return — remains chronically small. According to the European Defence Agency (2025), EU defence R&D in 2024 totalled just €13 billion ($\approx 0.07\%$ of EU GDP), compared with \$149 billion in the US ($\approx 0.51\%$ of GDP).

Using long historical data for the US, Antolin-Díaz and Surico (2025) find that tilting defence budgets toward R&D generates large and persistent gains in productivity and output, while spending on personnel or equipment delivers far lower long-run returns.

As Aghion and Howitt (1992) emphasise, innovation is inherently disruptive, and technological progress often comes from new entrants. Europe's concentrated defence-industrial structure, however, gives incumbents weak incentives to adopt technologies that threaten their dominance. A fiscal exemption favouring equipment procurement therefore raises profits for incumbents while discouraging frontier innovation. The exemption thus subsidises the least productive spending while constraining the most productive.

Europe's current fiscal carve-out is economically incoherent. It relaxes deficit rules for spending with limited domestic benefits while constraining investments — especially R&D — that expand long-run productive capacity, reduce dependence on foreign suppliers, and strengthen fiscal sustainability

Lessons from the US: from Bush's endless frontier to a European Office for Scientific Research and Development (OSRD)

Europe's challenge echoes a pivotal moment in US policy. In 1945, President Roosevelt asked his chief scientific advisor, the MIT-trained engineer Vannevar Bush, to recommend how to convert wartime scientific progress into peacetime prosperity. Bush's report, *Science: The Endless Frontier*, outlined a blueprint for what would become the American innovation ecosystem, built on three pillars:

1. Sustained public funding of basic research in areas of broad societal value
2. Strong universities and research institutes pursuing frontier science
3. A private sector capable of commercialising discoveries

This architecture underpinned the National Science Foundation, the tenfold expansion of the National Institutes of Health, and an innovation-driven economy producing breakthroughs from molecular biology to computing. Gazzani *et al* (2025a, 2025b) report that publicly funded but privately developed innovations have the largest and most persistent effects on productivity and standards of living.

US technological leadership, however, was not built on the Defence Advanced Research Projects Agency (DARPA) alone. DARPA represents just 2–4% of US defence R&D (~\$4 billion of \$149 billion in 2024). Fieldhouse and Mertens (2025) show that non-defence R&D, particularly in health and education, yields higher social returns than defence R&D.

Gross and Sampat (2025a, 2025b) demonstrate that Bush's OSRD, coordinating civilian R&D in wartime, was the ultimate engine of peacetime technological progress across electronics, engineering, and biomedical science.

Recent evidence clarifies why. Gazzani *et al* (2025a, 2025b) show that government-funded innovations have long-term effects not only by advancing the technological frontier but also by crowding in private R&D investment, particularly when funds flow to universities and research institutes. This, in turn, seeds dynamic start-ups and venture capital-backed firms, producing powerful cumulative productivity effects.

Europe can replicate this success by creating a mission-driven, science-centred institution analogous to OSRD, rather than a DARPA clone.

Draghi's 2024 report offers a blueprint for a mission-oriented, investment-driven research ecosystem. Realising Europe's "*endless frontier moment*" depends on translating these recommendations into long-term fiscal and institutional commitments, making innovation central to fiscal strategy rather than discretionary spending.

Improving the EU fiscal framework: exempt innovation, not procurement

Europe's current fiscal carve-out is economically incoherent. It relaxes deficit rules for spending with limited domestic benefits while constraining investments — especially R&D — that expand long-run productive capacity, reduce dependence on foreign suppliers, and strengthen fiscal sustainability.

A better framework would **exempt innovation-related expenditure** — particularly public R&D, defence and civilian — while keeping salaries, imported equipment, and routine procurement within deficit limits. Public R&D conducted in Europe, with European firms or joint ventures, would qualify; procurement-heavy spending would not.

Such reform delivers three core benefits:

1. **Alignment with growth:** borrowing for R&D yields high long-run returns and expands future fiscal capacity (Antolin-Diaz and Surico 2025).
2. **Fiscal responsibility:** R&D is small relative to total spending and among the most self-financing expenditures.
3. **Strategic autonomy:** technological leadership — not procurement budgets — defines defence-industrial capability (Mejino-López and Wolff 2025).

Operationalising an innovation exemption

Two mechanisms could anchor this shift:

- **R&D bonds:** long-term, earmarked instruments dedicated to exempt R&D spending, allowing investors to link financing directly to productive research.
- **European Investment Fund (EIF):** housed at the European Investment Bank (EIB), pooling and doubling private sector resources in addition to the capital raised from R&D bonds and other channels, significantly expanding existing commitments. Project selection would reflect economic merit and strategic relevance, overseen by a European OSRD-like agency. The fund would support dual-use technologies, strategic digital infrastructure, and the green transition, while multi-sourced procurement would intensify competition

among incumbents and start-ups. National equity stakes in the EIF would ensure accountability and visible returns.

Government support to venture capital markets

Policy can also strengthen venture capital markets. **Pension reform, tax incentives, and regulatory adjustments** can encourage institutional investors — particularly pension funds — to socialise the costs and benefits of a European innovation ecosystem by shifting from low-risk fixed-income assets toward long-term equity. For instance, a more decisive move from defined-benefit to defined-contribution pension schemes would increase funds' flexibility to invest in higher-risk, higher-return venture capital.

Venture capital funding in Europe remains concentrated in short-horizon sectors, particularly software and services in the UK, where financing risk is lower and exit options are more abundant; by contrast, science-based and long-horizon projects, despite potentially high social returns, are underfunded because they risk failing to secure follow-on financing (Parry 2025).

Policies that incentivise institutional equity investment and targeted support for later-stage start-ups (such as the European Investment Fund equity finance programme) would reduce long-horizon financing risk, improve capital allocation, and counter the migration of European entrepreneurs toward the US ecosystem.

Policy proposals to build a European innovation ecosystem

Innovation thrives on stability. Europe should adopt multi-year public R&D targets, set independently of GDP ratios, to crowd in private investment and ensure continuity across political cycles. Credible, predictable commitments — especially when coupled with guaranteed or lead demand — are powerful incentives for business R&D and venture capital.

Procurement reform is equally urgent. A shift away from sole-source awards to incumbents toward **open and competitive calls** accessible to both established firms and new entrants is needed. **Multi-source procurement**, where the same contract or components are awarded to a mix of incumbents and start-ups, would strengthen competition and promote technological integration across the defence industrial base.

Expanding significantly **Horizon Europe** (budgeted at €7.3 billion in 2024) would reinforce Europe's innovation backbone: universities, research institutes, and publicly supported laboratories. Participation should extend beyond the EU, including the UK, Switzerland, Israel, and Ukraine.

Likewise, it is necessary to expand significantly the **European Investment Fund** which, in 2024, committed to €3.1 billion in high-tech innovation (ETCI) and €7.3 billion in equity financing (of which only €175 million for defence) to support later-stage start-ups through scale-up finance.

A **Bayh–Dole-style framework** would allow public institutions to retain and license intellectual property from publicly funded research, amplifying returns and translating discoveries into technological leadership across the whole continent (as opposed to only Denmark and Germany, which adopted a version of the American legislative framework). This echoes Vannevar Bush's insight: public inventions should be patented to ensure disclosure, diffusion, and cumulative progress across sectors, including defence.

Addressing objections

First, security needs are immediate, but urgency justifies targeted procurement flexibility, not permanent exemptions for wages and imported hardware or for current spending creatively relabelled as defence (see German Council of Economic Experts 2025).

Second, innovation spending is hard to monitor, yet R&D is highly auditable — projects are registered, peer-reviewed, and often co-funded under the Horizon Europe framework.

Third, revising fiscal rules is politically difficult, but the Stability and Growth Pact (SGP) already recognises that not all debt is equal (Janeba and Larch 2025). An innovation exemption is a logical next step and would better equip the EU for future crises, including pandemics.

From loophole to leverage: a call for action

Europe stands at a crossroads. It can maintain fiscal rules that divert borrowing into short-lived consumption and potentially obsolescent equipment — or it can **redesign its fiscal architecture around innovation**: the ideas, technologies, and institutions that drive long-term prosperity and strategic autonomy.

The post-1945 US experience is clear: placing science and innovation at the heart of national strategy transforms productive capacity for generations. Europe must now choose the same path — replacing upside-down exemptions with rules that reward public investment in knowledge, empower universities and research institutes, and catalyse private-sector innovation across the continent. The choice is stark: continue subsidising technological dependence or build Europe's technological future. ■

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References

- Aghion, P and P Howitt (1992), "A Model of Growth Through Creative Destruction", *Econometrica* 60(2): 323-351.
- Antolin-Díaz J and P Surico (2025), "The Long-Run Effects of Government Spending", *American Economic Review* 115(7): 2376-2413.
- Bayh–Dole Act (1980), "U.S. Public Law governing ownership and licensing of publicly funded research".
- Bush, V (1945), *Science: The Endless Frontier*, U.S. Government Printing Office.
- Draghi, M (2024), *The Future of European Competitiveness: A Report for the European Commission*.
- European Defence Agency (2025), "[European Defence Agency data 2024-2025](#)".
- Fieldhouse, AJ and K Mertens (2025), "[The Returns to Government R&D: Evidence from US Appropriations Shocks](#)", Working Paper.
- Gazzani, A, J Martinez, F Natoli and P Surico (2025a), "[The Public Origins of American Innovation](#)", CEPR Discussion Paper 20788.
- Gazzani, A, J Martinez, F Natoli and P Surico (2025b), "[Public money, private innovation: How government funding built—and sustains—America’s technological leadership](#)", VoxEU.org, 18 November.
- German Council of Economic Experts (2025), *Jahresgutachten "Perspektiven für morgen schaffen, Chancen nicht verspielen"*.
- Gross, D and B Sampat (2025a), "America, Jump-Started: World War II R&D and the Takeoff of the US Innovation System", *American Economic Review* 113(12): 3323-3356.
- Gross, D and B Sampat (2025b), "[New data, old debates: US government-funded R&D and patent policy](#)", VoxEU.org, 17 February.
- Janeba, E and M Larch (2025), "[The European Union’s new fiscal rules: A fine line between brilliant masterpiece and another chapter of déjà vu](#)", VoxEU.org, 14 November.
- Mejino-López, J and G Wolff (2025), "Europe’s dependence on US foreign military sales and what to do about it", *Bruegel Brief*, 13 October.

Parry, C (2025), "Start-up Financing, Entry and Innovation", Cambridge University mimeo.

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Legal advisors are constantly in search of jurisdictions that offer not only credibility but also efficiency, stability, and legal robustness. The Civil Aviation Authority of the Cayman Islands highlight why the Cayman Islands is the jurisdiction of choice for aircraft registrations

In today's highly regulated and competitive aviation industry, aircraft owners, financiers, management companies, and legal advisors are constantly in search of jurisdictions that offer not only credibility but also efficiency, stability, and legal robustness.

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For over 50 years, the CIAR has upheld rigorous standards of safety and compliance, in line with the standards and recommended practices of the International Civil Aviation Organisation (ICAO). This commitment to global mandated standards has positioned the registry as a leader in international aviation, trusted by stakeholders across the globe.

The Civil Aviation Authority of the Cayman Islands (CAACI), established in 1987, is the statutory body responsible for aviation regulatory oversight throughout the Cayman Islands, and for aircraft registered in the Cayman Islands wherever they operate globally. The CAACI fulfils its duties effectively through a developed structure and a team of highly qualified professionals.

The authority's regulatory oversight extends to the licensing of aerodromes, aviation industry personnel, certification of aircraft accepted to the aircraft registry, continuing airworthiness, and associated maintenance organisations. In addition, economic regulatory oversight including issuance of operating permits to foreign carriers operating to the jurisdiction and adherence to bilateral air service agreements.

The CAACI has proven itself as a very attentive and responsive aviation authority by routinely working closely with applicants to assess and complete the registration requirements in order to meet client deadlines. In addition, the authority deploys its highly qualified and experienced airworthiness surveyors and flight operations inspectors to inspect aircraft at their preferred locations globally fulfilling initial and recurrent safety inspection requirements.

The Civil Aviation Authority of the Cayman Islands' commitment to client service, regulatory excellence, and innovation ensures that the Cayman Islands Aircraft Register remains a preferred choice for aircraft registration and financing in today's global aviation landscape

The CAACI adheres to high regulatory standards and offers excellent, responsive, and efficient service to clients and stakeholders by its dedication to building strong relationships. This has resulted in the CAACI's positive reputation, gaining respect and recognition within the global aviation industry.

Some of the major benefits of registering your aircraft in the Cayman Islands:

Bespoke systems to streamline processes

One of the CIAR's most innovative offerings is VP-C Online, a bespoke electronic document management platform. This system simplifies the entire registration lifecycle, from initial application to ongoing airworthiness certification, through intuitive online smart forms and secure 24/7 access to critical documentation. With its managed services partner – Brac Informatics Centre (BIC), the platform offers SSL encryption and secure, redundant data storage. VP-C Online ensures that client interactions are both seamless and secure, while enhancing compliance.

Client-centric oversight

A key differentiator for the CAACI is its personalized and efficient service model. The authority is known for working closely with clients and stakeholders to meet international mandated standards of the International Civil Aviation Organisation (ICAO), while respecting individual registration and financial transaction timelines providing bespoke technical solutions. This high-touch approach fosters lasting relationships and enhances the client experience, all while maintaining the highest regulatory standards.

A stable and compliant jurisdiction

The Cayman Islands offers a politically stable and financially compliant environment, backed by a respected English common law legal system. The Cayman Islands adheres to best practise financial regulatory standards and



through compliance demonstrates its commitment to international transparency without compromising client confidentiality, including best practises for anti-money laundering, tax information and international cooperation.

This legal reliability makes the Cayman Islands especially attractive for the incorporation of special purpose vehicles (SPVs) often used in international aircraft financing transactions. The Air Navigation (Overseas Territories) Order (AN(OT)O), a UK statutory instrument, is the enabling aviation legislation coupled with the bespoke regulatory code - the Overseas Territories Aviation Requirements (OTARs) offering regulatory assurance.

Protection of third-party interests (the Cape Town Convention)

The Cape Town Convention is an international treaty that aims to standardise transactions involving movable property, such as aircraft. In 2015, the Cayman Islands government passed enabling legislation entitling the Cayman Islands to international recognition as a territorial unit of a contracting state (the UK) to the Cape Town Convention and to recognition of the declarations deposited by the UK government on behalf of the Cayman Islands government with the International Institute for the Unification of Private Law acting as depository pursuant to Article 52(1) of the Cape Town Convention and Article XXXVII(1) of the Protocol – UNIDROIT.

The extension of the Convention to the Cayman Islands does not eliminate the existing local regime of security interest registration as there will be circumstances where the Convention will not apply (for example, where the owner of an aircraft is located in a non-contracting state or the aircraft does not meet the weight qualifications to fall within the Convention).

Indeed, some financiers opt for the protections available under the dual mortgage registration regime and make filings relating to mortgages under the Cape Town Convention as well as register the mortgages in the aircraft mortgage register maintained by the CAACI.

Ease of operation into US airspace

Cayman-registered aircraft benefit from exemptions to certain TSA Waiver Authorization requirements. This exemption provides operators with significant flexibility to schedule or reroute flights into or over US airspace on short notice—an advantage that’s particularly valuable for private and corporate aviation.

Cayman Maritime & Aviation City

For businesses looking to establish a physical footprint in the Cayman Islands, the Cayman Enterprise City’s Maritime & Aviation City offers a special economic zone. This initiative supports aviation service companies in setting up local operations, ranging from air transport and aircraft management to aerospace manufacturing and logistics. This environment not only enhances operational capabilities but also makes it easier to obtain an Air Operator Certificate (AOC), meeting requirements for principal place of business establishment in the jurisdiction.



**CAYMAN
MARITIME &
AVIATION CITY**
by Cayman Enterprise City

Summary

Whether it’s the stable legal framework, robust international compliance, advanced digital systems, or world-class regulatory support and service, the Cayman Islands continues to attract discerning aviation professionals from around the globe.

The Civil Aviation Authority of the Cayman Islands' commitment to client service, regulatory excellence, and innovation ensures that the Cayman Islands Aircraft Register remains a preferred choice for aircraft registration and financing in today's global aviation landscape. ■

Civil Aviation Authority of the Cayman Islands (CAACI)

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**CAYMAN ISLANDS
AIRCRAFT REGISTRY**

The cause of economic stagnation

An illustration of a person with dark hair, wearing a light-colored long-sleeved shirt and dark pants, sitting on a large, dark brown rock. The person is holding a fishing rod with a hook, and a brown suitcase is on the rock next to them. The background shows a dark blue ocean with several fish swimming and a dark sky with a few clouds. The overall scene is dimly lit, suggesting dusk or dawn.

Economic growth depends on free market policies. Patrick Minford argues that the UK's economic stagnation is not caused by Brexit but by damaging government policies

UK Government ministers have recently looked for a scapegoat for the UK economy's obvious failure to grow; and have come up with Brexit, always hated by the Labour left but voted for by its northern supporters *en masse* in 2016. A recent NBER working paper¹ has come to their aid, arguing that Brexit reduced UK per capita income by as much as 8%.

To get this estimate they used a 'doppelganger' technique which involves concocting a weighted group of other countries that mimic the UK's pre-Brexit behaviour, then taking their post-Brexit difference from the UK as the measure of the Brexit effect. As is obvious when you think about it for just a few minutes, this method is entirely fallacious, as the UK's relative behaviour since 2016 could be due to numerous differential factors at work both here and elsewhere, there is simply no identifying link to Brexit.

This can be seen clearly by swapping the countries in the doppelganger, which is easily done as before Brexit many countries were similarly affected by the Global Financial Crisis of 2008, giving a wide choice of component countries. If countries are chosen that recovered well from the GFC after 2016, such as the US, Greece and Estonia-given prominent weights in the NBER piece then it will look as if Brexit caused sizeable damage.

However, if other economies are substituted that have struggled to recover since the GFC, then it looks as if the Brexit effect is actually positive. But both such measures are spurious, simply illustrating that other shocks than Brexit are at work in the comparison.

Figure 1 illustrates the point, showing the difference between the NBER paper's chosen countries and an alternative set I have chosen, (labelled 'Our') to give a positive 'Brexit effect'.

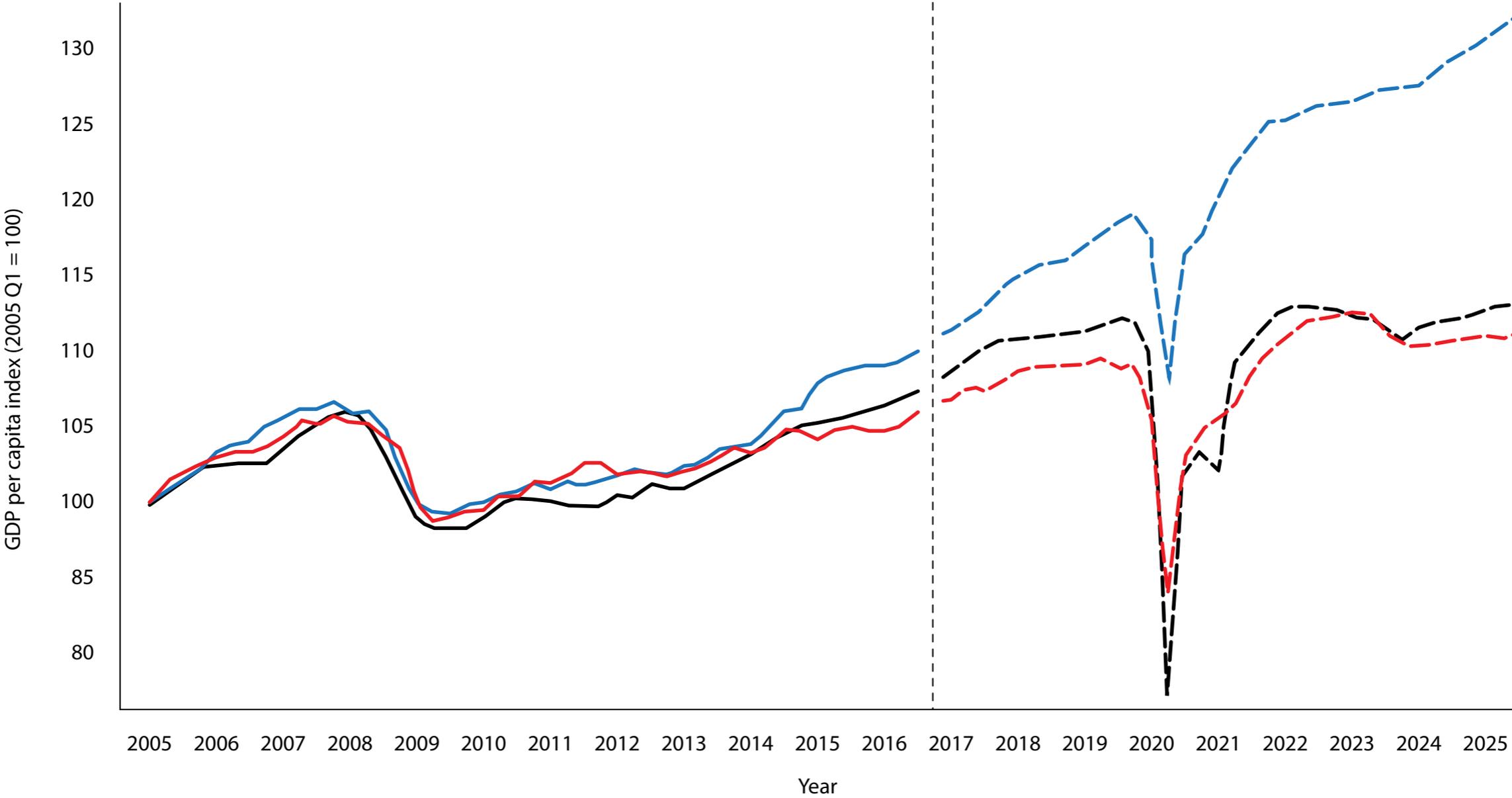
The NBER countries and weights (%) are: US 61.4, Estonia 10.9, Greece 9.5, Italy 6.7, Ireland 4.4, Latvia 3.4, Iceland 3.0, Hungary 0.7. The alternative countries and weights are:

	Canada	Iceland	Ireland	Italy
Weight	65.81%	13.53%	0.15%	20.51%

Britain's economic miseries can be put right by new policies restoring the economic incentives for entrepreneurs that were once put in place by the Thatcher reforms after the dreadful 1970s. These policies must be championed by whatever new government succeeds the current Labour government

Figure 1. UK GDP per capita versus alternative Doppelgangers

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- UK (before 2016 Q3)
- - - UK (after 2016 Q4)
- NBER doppel (before 2016 Q3)
- - - NBER doppel (after 2016 Q4)
- OUR doppel (before 2016 Q3)
- - - OUR doppel (after 2016 Q4)
- - - Break: 2016 Q3

Plainly, each set yield a close fit to the of UK pre-2016; for the record both have an R-squared around 0.9 for this period-fitting the UK closely.

So take your pick of these Doppelgangers: choose the NBER paper one and Brexit reduced UK GDP substantially. Choose the other and instead it raised it somewhat. Of course, neither comparison makes any sense. The only valid way to assess the effects of Brexit is to inspect UK data for shifts in behaviour around the Brexit dates.

Economic theory predicts that introducing a border with the EU followed by a Trade and Cooperation Agreement to restore free trade across that border will create temporary disruption as businesses adjust, either by adopting new paperwork to continue their EU trade or by diverting their trade to the home market or other countries.

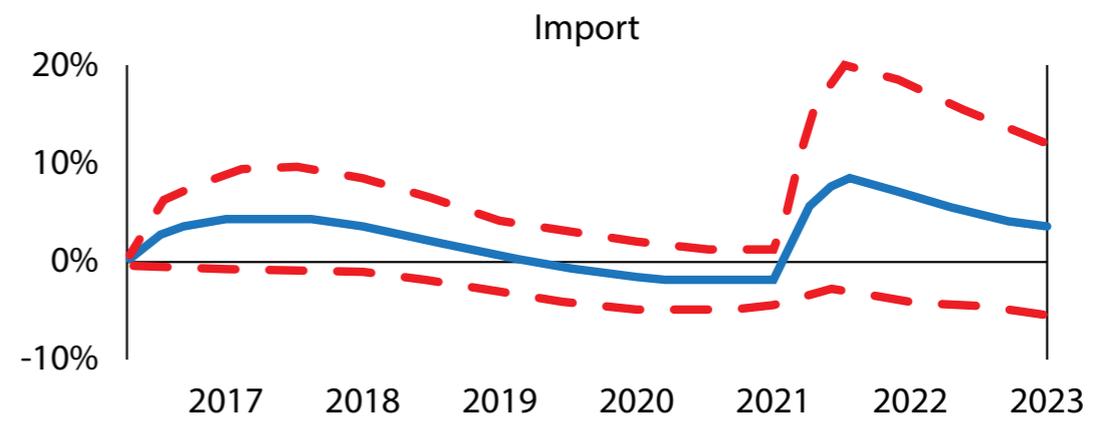
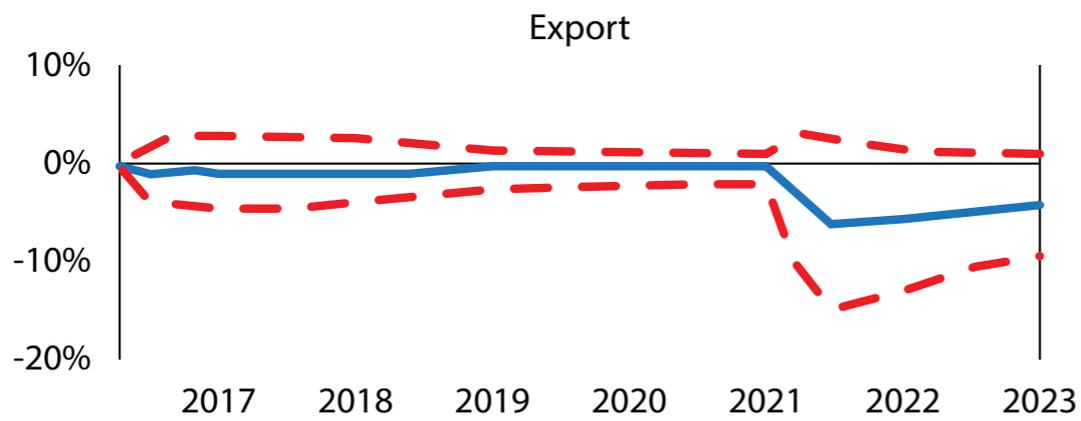
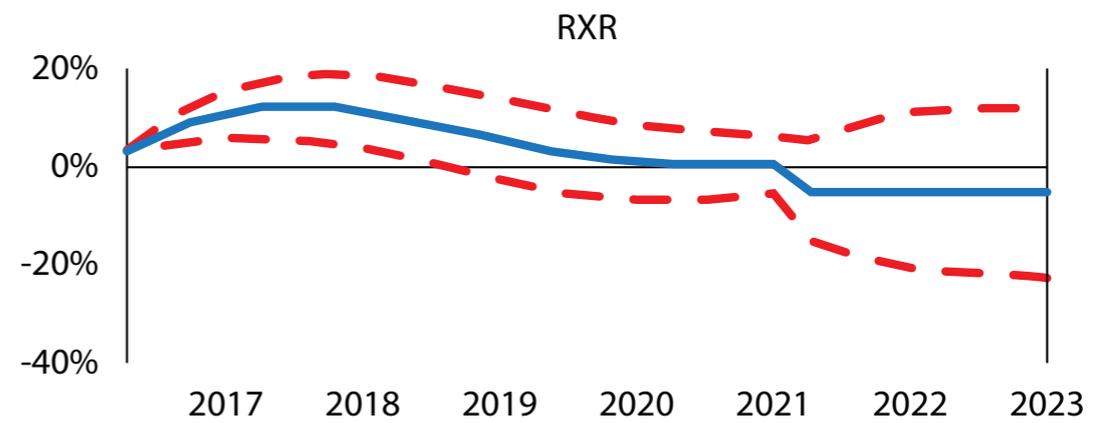
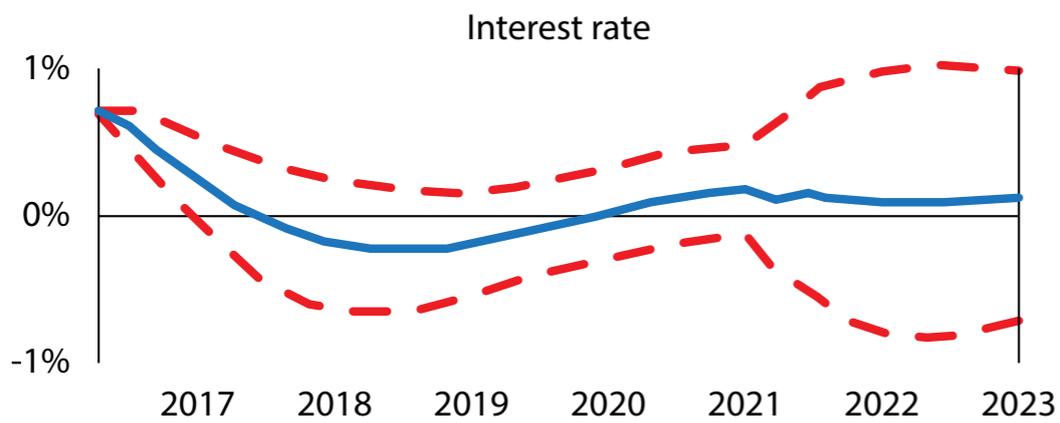
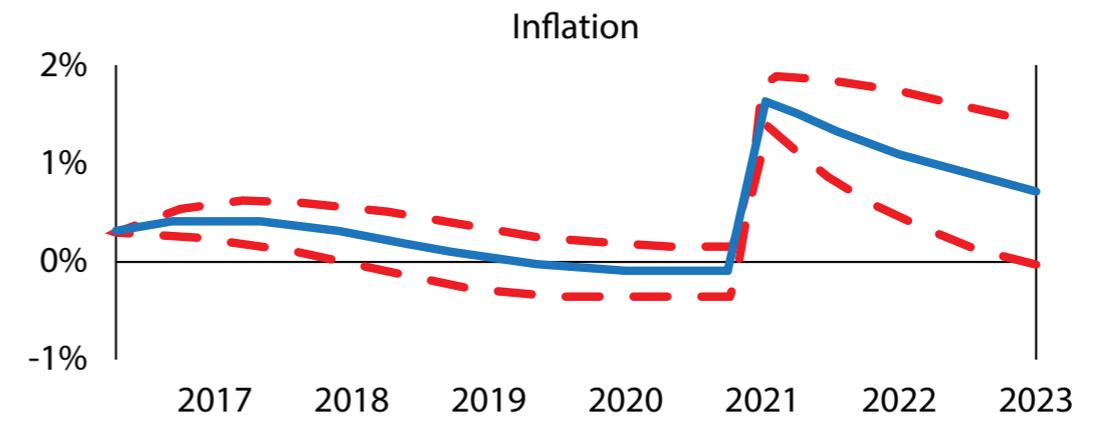
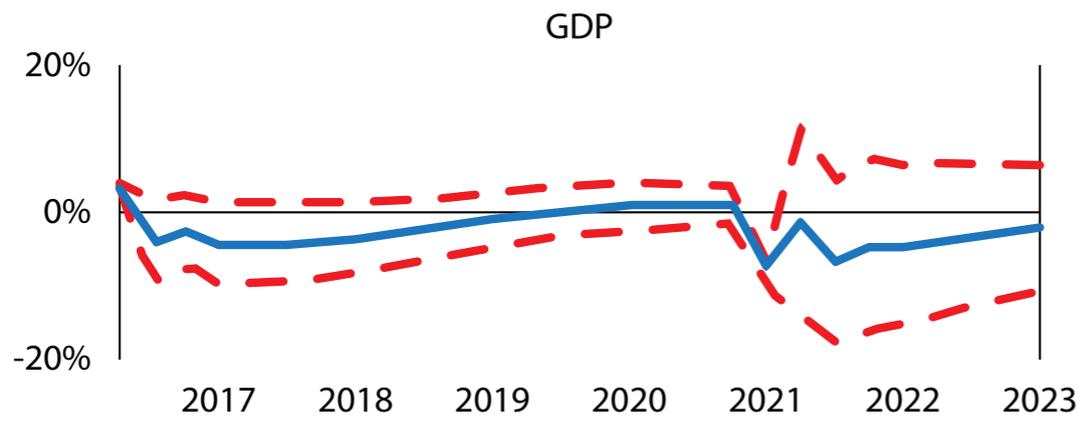
This is what I find in a recent joint paper² when looking for such shifts in behaviour in a many-variable regression of the UK on its past—a 'Vector Autoregression'. We show the results in the graphs below—in Figure 2 the blue lines show the estimated effects while the red lines show their statistical limits around this.

It can be seen they confirm that there are effects, but they dissipate over time. The NBER paper also has a survey of businesses, asking them about Brexit effects; this confirms there are differential effects for firms with more EU business, as one would expect. Our work suggests these will be temporary as these businesses adjust.

It is government policies on tax and regulation that explain the UK's recent weak economic performance. What research on growth has uncovered, both that of many scholars worldwide and our own work on the UK in Cardiff, is not surprising but it is crucial to understanding why the UK has moved into stagnation, as Figure 1 shows clearly that it has.

Figure 2. Diagrams of effects of Brexit from analysis of shifts in relationships at times of Brexit (red lines are 95% confidence limits)

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WCR ■ Spring 2026

— Estimated effect

- - - 95% confidence bands

It is that growth depends on the institutions of free markets and particularly the level of marginal tax rates on entrepreneurial income and the regulative burden on business, especially via the labour market, that acts in a similar way to siphon off entrepreneurial profit.

A good and accessible review of the postwar evidence on how growth is damaged by tax is still the Institute of Economic Affairs's *Sharper Axes, Lower Taxes*, published in 2011 and edited by Professor Philip Booth³. Jon Moynihan⁴ in his recent book, *Return to Growth*, has also usefully surveyed the cross-country evidence that low tax countries grow faster.

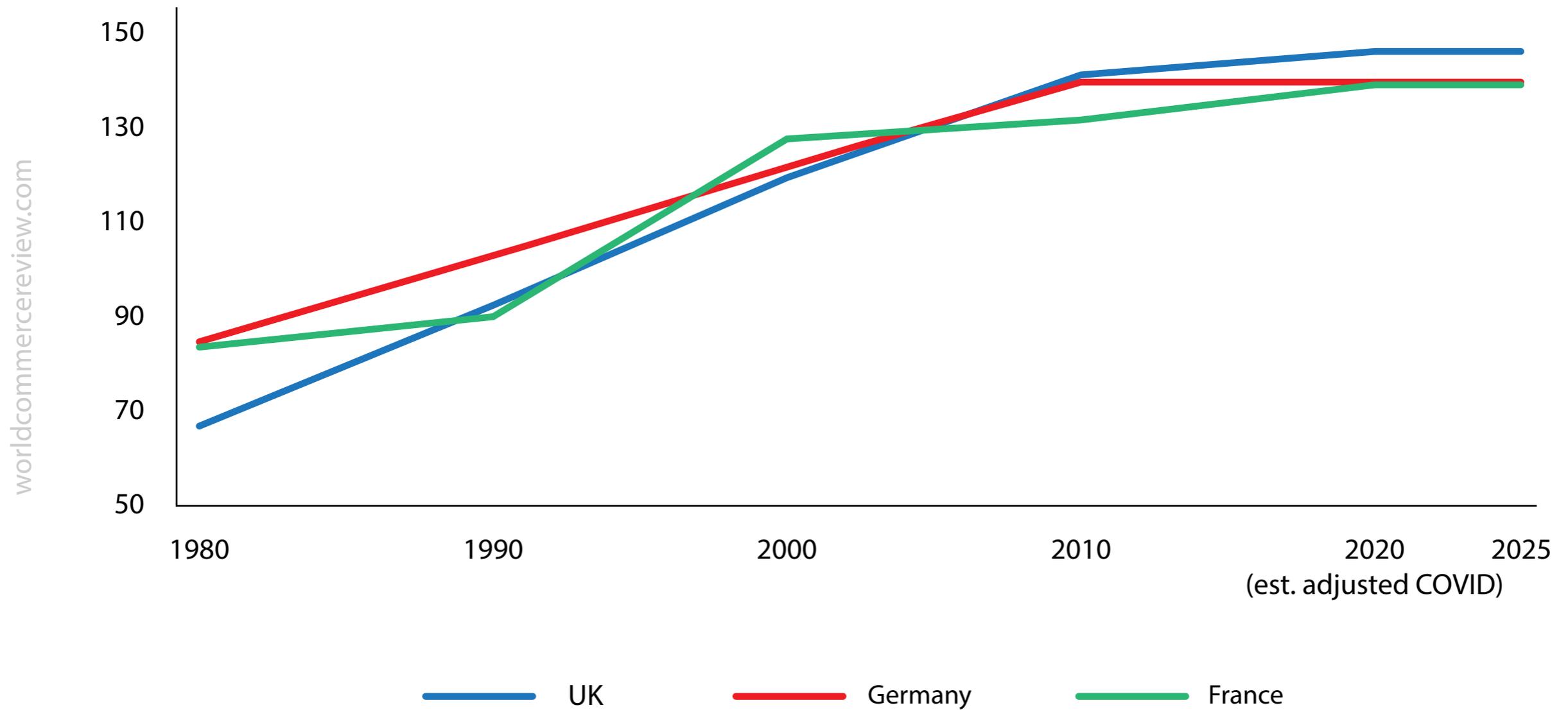
The UK economy has acted as a live experiment in these policies since 1970-which is a great help to economists who cannot generally count on policy experiments to further their research, as scientists in the natural sciences can. In the 1970s the UK was generally tagged as 'the sick man of Europe' with high inflation and unemployment as well as slowing growth.

Under the Thatcher governments of the 1980s new policies were brought in to reduce inflation via monetary reforms, while supply-side reforms such as union laws and privatisation eliminated union strike power to disrupt business while other supply-side reforms to the benefit system incentivised the unemployed to take available jobs.

These reforms raised employment and output, reducing unemployment to low rates. Finally, however and most importantly for growth, reforms were brought in, as Mrs Thatcher put it, 'to restore Britain's entrepreneurial culture', by cutting marginal tax rates on entrepreneurs and reducing labour market regulation. These reforms dramatically improved UK growth and living standards, as shown in Figure 3.

Figure 3. Per capita GDP for UK, France and Germany

PPP GDP per capita, Penn tables - US 1980=100



Ongoing growth comes from productivity growth which in turn is the result of innovation by entrepreneurs seeking better products and processes. By construction innovation cannot be known about in advance and so cannot be planned by state guidance or industrial strategy. It arises out of the free actions and curiosity of business owners and entrepreneurs.

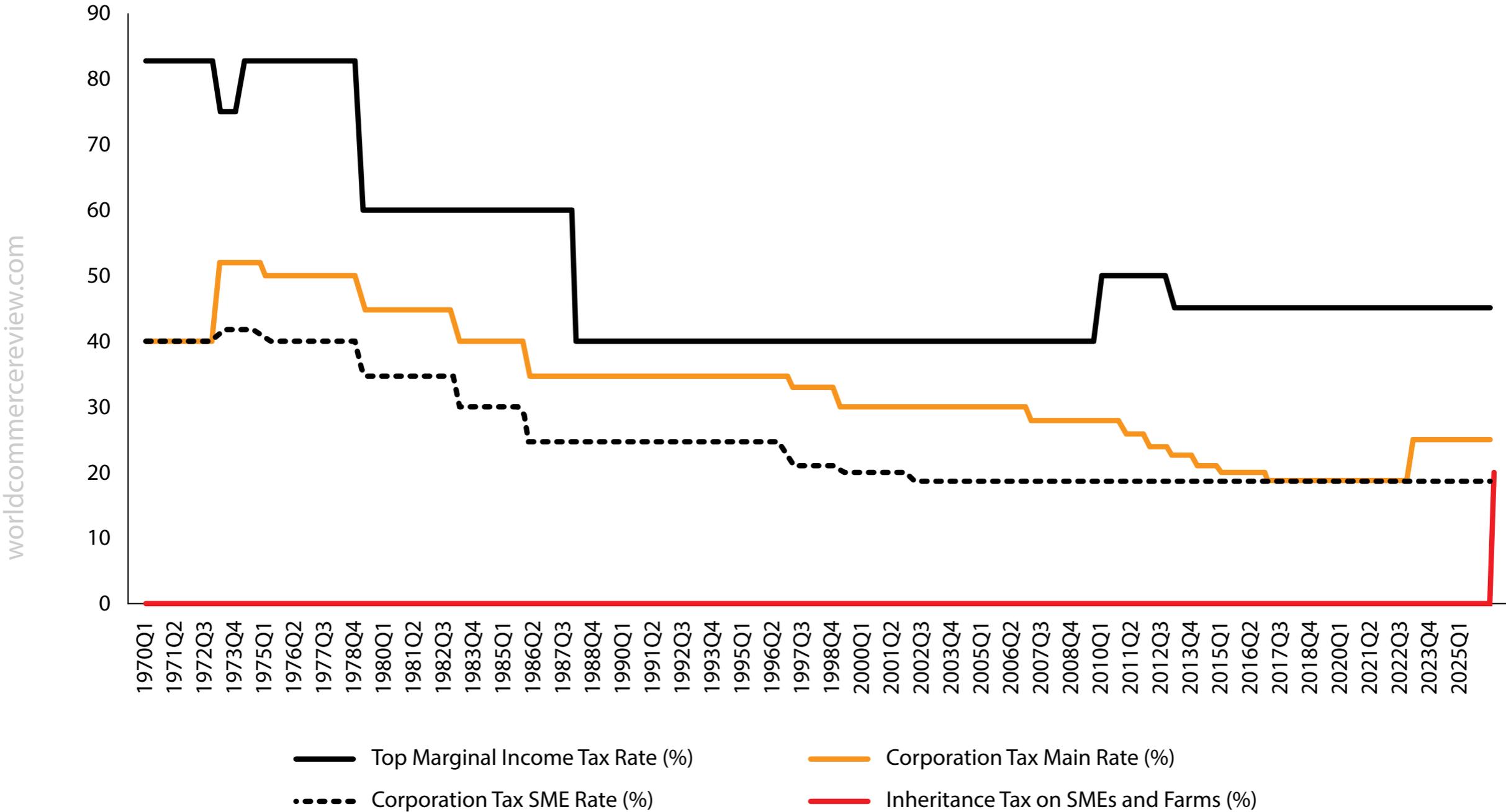
These will occur naturally provided incentives to innovate are not destroyed by confiscation (tax) or cost-raising regulation (effectively a tax whose proceeds go directly to beneficiaries of the regulation, as with workers obtaining mandated benefits such as holiday rights). The Thatcher government turned its attention in its third term to this issue.

A major regulative component of this had already been put in place in the form of union reforms, cutting back the power of unions to obstruct good working practices and insist on worker rights beyond those agreed to in free labour contracting between workers and firms.

The charts below show how the unionisation rate (in Figure 6), the Mandated cost of dismissal (MCD) and the Centralised Collective Bargaining rate (CCB) all fell during this period-see Figure 5 which also shows the average of these two as the index LMR. As yet there was no minimum wage (first set in 1999). What was still missing was non-confiscatory marginal income and corporate tax rates.

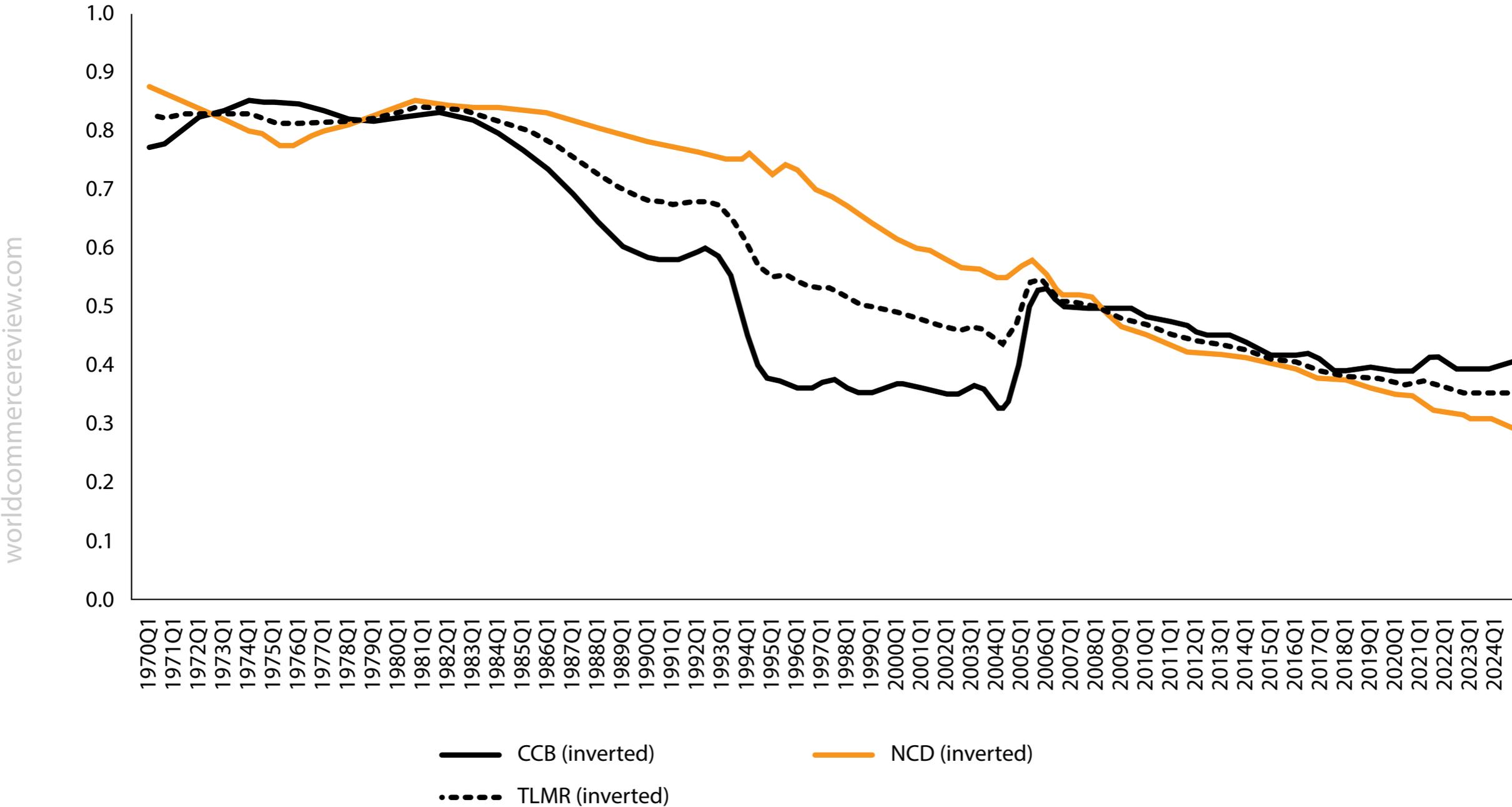
In the 1988 budget the top marginal income tax rate was cut from 60% to 40%, while the SME corporation tax rate had already been brought down to 30%, from over 40% in 1980, and the main rate to 35%, from over 50% in 1980. This greatly reduced the tax disincentives for entrepreneurs, comparing net returns from innovation to its costs and risks-see Figure 4.

Figure 4. Key marginal tax rates for entrepreneurs 1970-2025



Note: Inheritance tax on SMEs and farms is set at 20% on value above the £2.5 million threshold from April 2026.

Figure 5. Key parts of labour market regulation



Unfortunately, these reforms to tax and regulation have been badly undermined by left-leaning governments since 1997 when Labour regained power after the supply-side reforming governments of Mrs Thatcher and John Major over the 1980s and 1990s.

The advent of the Labour government in 1997 put an end to the Conservatives' policy of keeping EU regulation at arm's length. John Major had agreed an opt-out from the Social Market provisions of the EU's Single Market, as well as from joining the euro, to be launched in 2000.

Once Labour was in power, it soon cancelled the Social Market opt-out - naturally, since this brought in, via the EU, many regulations Labour was in favour of but was reluctant to force onto ambivalent or hostile domestic opinion; this included an aggressive EU agenda of increasing union rights.

Tony Blair was also keen to join the euro, but on this he was frustrated by Gordon Brown's and the Treasury's opposition-related to its experience of the previous disaster of the Exchange Rate Mechanism of fixed EU exchange rates, the ERM, the euro's precursor.

Brown's main political aim however was to raise public spending; this, deferred for three years after the 1997 election as part of Labour's campaign to win public trust for its fiscal responsibility, required rising taxes. As part of this programme, the top rate of income tax was put up to 50%, having been lowered to 40% by Lawson in his 1988 budget.

The overall result was an environment increasingly unfriendly to entrepreneurs, largely reversing the previous reforms. Marginal tax rates went up, and union-friendly laws were brought in, notably a new minimum wage provision, initially at a low ratio to median earnings but steadily raised, including by Conservative governments

after 2010, who saw it as a way to attract unskilled worker votes without a revenue cost; at the same time they were politically too frightened of these voters to cut the top income tax rate or maintain the low corporation tax rate they had set at the SME rate of 19% in 2016, eventually put up by Rishi Sunak to 25%.

Thus Conservative governments after 2010 allowed the entrepreneur-friendly environment to worsen and decay, culminating in its part-abolition of the non-dom regime that allowed foreign but UK-domiciled entrepreneurs, a vital group, to pay no tax on their foreign assets; when Labour returned to government in 2024, its policies of 'taxing the rich' via inheritance tax (now levied on SME and farm assets, and crucially payable by non-doms on worldwide assets) and total abolition of the non-dom regime delivered the coup de grace to Britain's business culture, ensuring that growth would stall entirely.

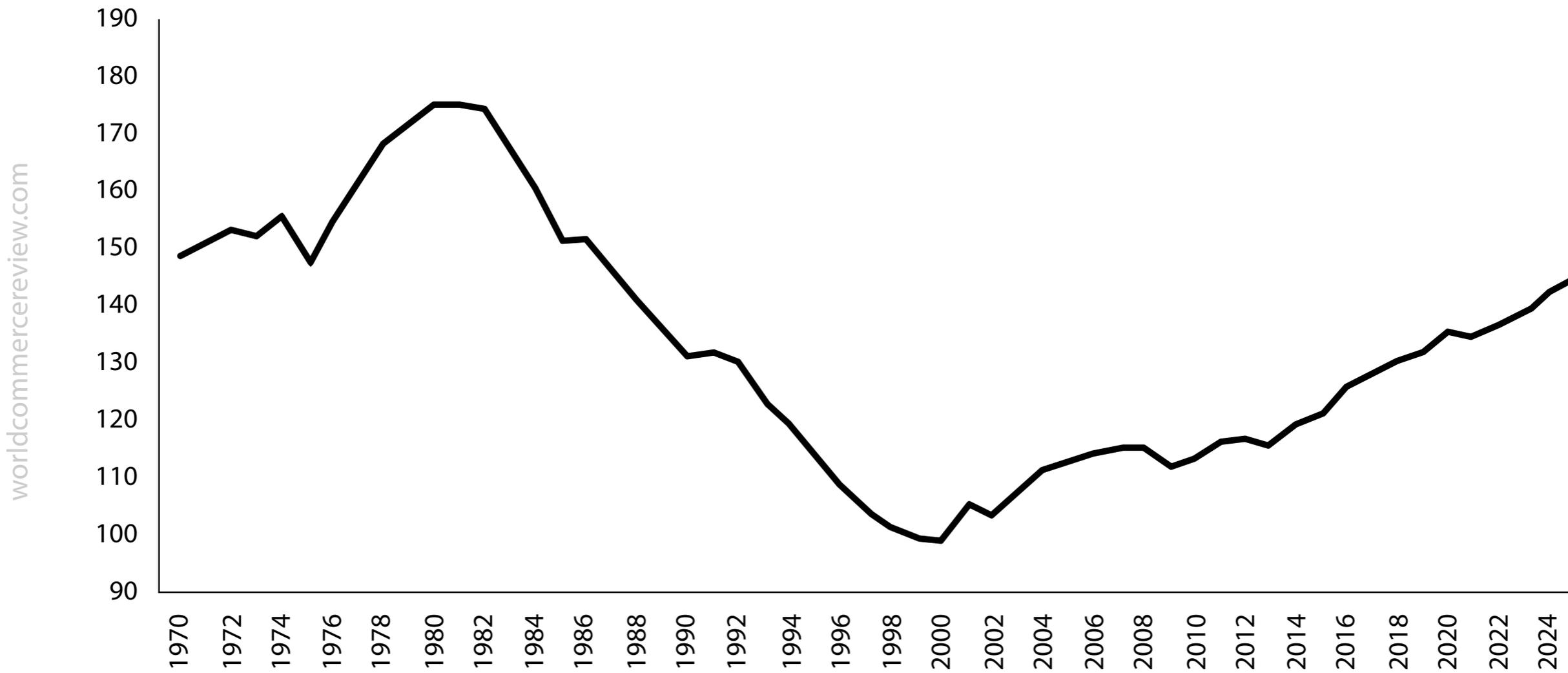
Complementing this is a new labour regulation law soon to pass, awarding largescale new rights to workers, most of all to fresh joiners. These reversals of the liberalising measures of the 1980s and 1990s in the later years are shown in Figures 4 and 5, as in Figure 6 is the rise in the minimum wage from 1999, succeeding the steady fall in unionisation up until then.

When we tested our proposed model of growth on UK data, both on data up to 2010 and subsequently on data updated to 2015, we found that it satisfied our test, fitting the data behaviour of both periods. Adding in effects from housing and infrastructure provision made no difference, and on their own these were rejected as a causal explanation of the data⁵.

According to our latest growth model estimated in our Cardiff research, the effect of the overall withdrawal from the post-Thatcher regime is a fall of about 2% per annum in living standards⁶.

Figure 6. Unionisation up to 1999 and the minimum wage ratio from 1999

UNR and Minimum to Median Wage Ratio Combined Index



Hence the cause of the UK's economic growth collapse lies in the retraction of the Thatcher-originated rebuilding of Britain's business culture, first by Labour from 1997, then by Conservative leftward drift aided until Brexit by rising EU regulation, and latterly by business-hostile Labour policies on both tax and labour market regulation.

The UK collapse is in short no mystery-while as for Brexit, it permits us to help matters by new free trade agreements and by transferring regulatory controls to UK regulators who now have the power to improve damaging EU regulation.

It follows that Britain's economic miseries can be put right by new policies restoring the economic incentives for entrepreneurs that were once put in place by the Thatcher reforms after the dreadful 1970s. These policies must be championed by whatever new government succeeds the current Labour government. ■

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Endnotes

1. Nicholas Bloom, Philip Bunn, Paul Mizen, Pawel Smietanka & Gregory Thwaites (2025) *'The Economic Impact of Brexit'*, NBER Working Paper 34459, DOI 10.3386/w34459, Issue date November 2025.
2. Minford, P and Zhu, Z (2024) *'Modeling the effects of Brexit on the British economy'*, Journal of Forecasting, 2024, vol. 43, issue 4, 1114-1126.
3. Booth, P ed. (2011) *"Sharper axes, lower taxes-big steps to a smaller state"*, IEA.
4. Jon Moynihan, *Return to growth*, vols 1 (2024) and 2(2025), Biteback publishing.
5. Minford, P and Zhu, Z (2025) *'A heterogeneous-agent model of growth and inequality for the UK-do planning and infrastructure matter? A supplementary note'*, Cardiff Economics Working Papers E2025/3, Cardiff University, Cardiff Business School, Economics Section, forthcoming Open Economies Review.
6. See Table C-(effects of cuts in marginal tax rates and regulation) in Minford,P, Gai,Y and Meenagh, D (2022) *'North and South: A Regional Model of the UK'*, Open Economies Review, 2022, vol. 33, issue 3, No 7, 565-616.

Talking 'bout next generation

The international and technological frontier for retail payments is advancing. Sarah Breeden sets out how the Bank of England is leading the design of the UK's next generation retail payments infrastructure, while also supporting private sector innovation in the interim

It's a pleasure to talk about the UK's work to renew our retail payments infrastructure, and the significant role the Bank of England is playing in that. After all, money and payments are at the heart of the Bank's monetary and financial stability role. This is core central banking – using our own infrastructure and balance sheet, and our convening power at the heart of the financial system, to ensure trust in money and drive responsible innovation in payments in support of long-term economic growth.

The advancing frontier for retail payments - internationally and technologically

Retail payments in the UK have no doubt improved in recent decades. We were among the first in the world to launch, through Faster Payments (FPS) in 2008, a 24/7 system for instant, interbank retail payments. And today, many people have a quick and seamless payments experience - with near ubiquitous contactless card payments and mobile wallets like Apple Pay and Google Pay.

But the frontier of innovation in money and payments has not stopped there. We only have to look abroad to see examples of interbank retail payment systems that offer options and functionality not available to people in the UK. That is perhaps not a surprise given the UK was a first mover internationally.

Nonetheless, it remains the case that UPI in India, Pix in Brazil and Swish in Sweden are used alongside cards for retail payments in a way that doesn't yet happen in the UK. Individuals can pay retailers in-store or online out of their bank accounts without going via cards – offering savings particularly for small businesses. And people increasingly make payments between different banks using only the recipient's mobile phone number or a QR code.

Not only is the frontier moving internationally, it's also moving technologically. Tokenisation and distributed ledger technology bring opportunities to enhance the functionality of real-world retail payments – including through

greater customisability, conditionality and automation in payments, compared to the standing orders and direct debits of today. Such features will be essential to support an increasingly digitalised economy.

A new institutional model for the UK to deliver next-generation retail payments infrastructure

This international and technological context is part of why the Government and UK authorities announced at Mansion House in July a new model to deliver the next generation of UK retail payments infrastructure¹.

The international and technological frontier for retail payments is advancing. In support, the Government has set out a new institutional model for UK retail payments, with the Bank taking on a new role leading, with industry, the design of the UK's next-generation retail payments infrastructure

In this model, the UK authorities set the strategy for UK retail payments, reflecting their public policy objectives, through the Payments Vision Delivery Committee on which I sit alongside my counterparts from HM Treasury, the Financial Conduct Authority (FCA) and the Payment Systems Regulator (PSR).

The Bank of England has taken on a new role leading the translation of that strategy into a design for the new infrastructure, working with the industry and a wide range of stakeholders in the payments ecosystem. To do that, my colleague Victoria Cleland is chairing a new [Retail Payments Infrastructure Board](#) (RPIB), with a membership comprised of banks and building societies, merchants and fintechs, as well as Pay.UK as the existing retail payment system operator and alongside PSR colleagues.

Finally, RPIB will oversee the delivery of that design by a new industry-led Delivery Company, which will procure and fund the build of the infrastructure, and which is in the process of being established with involvement from across the industry, under chair designate Vim Maru (CEO of Barclays UK) and with support from UK Finance.

While the next-generation infrastructure is designed and built, Pay.UK retains its crucial role operating the scheme for our current interbank payment systems – including working with industry to take forward critical short-term enhancements to those systems to ensure their resilience and near-term functionality, under the supervision of the Bank and the PSR.

What will be different about next-generation UK retail payments?

Our next generation infrastructure needs to adapt to the changing demands of a dynamic and increasingly digital real economy. To do this, it will need to support new types of payment - for example paying digitally in areas of low and no connectivity, or as AI agents make payments on our behalf².

Understanding and meeting these requirements requires engagement far outside the core infrastructure. So, we will engage widely across the payment ecosystem, beyond the RPIB membership, to gather input and expertise from the wider financial and fintech sectors, as well as end-users and merchants. We've set out today the mechanisms for how we will do that³.

As a first step, the UK authorities set out in November the outcomes we want to see the new infrastructure deliver⁴. Our shared goal is for a resilient, fair, trusted, competitive payment system that supports a multi-money ecosystem (where different forms of money play their own roles and are freely and frictionlessly exchanged at par) - all to serve the real economy.

To serve new and unknown needs, the next generation infrastructure must be built on principles of extensibility, modularity and flexibility. RPIB is now working at pace on what that infrastructure might look like, as well as the scheme design required to support it. We will publish consultations on these issues in the Spring.

To make all this real, I would pick out three key enhancements to user experience that UK authorities want next-generation retail payments in the UK to deliver compared to what we have today.

1. An account-to-account payment option in-store and online

First, we want UK consumers to have the option to pay retailers in-store or online directly out of their bank accounts as a complement to doing so via card schemes.

Such an option would provide valuable competition, improving functionality and potentially reducing the costs faced by merchants to accept payments (and which are otherwise passed on to consumers, at least in part, in the

form of higher prices). The average cost to UK merchants of accepting card payments today is around 0.6% of transaction value⁵.

Moreover, the smallest merchants pay over four times more on average than very large ones⁶. Competition from an extra payment option could bring these costs down. And in the context of a challenging and changing cyber and operational risk environment, it could provide a degree of extra resilience in the UK payments landscape, as an additional payment rail on the rare occasion of operational disruption to existing rails.

While updated, operationally resilient payment infrastructure will help enable these outcomes, it won't alone be sufficient. Scheme rules, a viable commercial model and appropriate standards of consumer protection are all needed to incentivise the industry to offer and promote this 'account-to-account' payment option at point-of-sale. The new institutional model for retail payments that I described earlier will convene industry and authorities to support the UK's public policy objectives here.

2. The seamless exchange of traditional and tokenised money

The second way that we want the new retail infrastructure to improve on the payments experience of today is to enable the seamless exchange of not just traditional but also tokenised money.

I've spoken before about how we want payments innovation in the UK to take place in a 'multi-money' system⁷. Today, we make digital payments in the UK primarily using our bank deposits. In future, we want people to have a greater choice, between:

- traditional bank deposits;

- tokenised versions of those bank deposits;
- digital money issued by non-banks (that is, systemic stablecoins, where we will finalise a regulatory regime this year to ensure they have the robustness of money when used in real-world payments)⁸; and
- potentially, a digital version of banknotes to complement physical cash (that is, a retail central bank digital currency, where we'll set out with HM Treasury the conclusions of our design phase for a [digital pound](#) later this year).

Greater competition from a wider variety of technology and business models should drive lower costs and greater functionality for users.

The new infrastructure will be critical to delivering this in a way that maintains monetary and financial stability – where money regardless of the institution which issues it can be exchanged seamlessly and settled safely in central bank money. Just as today I can use online banking to make an instant payment from an account in one bank to an account in another, in future the retail payments infrastructure should enable the same ‘interoperability’ - not just between traditional deposits, but also with and between tokenised bank deposits and systemic stablecoins, and always with the assurance that £1 of one money equals £1 of other forms of money.

That would mean, for example, that when shopping online, the payment I make with my regulated systemic stablecoin, triggered automatically once I confirm my parcel has been delivered⁹, would then instantly credit the retailer’s bank account – with the payment ultimately settling, safely and with finality, across the books of the Bank of England through the accounts that both my stablecoin issuer and the retailer’s bank hold with us in our Real Time Gross Settlement (RTGS) service.

Ensuring that it is as easy and safe for customers of two different banks (or stablecoin issuers) to pay each other, as it is for customers of the same money issuer to do so, is also vital to ensure competition and innovation in a world of digital money.

Otherwise, we risk a coordination problem where no one bank or systemic stablecoin issuer can innovate sufficiently in tokenised money unless they have the scale to pursue their own walled garden. And it must be underpinned by shared standards and common addressability¹⁰.

3. Improved crossborder retail payments

The last objective for future UK retail payments that I'll highlight today is cheaper and faster crossborder payments.

Enhancing these has been a priority for G20 countries for several years now, since the G20 set out its *Cross-border Payments Roadmap* in 2020.

In the UK - as in the wider G20¹¹ - we've made some progress, but there is still more we can do to improve the cost and speed of crossborder retail payments. The average cost of sending a \$200 remittance payment abroad from the UK was 5.2% in Q1 2025, the third lowest in the G20, having fallen 1 percentage point since Q2 2021¹². But in general progress has remained slow and uneven across major economies.

By ensuring our next-generation infrastructure improves on the current system by implementing international messaging standards (ISO 20022), processing of payments messages can be automated to a greater degree, with fewer payments needing costly and slow manual investigation.

And it could enable the UK to explore interlinking our retail payments system with those of other countries, which could further lower transaction costs by reducing the number of intermediaries and exchange rate conversions needed to settle payments¹³.

A word on wholesale payments

I've talked up to now about retail payments – high-volume, low-value payments between households and businesses. I wanted briefly to touch on wholesale payments and settlements – low-volume, high-value payments and financial market transactions between financial institutions and large corporates, The Bank and other UK authorities are also doing a lot here to drive responsible innovation.

Greater tokenisation of assets and money could bring cost and functionality benefits for wholesale transactions in financial markets – including fewer intermediates, greater automation, and greater liquidity for a wider range of financial assets¹⁴. The Bank and FCA's Digital Securities Sandbox (DSS) enables the private sector to set up real-world trading venues and settlement systems in the UK for such tokenised securities, both in sterling and foreign currencies, and we have 16 firms preparing with us to launch these starting later this year.

The greater conditionality, customisability and automation that tokenisation brings to retail payments can also apply in large wholesale corporate payments, including crossborder. For example, tokenised deposits could enable a corporate to trigger a payment to a large supplier automatically upon delivery of a shipment being confirmed. We're exploring how such a system could work with six other major central banks and over 40 private sector financial firms in the Bank for International Settlements' Project Agora¹⁵.

It has long been recognised by market participants and international standards that there are benefits for market liquidity and financial stability of wholesale transactions settling across the accounts that banks and other financial

institutions hold with central banks¹⁶. Accordingly, we're doing a lot to enable tokenised wholesale transactions to settle in central bank money.

The modernised RTGS service provides a platform for innovation. For example, a payment system using RTGS functionality to settle the sterling cash leg of tokenised transactions using a tokenised representation of central bank money is already live in the UK¹⁷.

We're testing full integration of RTGS with tokenised transactions this year before fully deploying the functionality¹⁸. And we are experimenting with going further, and tokenising central bank money itself on a separate, distributed ledger – so-called wholesale central bank digital currency (CBDC)¹⁹.

Finally, as tokenised asset markets emerge in different jurisdictions, we want to avoid them operating in a such a way that they are incompatible with each other - or indeed with existing technology. That would impede crossborder and cross-asset trading and so fragment market liquidity.

Interoperability and regulatory cooperation including across borders will therefore be essential. We are closely engaged in the work of the [Transatlantic Taskforce for Markets of the Future](#), as well as 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.

Supporting retail payments innovation in the interim

The institutional model I described earlier is a groundbreaking public-private partnership. It aligns the interests of industry and authorities and allows us to work together at pace to deliver the next-generation retail infrastructure.

But given the timescales involved, we are keen also to encourage wider private sector innovations in retail payments that could deliver some of the desired outcomes in the nearer term, including in tokenised deposits and regulated stablecoins.

We and other authorities are engaging closely with such initiatives. PVDC made clear in November that such initiatives should advance the outcomes it set out in its *Strategy*, not distract industry and authorities from design and delivery of the next-generation infrastructure, and be designed to integrate with the new infrastructure as appropriate²⁰. Success here rests on this same partnership and high-quality dialogue and engagement which the RPIB has been set up to achieve.

For our part, we are taking steps actively to encourage such innovations. First, our technology experimentation platforms – the [Digital Pound Lab](#) and the [Synchronisation Lab](#) – allow us to work with firms on understanding the benefits, risks and practicalities of new payments use cases.

In Phase 1 of our Digital Pound Lab, which launched in August (with Phase 2 now open for applications), firms have been testing new use cases for retail payments – for example, making payments at point-of-sale using phone numbers or QR codes.

And our RTGS Synchronisation Lab allows firms to test how to integrate the movement of money or assets, both traditional and tokenised, on external ledgers with movement of money across financial institutions' accounts at the Bank of England. We've had very strong interest from firms in participating – with 18 firms due to start work with us in the Spring.

The practical insights gained from these labs help industry refine their ideas and systems. They help us to design supporting infrastructure (including both the next generation retail payments infrastructure and our own RTGS service). And they help inform our regulatory approach as particular payments use cases proceed to real-world activity.

In July we set out a proportionate [approach](#) to supervising Financial Market Infrastructures (FMIs), including payment systems. After recognition, a new payment system could enter a 'mobilisation' and then a 'scaling' stage where we would tailor our supervisory expectations according to size and risk profile. Limits on activity would start low and increase gradually, until it is ready safely to launch as a fully operational FMI and able to meet the supervisory expectations of an established firm²¹.

Taken together these initiatives enable us to encourage innovation now while the new retail payments infrastructure is being designed and built – and to take a proportionate approach to mitigating any risks to our public policy objectives.

Conclusion

The international and technological frontier for retail payments is advancing. In support, the Government has set out a new institutional model for UK retail payments, with the Bank taking on a new role leading, with industry, the design of the UK's next-generation retail payments infrastructure.

The UK authorities have set out the outcomes they are seeking from this new infrastructure – including (i) an option for people to pay retailers in-store or online out of their bank accounts without going via cards, (ii) seamless exchange of traditional deposits, tokenised deposits and systemic stablecoins, and (iii) enhanced crossborder

retail payments. Authorities and industry will work at pace to design and deliver this, and the new Retail Payments Infrastructure Board, chaired by the Bank, will consult on the design in the Spring.

But given the timescales inherent in such a project, we are keen to encourage private sector payments innovation in the interim. And both the Bank's technology experimentation platforms and our proportionate regulatory approach to new FMIs will enable us to do just that. I look forward to industry joining us on that journey. ■

Sarah Breen is Deputy Governor, Financial Stability, at the Bank of England

Endnotes

1. [Payments Vision Delivery Committee Update](#) - GOV.UK.
2. [Agentic commerce: How agents are ushering in a new era](#) | McKinsey
3. <https://www.bankofengland.co.uk/payment-and-settlement/the-national-payments-vision/the-banks-engagement-on-retail-payments>
4. [Strategy for future retail payments infrastructure](#) - GOV.UK.
5. See Figure 11 of the PSR's final report from its market review into the supply of card-acquiring services, based on data provided by the five largest card acquirer firms, which enable merchants to accept card payments, and which pass on some of the fees they charge to the card scheme (Visa/Mastercard) and to the payer's bank. [MR18/1.8 Market review into the supply of card-acquiring services: Final report](#) | Payment Systems Regulator Latest PSR data is from 2018 – but more recent data from the British Retail Consortium suggest, for a smaller sample of merchants, that the cost of accepting card payments in 2024 is similar to that in 2018.
6. Figure 10, [MR18/1.8 Market review into the supply of card-acquiring services: Final report](#) | Payment Systems Regulator. Comparing the merchant services charges paid by merchants with less than £380,000 in annual card turnover and those paid by merchants with over £50 million in annual card turnover.
7. [Building trust and supporting innovation in the multi-moneyverse](#) - speech by Sarah Breeden | Bank of England.
8. [Bank of England launches consultation on regulating systemic stablecoins](#) | Bank of England.
9. We demonstrated this and other 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](#).
10. Common addressability refers to the ability uniquely to identify and transact with payment users outside a closed network. A globally consistent approach could facilitate the free exchange of different forms of money, reducing transactional frictions and broadening use cases for innovative payment products.

11. *“While the majority of the Roadmap actions have been completed, these efforts have not yet translated into tangible improvements for end-users at the global level. It is unlikely that satisfactory improvements at the global level will be achieved in line with the 2027 Roadmap timetable. The Key Performance Indicators (KPIs) for 2025 show only a slight improvement at the global level since the KPIs were first calculated in 2023.”* [G20 Roadmap for Cross-border Payments: Consolidated progress report for 2025](#) - Financial Stability Board.
12. [World Bank Remittance Prices Worldwide Quarterly](#).
13. *In the latest monitoring report by the Bank for International Settlements’ Committee on Payments and Market Infrastructure, more than half of the 45 fast payment systems (FPS) surveyed were exploring or planning interlinking arrangements in 2024.* [Moving on up: results of the 2024 crossborder payments monitoring survey](#).
14. [Not just token gestures](#) - speech by Sarah Breeden | Bank of England.
15. [Project Agora: exploring tokenisation of crossborder payments](#).
16. [Principles for Financial Market Infrastructures \(PFMI\)](#).
17. [Bank of England publishes policy for omnibus accounts in RTGS](#) | Bank of England.
18. [Synchronisation Lab](#) | Bank of England.
19. [The Bank of England’s approach to innovation in money and payments](#) | Bank of England.
20. Para 3.10, [PVDC_Strategy.pdf](#).
21. *This is also the logic, albeit in a wholesale financial markets rather than retail payments context, of the Bank-FCA [Digital Securities Sandbox](#) for firms seeking to launch real-world trading venues and settlement systems for tokenised assets. We have 16 firms preparing with regulators to launch these, starting later this year.*

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Promoting the ideas of freedom

Javier Milei discusses the relationship between economic efficiency, ethics and public policy, drawing on economic and philosophical traditions to argue that justice and efficiency are interconnected

state categorically that Machiavelli is dead. For years, our thinking was distorted by the presentation of a false dilemma in the design of public policies, one in which we were supposedly faced with a choice between political efficiency on the one hand and respect for the ethical and moral values of the West on the other.

As Professor Jesús Huerta de Soto points out in his work on dynamic efficiency, from that perspective, efficiency is not compatible with various schemes of equity or justice, but rather arises solely and exclusively from one of them, the one based on respect for private property and the entrepreneurial function.

Therefore, the opposition between the dimensions of efficiency and justice is false and erroneous. That is to say, what is just can't be inefficient, nor can what is efficient be unjust. Actually, from the standpoint of dynamic analysis, justice and efficiency are two sides of the same coin.

Without a doubt, the thinker who purviewed this most clearly was Murray Rothbard when he articulated the connection between the dynamic conception of economic efficiency and the realm of ethics. Rothbard considered it essential to establish in advance an adequate ethical framework to foster dynamic efficiency, given our lack of knowledge regarding the ends, means and utility functions that exist in reality.

According to Rothbard, and I subscribe to this view, even in my role as President of the great Argentine nation, only the ethical principles underlying Western culture can serve as efficiency criteria when it comes to making public policy decisions. Put bluntly, when public policies are designed, it is unacceptable from the standpoint of ethics and morality to sacrifice justice on the altar of efficiency. This commitment to values not only stands above economic efficiency, but even stands far above political utilitarianism.

Thus, by setting aside ethical and moral values, we end up with policies that are not only unjust but also lead to collapse, not only economically but also socially, to such an extent that they could ultimately bring about the downfall of Western civilization itself.

This is why, in 2024, I stated that the West was in danger. In turn, in my 2025 Davos address, I showed that the agendas and policies being promoted by various international organizations and fora were nothing more than a whole set of socialist policies elegantly packaged to deceive people of noble spirit, who were full of good intentions. But this always led to the same catastrophic results.

The world has begun to awaken. The best proof of this is what is happening in the Americas with the rebirth of the ideas of liberty

That is why we must never forget the words of Thomas Sowell on socialism, of which he acknowledged the merit that it sounds very appealing, but whose flip side is that it always ends badly, appallingly badly. In fact, and beyond the continuous disasters caused by socialism throughout the 20th century, we can see the terrible damage done in Venezuela. Not only an 80% collapse in GDP, but something far worse still, namely the establishment of a bloody narco dictatorship whose terrorist tentacles spread across our entire continent in the Americas.

Therefore, today more than ever, in the face of the ethical and moral degradation afflicting the West as a result of embracing the new socialist agenda, it is necessary to once again promote the ideas of freedom.

However, unlike the way this was approached in the past based on a utilitarian framework, today, the defence of the free enterprise capitalist system must be grounded in its ethical and moral virtue.

As Israel Kirzner points out, today's socialists do not deny capitalism's superiority in terms of productivity; they challenge capitalism on the grounds that it's unjust. Therefore, it's not enough for the system to be more productive, because if its roots were unjust, capitalism should not be defended. I will demonstrate that free enterprise capitalism is not only more productive, but also that it's the only just system.

I will also demonstrate that there is no dilemma between political utilitarianism and policy making based on values, because if the two were in conflict, that would imply that the foundations of political utilitarianism should be discarded as unjust.

Therefore, this will mean that if we wish to emerge from our dark present, we must once again draw inspiration from Greek philosophy, embrace Roman law and return to Judeo-Christian values, thereby enabling us to save the West.

A large share of human conflicts arises from a failed interaction between natural law and positive law. Natural law is the law that ought to govern human beings because it accords with their nature, and it is therefore just in a universal sense. It is a law common to all men because it is intrinsic to their essence and therefore unchangeable and immutable.

By contrast, positive law is the law written by human beings to govern according to their convenience. Thus, when positive law is in harmony with natural law, there will be justice. Otherwise, the law may be legal but not legitimate.

Accordingly, two fundamental rights are recognized: the right to life and the right to liberty. Man is born alive and free and has the right to preserve these attributes of nature. He also has the right to demand that others respect them in order to pursue his own happiness, which is the end towards which every human being tends.

Alongside these, we have acquired rights, which are neither natural nor inherent to human beings, but are instead earned through merit or obtained as a gift. Thus, from the fundamental right to liberty derives the acquired right to private property, which is manifested in our ability to freely acquire goods with the fruits of our labour or to receive assets that are freely donated or inherited.

In turn, the right to property, especially because of its dynamic consequences, is linked to Locke's principle of appropriation. Property may not only derive from donation, gifts, inheritance and/or exchange, but also from appropriation through discovery and creation.

Finally, these rights are complemented by the non-aggression principle, which establishes that no human being has the right to inflict aggression of any kind on another human being. This includes not only physical aggression, but also all forms of coercion, compulsion and/or imposition under the threat of force.

Hence, we define libertarian liberalism, in line with Alberto Benegas Lynch Junior, as unrestricted respect for the life project of others based on the principle of non-aggression and in defence of the right to life, liberty and property, whose institutions are private property, markets free of state intervention, competition understood as free entry and exit, the division of labour and social cooperation.

Naturally, associated with this social order, the question arises as to whether it is just. Therefore, in order to determine whether the system is just, the necessary reference is Ulpian, whose basic premise constitutes a foundation of Roman law and is undoubtedly one of the pillars of Western civilization.

Thus, justice is a constant, and perpetual will to give to each his due, that is, the intention to give to each their own what belongs to them. However, Ulpian's statement did not end there; he went on to add that the principles of law consist in living honourably, harming no one and giving to each their own. Therefore, from all of this, it follows that one of the defining characteristics of free enterprise capitalism is that it is a just doctrine.

Given the emergent institutional framework, which we have also shown to be just, it is now time to demonstrate that it is also efficient. The first formulation in this regard was put forward by Adam Smith, who, by using the argument of the invisible hand, posited that each individual, in pursuing their own interests, maximize social welfare.

Later, the neoclassicals, guided by an idea of the invisible hand based on the Pareto optimum, derived the first fundamental theorem of welfare economics, namely that every competitive equilibrium is Pareto optimal. However, this required embracing a mathematical structure that left the door open to state intervention under the well-intentioned goal of correcting market failures, which, from my perspective, do not really exist.

To address this, the proof developed by Hans-Hermann Hoppe, based on property rights in line with Locke's principle of original appropriation together with the non-aggression principle, not only proves satisfactory in establishing optimality, but also leaves no room for intervention.

In this regard, Hoppe states, "Any deviation from this set of rules implies, by definition, a redistribution of property titles, and thus of income, from producer-users and contracting parties to non-producer-users and non-contracting parties. Consequently, any such deviation implies that there will be relatively less original appropriation of resources, whose scarcity is known, and therefore, there will be less production of new goods, less maintenance of existing goods and fewer contracts and trades that are mutually beneficial. This naturally implies a lower standard of living with respect to goods and services that change hands. Moreover, the postulate that only the first user of an asset acquires property rights over it, not the last one, ensures that productive efforts will be as high as possible at all times."

Likewise, the notion that only the physical integrity of property and not its value must be protected, guarantees that every owner will undertake the greatest possible value-producing efforts, that is to say, efforts to promote favourable changes in the value of property and to prevent or counteract any unfavourable change in its value. Therefore, any deviation from these rules entails a reduction in productive efforts at all times.

Note that by relying on private property rather than on excess demand functions derived from optimization exercises. This approach allows an optimum to be reached without the need to use esoteric assumptions that later serve as justification for state intervention.

This also avoids falling into the empirical absurdity of the second theorem of welfare economics, which posits independence between production and distribution, as if choosing between capitalism and communism were neutral in terms of outcomes.

So, having demonstrated that the institutions of free enterprise capitalism, supported by natural rights, Locke's principle of original appropriation and the non-aggression principle are not only just but also efficient, at least in static terms. It is now time to show that free enterprise capitalism displays the same properties in dynamic terms as well.

As early as 380 BC, Xenophon pointed out that economics is a form of knowledge that enables men to increase their wealth while arguing that private property is the most beneficial vehicle for the life of individuals. Xenophon then went on to address the concept of efficiency from two perspectives. On the one hand, from a static viewpoint, he defined efficiency as the management of available resources aimed at avoiding waste, while highlighting the benefit of private property by stating that the master's eye is the best way to fatten his cattle.

On the other hand, in his second definition of efficiency, Xenophon delved into the dynamic realm, noting that efficiency also entails increasing wealth, that is, increasing the available quantity of goods through entrepreneurial creativity, namely through trade and speculation.

This latter criterion of efficiency is of fundamental importance for the study of economic growth, because, unlike a static model that considers only what Robert Lucas Junior defined as deep parameters, that is, preferences, technology and initial endowments of resources, in the dynamic sphere, both technology and initial endowments can vary. And in fact, they do so continuously as a result of entrepreneurial creativity.

Moreover, the institution of private property deserves a separate chapter. By pivoting on it, the Austrian School of Economics from Mises, Hayek, Rothbard, Kirzner and Hoppe to Huerta de Soto has demonstrated the impossibility of socialism, thereby dismantling the ghostly idea of John Stuart Mill that postulated independence between

production and distribution; a form of academic deafness that led to socialism and cost the world the lives of 150 million human beings, while those who managed to survive the terror, did so in absurd poverty.

In line with their previous remarks and consistent with Xenophon's second line of analysis, economic theory has identified four sources of economic progress. First, there's the division of labour, which was illustrated by Adam Smith through the pin factory example. At its core, this is a mechanism that generates productivity gains, manifested as increasing returns. Although its limit is determined by market size, the size of the market is positively affected by this process. However, it is also worth noting that this virtuous process is not infinite and that its ultimate limit lies in the endowment of initial resources.

Second, there is the accumulation of capital, both physical and human. With regard to physical capital, the interaction between saving and investment is crucial, highlighting the fundamental role of capital markets and of the financial system in carrying out such intermediation. On the human capital side, the focus should not be limited to education alone but should also include the development of cognitive capacities from birth, as well as nutrition and health, basic elements for gaining access to education and the labour market.

Third, there is technological progress, which consists in being able to produce a greater quantity of goods with the same amount of resources, or to produce the same output using a smaller quantity of inputs.

Finally, there is entrepreneurial spirit, or rather the entrepreneurial function, which, according to Professor Huerta De Soto constitutes the main driver of the economic growth process. Because, although the three factors mentioned are important, without entrepreneurs, there can be no production, and living standards would be extremely precarious.

In fact, the entrepreneurial function is not so much focused on short-term efficiency, but rather on increasing the quality of goods and services, which, in turn, leads to higher standards of living. On this basis, what truly matters is to expand the frontier of production possibilities to the maximum extent possible. Thus, dynamic efficiency can be understood as an economy's capacity to foster entrepreneurial creativity and coordination.

In turn, the criterion of dynamic efficiency is inseparably linked to the concept of the entrepreneurial function, which is that typically human capacity to perceive profit opportunities that arise in the environment and to act accordingly to take advantage of them. This makes the task of discovering and creating new ends and means fundamental, driving spontaneous coordination to resolve market imbalances.

Moreover, this definition of dynamic efficiency proposed by Huerta de Soto coherently and appropriately combines Schumpeter's idea of creative destruction with North's concept of adaptive efficiency.

Naturally, given the role of the entrepreneurial function, the institutions under which it develops are of vital importance. In this regard, both Douglass North and Jesús Huerta de Soto consider one of the key functions of institutions to be that of reducing uncertainty.

So, while North presents them as a set of humanly devised constraints that structure social interaction in a repetitive manner, Huerta de Soto considers that these institutions, conceived by human beings, emerge spontaneously from a process of social interaction without being designed by any single individual, and that they reduce uncertainty in the market process.

As Roy Cordato points out, the appropriate institutional framework is one that favours entrepreneurial discovery and coordination. Accordingly, within this framework, economic policy should aim to identify and remove all artificial barriers that hinder the entrepreneurial process and voluntary exchanges.

Given the decisive influence of institutions on economic progress, this directs our attention to the importance of ethics, as societies that adhere to stronger moral values and ethical principles in support of institutions will be dynamically more efficient and will therefore enjoy greater prosperity. Accordingly, the fundamental ethical problem is a search for the best way to foster entrepreneurial coordination and creation.

Therefore, in the field of social ethics, we conclude that conceiving human beings as creative and coordinating actors entails accepting axiomatically the principle that every human being has the right to appropriate the results of their entrepreneurial creativity.

So the private appropriation of the fruits of what entrepreneurs create and discover is a principle of natural law because if an author were unable to appropriate what they create or discover, their capacity to detect profit opportunities would be blocked, and the incentive to carry out their actions would disappear. Ultimately, the ethical principle just stated is the fundamental ethical foundation of the entire market economy.

So, what we've just demonstrated is that free enterprise capitalism is not only just but also efficient and also that it is the one that maximizes growth.

Given the conceptual framework of dynamic efficiency and the absence of a dilemma between efficiency and ethical values when designing public policies, it is of interest to consider their implementation in real life.

Beyond the enormous achievements we have exhibited during these years in office, having eradicated a fiscal deficit of 15% of GDP, reducing inflation from 300% to 30%, lowering country risk by 2,500 basis points and restoring economic growth, with poverty falling from 57% to 27%, pursuing public policies guided by ethical and moral values, I would like to focus on the case of the Ministry of Deregulation, or, as we call it back home, the Ministry of Increasing Returns.

This ministry is inspired by the evolution of per capita GDP since the beginning of the Christian era, and it is in the shape of a hockey stick. This figure arises from the fact that until the year 1800, per capita GDP remained almost constant and from that point onwards, it increased 15-fold in a context in which the size of the population increased tenfold. In parallel, as GDP grew, extreme poverty fell from levels of 95% to 10%.

However, this marvel implies the existence of increasing returns, which in economics are associated with concentrated market structures, and this is where the public policy dilemma between Pareto efficiency and justice arises.

In Pareto analysis, increasing returns entail the existence of non-convexities in the production set that prevent the derivation of a profit function with a maximum. As a result, neither supply of goods nor the demand for imports is optimal. In response, regulation of firms is proposed in order to assimilate them to a perfectly competitive case, that is, to kill increasing returns and with them, economic growth.

Consider the effects caused by regulation around the world. The values-based view of capitalism holds that if such a position has been achieved through discovery, voluntary exchange and without violating the non-aggression principle, there is no justification for intervention. Indeed, intervention constitutes a violation of property rights,

and by punishing profits, the economy's potential growth declines, so intervention and regulation are dynamically inefficient because they are violent and therefore unjust.

This is why, since we took office in 2023, we have carried out, thanks to the Cyclopean effort of Federico Sturzenegger, 13,500 structural reforms, which today allow us to have a dynamically more efficient economy and will enable us to grow once again. That is to make Argentina great again.

Thus, the Pareto optimal is clearly called into question, and for that reason, many consider that it authorizes the regulation of concentrated structures by assimilating them to a competitive model. But, as I said, this means killing increasing returns, with the unintended collateral effect of killing growth.

Note that along the same lines, we can also address the issue of artificial intelligence, a tool that can be seen as the 21st-century version of Adam Smith's pin factory. That is a catalyst for increasing returns and, thereby, a catalyst for greater growth and wellbeing.

Therefore, the most responsible thing states can do regarding this issue is to stop pestering those who are creating a better world. Let me say it in a straightforward way. The most responsible thing politicians can do is to stop pestering those who are creating a better world.

At the same time, I wish to point out that all fears associated with dystopian scenarios are nonsense. The answer is Adam Smith; the limit to increasing returns is determined by the size of the market. We must finally not forget that the implementation of these projects requires real inputs and financial resources, so expansion will be constrained by initial endowments.

Lastly, linked to this phenomenal future that lies ahead, the role of human capital is of vital importance. And in this regard, in Argentina, thanks to the work of Minister Sandra Pettovello with respect to vulnerable sectors, we have stopped giving people fish and have started to teach them how to catch fish, and if possible, hoping to encourage them to create their own fishing company.

Finally, despite popular criticism, free enterprise capitalism does not undermine moral values. After all, economic progress through the mechanism of the invisible hand emerged from Adam Smith's moral sentiments, and the modern era owes its existence to what McCloskey calls the bourgeois virtues.

In turn, thanks to the great work of Huerta de Soto in developing the concept of dynamic efficiency and its application in Argentina, we can be confident that the alleged dilemma between efficiency and justice is false. That is to say, markets are not only superior and productive terms, but they are also just.

Therefore, public policies should be guided by ethics rather than by economic and/or political utilitarianism, which invariably leads to unjust, populist and impoverishing solutions. So I reaffirm what I stated at the beginning. Machiavelli is dead. Therefore, it is time to bury him.

Moreover, given the deep link between morality and free markets, the latter makes us better people. Thanks to dynamically efficient markets, we can simultaneously achieve economic progress, defend private property, maintain peace, attain social harmony and strengthen the social virtues that are indispensable for a prosperous society.

Finally, I would like to leave you with a reflection on this week's Torah portion, Parashat Bo describes the moment when Moses confronts Pharaoh, the symbol of the oppressive power of the state, to warn him that if he didn't free the Hebrew people, the final three plagues would fall upon Egypt.

When Pharaoh refused, the plague of locusts came, which meant famine. Then came the plague of darkness, meaning the loss of clarity in decision-making. And finally, the plague of the death of the firstborn, which illustrates the fate of a society that denies liberty.

The analogy with what is happening in the West today is crystal clear. For some time now, and for some strange reason, the West began to turn its back on the ideas of liberty. That is why, in this same place in 2024, I stated that the West was in danger, as a result of having embraced increasing doses of socialism in its most hypocritical form, which is wokeism.

In turn, in 2025, I explained the mental parasites sown by the left in humanity. However, 2026 is the year in which I bring you good news. The world has begun to awaken. The best proof of this is what is happening in the Americas with the rebirth of the ideas of liberty.

Therefore, the Americas will be the beacon of light that will once again illuminate the entire West, thereby repaying the civilizational debt with expressions of gratitude towards the foundations in Greek philosophy, Roman law and Judeo-Christian values.

We have a better future ahead, but that better future exists only if we return to the roots of the West, which means returning to the ideas of liberty. May God bless the West. May the forces of heaven be with us, and long live freedom, damn it. ■

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This article contains the full transcript of a [special address](#) delivered at the World Economic Forum's Annual Meeting 2026 in Davos. This transcript was produced using AI and subsequently edited for style and clarity. The edits do not alter the substance of the speaker's remarks.

Addressing Europe's services dependencies



The geopolitical order keeps shifting. Agnès Bénassy-Quéré, Giancarlo Corsetti, Giulia Sestieri and Rolf Strauch discuss the economic security issues raised by services trade in the EU and call for a common industrial policy for services to boost competitiveness

The geopolitical order keeps shifting – politically and economically – as the US administration pursues its mercantilist-transactional approach to international relations and weaponise economic and financial instruments. This, and the distancing of the US from unambiguous support for NATO, which has long guaranteed the alliance, create an urgent need for Europe to strengthen its strategic autonomy (eg. Pisani-Ferry *et al* 2024, Garicano 2025, European Commission 2025c).

The reliance of the EU on China for critical goods (eg. Buysse and Essers 2023, Faubert *et al* 2024) has long occulted its dependence on the US for several critical services, such as software, cloud services, cybersecurity, and retail payments¹. By way of example, Mastercard and Visa account for two-thirds of card payments in the euro area, and only five countries in the euro area have a domestic card scheme. Services produced in the US are therefore core to the policy debate on strategic autonomy.

In addition, services are also the market where most gains can be made by reducing the still high barriers to trade in the European Single Market (European Commission 2025a, Rotunno *et al* 2025, Hoekman and Shepherd, 2025). Paradoxically, the EU is a global exporting power in services, not only in goods (Eurostat 2024), but trade in services is no higher among EU member states than between the EU and the rest of the world (European Commission 2025a).

Its dependence on foreign providers is to a significant extent home-made due to the fragmentation of the European internal market. An undesired consequence is that Europeans rely on US giant firms with monopoly power, which creates both rents and operational vulnerabilities². In this column, we focus on economic security issues raised by trade in services.

How to assess service dependencies

Compared to trade in goods, collecting useful data to detect dependencies on services runs into several hurdles, due to intangibility and complexity of what is traded, multiple delivery modes, limits to information collection, and intra-firm and digital trade. Traditional measures, such as market concentration and scarcity, are inherently difficult to apply to services.

European dependencies on services have multiple implications, ranging from rent extraction to security concerns. Europe in fact has multiple ways to address them, provided existing tools are actively employed and a significant step is taken towards internal market integration, which includes both the savings and investment union and the digital euro

One promising avenue exploits the concept of 'choke points' (eg. Chatham House 2017). Choke points identify possible bottlenecks and threat points to a supply chain. For financial services, dependence on and resilience of the sector are distinct concepts. Regular stress-testing provides information on the sector's resilience. What dependence captures is the impact of a disruption on some key financial services along the value chains.

Other services are also lifelines for the economy and may be equally crucial, such as public transport navigation systems and utilities. A systematic mapping of how the disruption of services provided by non-EU 'hyperscalers' (eg. Amazon, Microsoft) affects economic activity across sectors would clearly be a significant step forward.

How to reduce service dependencies

Generally, industrial policies may be warranted when there are market failures, including first-mover advantages, network externalities, and economies of scale (eg. Rodrik 2004, Aghion *et al* 2015). These features apply to several services, as they do to the production of several goods.

However, inefficiencies and dependencies may be byproducts of insufficient market integration. Some services markets have explicitly been excluded from the Single Market, mostly because they are subject to sector-specific regulation or public-interest considerations. Some of them are crucially constrained by a physical infrastructure – for example, train transport and utilities.

Some of the barriers are regulatory, such as those affecting IT-related professional services and financial services to various degrees. Moreover, crossborder services and competition may be constrained by different rules in consumer protection, service standards, or even labour law³.

Inadequacy of financial support is a stumbling block for technological upgrade and scaling up of European IT services. Europe lacks a sufficiently deep and liquid capital market creating the conditions for a high level of market capitalisation, and equity finance, also due to the dominance of pay-as-you-go pension systems.

The success of a savings and investment union (SIU) will be key to redirecting resources to productive investment, on top of creating the conditions for a strong, EU-scaled financial services industry. Building up an effective SIU will require a wide range of actions, at both national and supranational levels (Villeroy de Galhau 2025).

In 2025, the European Commission adopted a series of packages to translate the savings and investment union into concrete measures. It has proposed, among other things, to revive securitisation to support financing of small and medium-sized companies and the strengthening of funded pension systems. This would help market capitalisation and especially equity financing of innovative firms.

In December 2025, the Commission adopted the market integration package designed to remove barriers and unlock the full potential of the EU Single Market for financial services. This included proposals for more efficient and integrated supervision and it launched a consultation on the introduction of a '28th regime' that could reduce legal barriers to crossborder equity funding. Other proposals on the savings and investment union will be announced by early 2026.

The fragmented market of European financial services and infrastructure favours non-EU companies. According to the European Commission (2025b), Europe has over 300 stock exchanges, 14 clearing platforms, and 28 central securities depositories. In the US, there are five main clearing platforms and one central securities depository.

This multiplicity of financial markets and financial market infrastructures in Europe causes fragmentation of savings and financial market investments, higher costs for issuers, less efficient allocation of excess savings, reduced competitiveness of European financial institutions, and strong dependency for a couple of critical services vis-à-vis non-European financial market infrastructures.

This particularly concerns central clearing of euro interest rate derivatives (swaps and short-term futures), where UK central counterparties maintain a quasi-global monopoly.

While Europe has a high number of large banks, few of them have full European reach. This owes to the fact that regulations have a pure national perspective on systemic relevance and, in some cases, keep ringfencing national banking systems. Some components of an efficient European backstop are also missing.

This lack of genuine European reach of large European banks might also explain why US banks have a competitive edge in investment banking activities. The market share of US banks in European investment banking is much larger than that of euro area banks (close to 60% versus 30%, respectively). In the retail payments sphere, American card schemes are also dominant (ECB 2025)⁴.

In addition to sovereignty and resilience concerns, this dependency comes with an immediate cost for the real economy as merchant fees suffer an upward trend (European Commission 2024). The development of the digital euro by the Eurosystem, replicating banknotes in the digital sphere, should offer an alternative for European retail payments.

Towards an industrial policy for services?

Could a common industrial policy play a role once the frictions discussed above are addressed? There are different views in the academic literature, ranging from advocating a mission-driven ‘moonshot’ approach in certain areas, to conventionally more prudent approaches (Caffarra and Lane 2024). Still, efficient industrial policy should avoid falling back into old traps.

State aid should not be used to build up national champions, and it is essential to conduct industrial policy within the guard rails of a European competition regime. The enforcement of the Digital Markets Act will contribute to reducing dependencies in services through the traditional tools of competition policies.

Beyond this, as the 2024 *Draghi Report* forcefully argued, we need more policy coordination. Unilateral industrial policies, according to an IMF study (Hodge *et al* 2024), can create spillover and spill-back effects, which outweigh the benefits, and do not generate the necessary scale. Public procurement policies should enforce an open process and involve sunset clauses to avoid creating rents and allow competitive European players to arise.

In the specific case of retail payments, incumbents are protected by powerful network effects, limiting the ability of genuine European solutions such as Wero or EuroPA to expand. Again, the digital euro will have the capacity to overcome these network effects and impulse more competition.

A difficult, and much more contested area is the question of to what extent industrial policy for services should be geared towards geopolitical and geo-economic objectives and become an instrument of foreign economic policy. The available economic security instruments regarding services – the anti-coercion instrument (ACI), foreign investment screening, data protection, sanctions – are fewer in number than those for goods and little used⁵.

The anti-coercion instrument, for instance, is a powerful trade tool that allows the EU to respond to economic coercion by third countries through proportionate countermeasures. However, it has primarily been seen as a deterrent device so far, as the high level of dependencies largely prevents the EU from relying on economic security instruments, for fear of losing access to non-substitutable services.

Sophisticated instruments like Instex⁶, to avoid extraterritorial effects of US sanctions on Iran, have failed. The EU is also able to place restrictions on foreign direct investment (FDI) originating from a third country, effectively limiting its ability to acquire or establish service-providing entities in the EU market.

In a new communication of December 2025 (European Commission 2025d), the Commission signalled a shift towards a more proactive approach calling for systematic risk assessments, tighter screening of foreign investments, diversification of critical service providers, and coordination among member states via an Economic Security Network.

The communication acknowledges the limited practical use of coercion and advocates for deterrence. The limits on the use of coercive instruments in international rules pose a political dilemma for Europe, which positions itself as a defender of a rules-based trading system.

To conclude, European dependencies on services have multiple implications, ranging from rent extraction to security concerns. Europe in fact has multiple ways to address them, provided existing tools are actively employed and a significant step is taken towards internal market integration, which includes both the savings and investment union and the digital euro.

Coordination of public procurement could also help reduce existing and future dependencies (for example, for AI systems) but would need to be carefully designed so as to steer competition among European providers.

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Endnotes

1. See Cipollone (2025) on digital payments.
2. More generally, see ECB (2023) on Europe's external dependencies, and Gensler et al. (2025) on the economic consequences of the new US administration.
3. For an overview by country and sector, see the OCDE Services Trade Restrictiveness Index (2025).
4. Note that the figure of 57% does not include cash payments in its denominator, but only all non-cash means of payment.
5. On FDI screening, see Bencivelli et al (2023).
6. See, for example, France Diplomacy communication (2023).

References

- Aghion, P, J Cai, M Dewatripont, L Du, A Harrison and P Legros (2015), "Industrial policy and competition", *American Economic Journal: Macroeconomics* 7(4).
- Bencivelli, L, V Faubert, F Le Gallo and P Négrin (2023), "[The rise of foreign investment screening in advanced economies](#)", VoxEU.org, 16 November.
- Buysse, K and D Essers (2023), "Critical raw materials: from dependency to open strategic autonomy?", *NBB Economic Review* 13: 1-34.
- Caffarra, C and N Lane (2024), "[Not a 'side dish': New industrial policy and competition](#)", VoxEU.org, 5 April.
- Chatham House (2017), *Chokepoints and Vulnerabilities in Global Food Trade*.
- Cipollone, P (2025), "Empowering Europe: boosting strategic autonomy through the digital euro", *Introductory statement at the Committee on Economic and Monetary Affairs of the European Parliament*, 8 April.
- Draghi, M (2024), [The future of European competitiveness](#), European Commission.
- ECB (2025), "[Payments statistics: second half of 2024](#)".
- European Commission (2023), *2023 Annual Single Market Report: Single Market at 30, January*.

European Commission (2024), *Study on new developments in card-based payment markets, including as regards relevant aspects of the application of the Interchange Fee Regulation*.

European Commission (2025a), *The 2025 Annual Single Market and Competitiveness Report*, January.

European Commission (2025b), *"Breaking down barriers to integrate financial markets"*, Factsheet, December.

European Commission (2025c), *"Strategic autonomy and European economic and research security"*.

European Commission (2025d), *"Strengthening EU economic security"*, Joint Communication to the European Parliament and the Council, JOIN(2025), 977 final.

Eurostat (2024), *"World trade in services"*.

Faubert, V, N Guessé and J Le Roux (2024), *"Capital in the 21st century: Ownership of the firms producing raw materials"*, VoxEU.org, 29 June.

Furbach, N and I Ordonez Martinez (2025), *"The decline in non-tariff barriers to services trade and euro area competitiveness"*, VoxEU.org, 26 June.

Garicano, L (2025), *"Strategic autonomy for Europe requires economic growth"*, VoxEU.org, 4 September.

Gensler, G, S Johnson, U Panizza and B Weder di Mauro (2025), *The Economic Consequences of the Second Trump Administration: A Preliminary Assessment*, CEPR Press.

Hodge, A, R Piazza, F Hasanov, X Li, M Vaziri, A Weller, Y C Wong (2024), *"Industrial policy in Europe: A single market perspective"*, IMF Working Paper WP/24/249.

Hoekman, B and B Shepherd (2025), *"Single Market Competitiveness: Advancing Cross-Border Trade in Services"*, European Parliament Study.

Ioannou, D, JJ Pérez, H Geeroms, I Vansteenkiste, PF Weber, AM Almeida and KP Tylko-Tylczynska (2023), *"The EU's Open Strategic Autonomy from a Central Banking Perspective. Challenges to the Monetary Policy Landscape from a Changing Geopolitical Environment"*, ECB Occasional Paper 311.

Mazzucato, M (2020), *Mission-Economics: A Moonshot Approach to the Economy*, MIT Press.

Pisani-Ferry, J, B Weder di Mauro and J Zettelmeyer (2024), *"European economic security in an age of interdependence"*, VoxEU.org, 6 May.

Rodrik, D (2004), "Industrial Policy for the Twenty-First Century", Working Paper RWP04-047.

Rotunno, L, H Toprak and M Vaziri (2025), "Europe's Productivity Weakness: Firm-Level Roots and Remedies", IMF Working Papers, 2025/40.

Steinbach, A, G Wolff and J Zettelmeyer (2025), "The governance and funding of European rearmament", Bruegel Policy Brief n.15/25.

Villeroy de Galhau (2025), "L'Union pour l'épargne et l'investissement : incarner (enfin) une idée en actions", Conférence AEFR/REF "Où va l'épargne?".

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Measure, model, tackle, tailor

Climate and transition shocks increasingly shape the macroeconomic outlook and financial risks. James Talbot sets out the Bank of England's approach to assessing and managing climate impacts across its core objectives

It is nearly twenty years since the Stern review, which showed that climate change could, among other things, have a serious impact on GDP in the long run. Indeed, we are well used to thinking about climate change as something that happens in the long run. Scientists have been thinking about this issue for around forty years, economists for thirty years and governments have been taking policy action for more than twenty-five years. While economists may debate what horizon the long run refers to, those time periods would surely qualify...

Central banks are still a relative newcomer to thinking about these issues. At the Bank of England, our work on climate began around twelve years ago with an initial focus on the insurance sector. For the economists in the audience, that might qualify as at least approaching the long run...

Nine years ago, we were one of eight founding members of the [Network for Greening the Financial System \(NGFS\)](#), which was set up as a voluntary forum to enhance the role of the financial system in responding to climate change.

Today, we are responding to the implications of climate change right across the Bank's policy objectives. In addition, the NGFS counts around 150 member institutions worldwide¹. Considering the impact of climate as a central banker is now the norm, not the exception.

That is because the impacts from climate change are intensifying, and the effects are felt increasingly today. Global temperatures are estimated to have averaged more than 1.5 degrees higher than pre-industrial levels over the past three calendar years².

The rise in temperatures has already increased the frequency and intensity of extreme weather events, with heavy precipitation becoming more frequent and more intense globally³. Unsurprisingly therefore, the economic impact of climate change is rising.

At the same time, central banks have assessed the implications for the financial system and worked with firms to assess the impacts of climate-related risks under different scenarios⁴. Action to respond to a changing climate and to drive the transition can have an impact on both the economy and financial system.

While the policies needed to mitigate climate change are for governments, not central banks, to decide, if they have an impact on the economy and financial sector, central banks will need to understand them, just like any other shock.

If climate shocks and the transition affect the economy and financial system, then we need to understand their impacts, just like any other shock. In doing so, we can make sure that the financial system remains stable and that price stability is maintained

The Bank of England's mission is to promote the good of the people of the United Kingdom by maintaining monetary and financial stability. Our objectives are set by parliament and are defined through remits set by the government for our policy committees. To summarise:

- For the Monetary Policy Committee (MPC), the primary objective is price stability. When climate-related shocks move inflation and activity over the policy horizon – for example, through their effects on energy, food or supply chain disruption – the MPC will need to understand those impacts⁵.
- For the Prudential Regulation Committee, the primary objective is the safety and soundness of the firms we supervise and, for insurers, policyholder protection. Because climate change and the transition create operational and financial risks for firms, supervisors of banks and insurers will expect firms to understand and manage these risks appropriately and to take a strategic view of how to tackle them moving forwards.
- And for the Financial Policy Committee, the primary objective is to protect and enhance the stability of the UK financial system. In order to do that, we need to monitor and assess how the impacts of climate change build and transmit across the system as a whole.

Different central banks have different mandates. For the Bank of England, the impact of climate change matters for our primary objectives, given to us by Parliament. In addition, each of these committees is asked to have regard to the government's economic policy objectives, which include the transition to a net zero economy.

Climate also matters to the PRA's secondary competitiveness and growth objective because failing to address climate risks effectively could, in time, hinder firms' ability to support their customers and ultimately wider economic growth.

But considering climate change does not rest on a specific mandate. My point is simple: if climate change and the transition are impacting the macroeconomy and financial system, then this matters for our primary goal of maintaining monetary and financial stability. That is why so many central banks are now focused on these issues.

You'll be pleased to hear that I am not going to try to summarise everything we have done on climate over the past decade and more this evening. Many of my colleagues – past and present – have done that very eloquently. Instead, I will highlight what's new in our work in the last few years and where we are headed next.

What have we been up to?

Broadly speaking, there have been three phases:

1. Establish whether climate change is relevant to our objectives;
2. Size the impacts where it is; and
3. Work out how to address these impacts so that we can deliver on our objectives.

Our work is at different stages across our different responsibilities. We started with the risks to the firms we supervise, first insurers and then banks. We then moved onto scenario analysis and the impact on the financial system as a whole. And finally, as the economic impacts of climate begin to manifest themselves over the shorter-run horizon relevant for monetary policy, we have increased our focus there too.

This has not been a straight line. There is a feedback loop. We have reassessed and refined our approach to support better decision making. Our recently updated supervisory expectations for banks and insurers are a practical example of how we have improved our understanding over the past six years from talking to firms.

We have also learned from international best practice too. When we began this work, the rooms where we met were small, and the ideas were novel, but with more central banks and supervisors now working on this agenda, we are able to draw on the thinking and analysis of many others to improve our own understanding.

This is the strength of international fora like the NGFS and industry networks such as the [Climate Financial Risk Forum \(CFRF\)](#). That also means we do not need to lead on everything, which is especially important in a world where central banks need to understand an increasingly broad set of risks⁶.

Where we have established that climate matters for our objectives, we are increasingly focused on factoring that into our core policy-making responsibilities. As our work has moved from the conceptual to the applied, we've spent more time building the tools, data and approaches to take necessary action. I want to share some of that progress – setting out the current state of play, the lessons so far and the priorities we will pursue next.

Monetary policy – how climate links to our objectives

The monetary policy horizon is typically short – usually around two to three years. While that is not the long run under anyone's definition, as we begin to see climate change affect the economy, those impacts become a relevant consideration for monetary policy.

While monetary policy is the most nascent part of our climate work, our focus is beginning to intensify. Over the past four years, my work as chair of the NGFS Workstream on Monetary Policy, has brought together more than sixty central banks to set out a framework and analytical foundation to assess the impact of climate change on the economy.

These central banks bring different skills and experiences – they include oil exporters and importers; low income, emerging market and advanced economies; and countries where the physical effects of climate have already become much more prominent.

In doing this work, we take both the scientific evidence and government climate policies as given. What we want to understand is how climate change affects the economy. There are two main channels. First, physical hazards like rising temperatures, floods and storms that hit supply, demand, trade and productivity. Second, transition policies can drive large and sometimes persistent relative price movements, shifts in investment and reallocation of production across sectors of the economy.

We began by building a conceptual framework to understand how [acute physical impacts from climate change](#) and the [transition policies](#) implemented by governments can affect the macroeconomy over horizons relevant for policymakers. We are now moving from that framework to modelling – exploring how to incorporate those channels into central bank toolkits so the analysis is usable in practice. In a forthcoming NGFS publication, we will also publish an assessment of how climate change affects monetary policy strategy.

Let me briefly summarise the conclusions of the work that we have done so far at the Bank of England and the NGFS.

Central banks have long noted weather as a key driver of prices and activity, responding accordingly. Back in 1805, the Bank installed a wind dial in its boardroom, connected to a weathervane on the roof. An easterly wind signalled an increase in trade, as it allowed merchant ships to sail up the Thames to the Port of London – and a need to increase the supply of banknotes in circulation.

Over two hundred years later, the impact of weather on the economy is somewhat different, but arguably just as important. Sizing these effects is difficult. Much of the analysis is based on periods when shocks were smaller. An increase in the frequency, scale and persistence of climate-related events means that historical relationships may under-estimate the impacts. If climate dynamics are non-linear, we may also understate tomorrow's risks. For example, there is growing evidence that climate change is affecting food and energy prices⁷.

Research by the European Central Bank found that the summer 2022 extreme heat caused a cumulative impact of 0.7 percentage points on annual food price inflation and an increase of 0.3pp on annual headline inflation in Europe⁸. But projections under plausible but severe warming scenarios signal much larger and more persistent effects within the next ten years⁹.

More frequent heatwaves, droughts, floods and severe storms can interrupt production and raise transportation costs¹⁰. For example, De Winne and Peersman (2021) have shown that a 10% increase in global agricultural commodity prices stemming from weather-related shocks lowers GDP by 0.5% after six quarters across a panel of 75 countries¹¹.

Climate transition policies can also have an impact. Let me pick out three examples, based on analysis at the Bank of England:

- The size and composition of business investment will change. The UK's Climate Change Committee (CCC) estimates that a net zero-consistent pathway for the UK requires average financing of around £37 billion per year between 2025 to 2050¹². Evidence from the Bank of England's 2023 Decision Maker Panel survey of UK firms¹³ suggested that climate-related investments were set to rise from 2.5% of capital expenditures 2020-2023 to 5.5% over 2023-2026.

- Our models suggest that an increase in carbon prices in the Emissions Trading Scheme operate much like other supply-side shocks: increasing inflation, and decreasing output, within the monetary policy horizon¹⁴. For the UK, we estimate that a 7% rise in the carbon price leads to an increase in energy CPI inflation of 1pp after a year, followed by a smaller, but more persistent, rise in non-energy CPI inflation of just over 0.1pp four months later, and a 0.05% temporary fall in GDP around two years after the initial shock.
- The composition of the UK energy market is also changing. As more renewable electricity is generated under fixed-price contracts for difference (CfDs), household bills should become less exposed to gas price spikes, with the CfD share of electricity supply rising to around 25% by 2027/28.

Last year I [discussed](#) work at the Bank using a DSGE model adapted to incorporate climate-related policies. A forthcoming NGFS report uses the IMF's GMMET model to show the impact of an orderly phase-in of policies aligned with countries' nationally determined contributions. It shows that while carbon taxes can be very effective in reducing emissions, they can push up headline inflation and reduce output in the near term, creating a trade-off for policymakers.

Our modelling suggests that these trade-offs can be reduced when carbon tax revenues are spent on subsidies to green sectors. It also shows that if the transition is more abrupt, or agents doubt the credibility of announced policies, the inflationary effects are likely to be higher in the short-term.

This analysis shows that climate change can have important macroeconomic effects. In light of that, it becomes one of the factors we consider when setting monetary policy. My colleagues [Sarah Breeden](#) and [Catherine Mann](#) have spoken about some of these effects in recent speeches.

Physical climate shocks often look like supply shocks, pushing inflation up and output down, creating a trade-off for policymakers to manage. If shocks are temporary, for example isolated weather events, then it makes sense for policymakers to 'look through' the first-round effects. But if climate shocks become larger and more frequent, monetary policy may need to lean further against second round effects. So our work to understand these shocks better will be increasingly valuable.

The financial system – sizing the risk

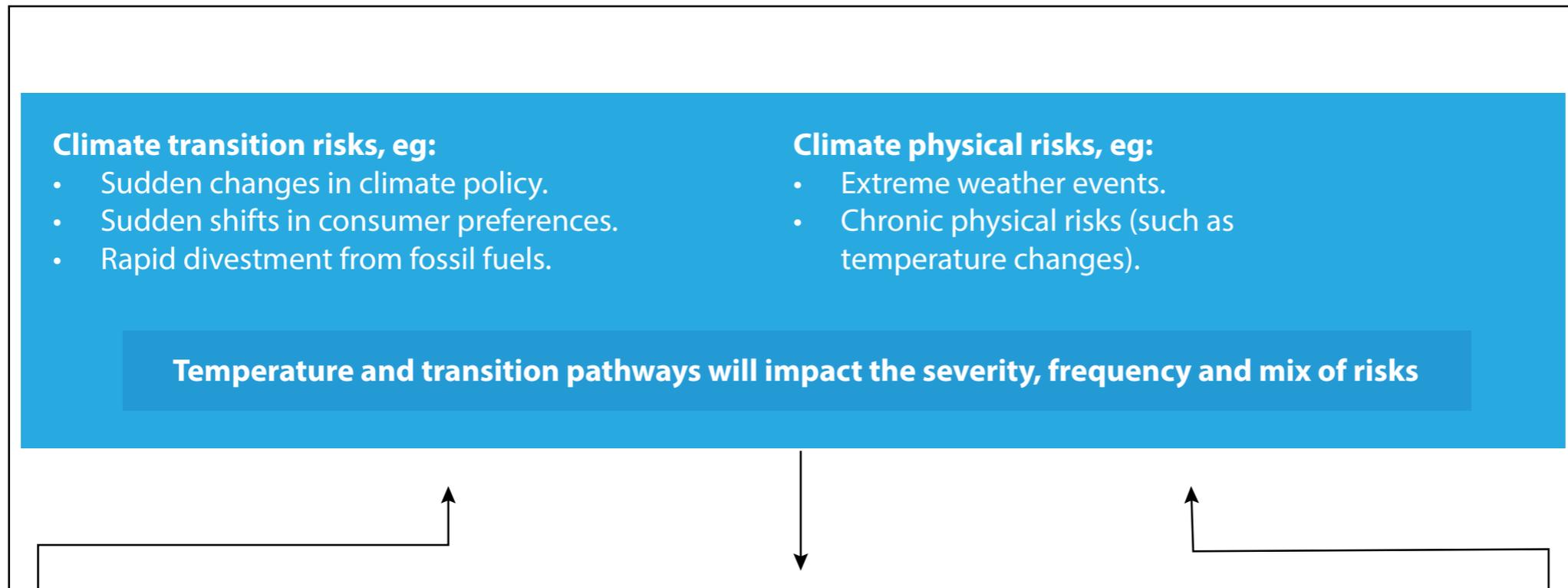
Our financial stability work has followed the same arc as that of monetary policy - but is further along. In 2021, the [Climate Biennial Exploratory Scenario \(CBES\)](#), our learning-by-doing exercise, was a first step in quantifying the impact of climate-related risks on the UK financial system in the long-run. It also found that a timely, well-managed transition keeps system costs lower relative to late or no action pathways.

But what of the near term? In the [November 2024 Financial Stability Report](#), we set out a framework to help identify and assess climate-related risks to UK financial stability (see Appendix). One of the things we flagged was that some financial markets could be under-pricing the risks to corporate borrowers' resilience posed by climate change and the transition.

So what if markets did start to price in risks suddenly – referred to by [some](#) as a climate 'Minsky moment'? In the [December 2025 FSR](#), we showed that a sudden reassessment of the costs of transitioning to net zero or the increase in physical risks from persistently elevated emissions could lead to a material adjustment in asset prices.

If such a repricing happened quickly it could have implications for financial stability, including by exposing non-bank financial institutions to material losses. In that case, it could also be amplified by the responses of financial market participants, in line with the findings of the Bank's 2024 [system-wide exploratory scenario exercise](#)¹⁵.

Figure 1. Framework from the November 2024 Financial Stability Report showing how climate-related risks could impact the financial system and the real economy



Impacts on the financial system and real economy

Risks to the financial system, affecting banks and NBFIs (including insurers)

- Sharp falls in some asset prices and increased risk of borrower default.
- Sharp increases in insurance claims and reductions in value of collateral.
- Increase liquidity demand due to rise in volatility and uncertainty.

Eg: reduced lending, higher insurance premia

Eg: more credit risk

Risks to the macroeconomy, affecting households, businesses and governments

- Sharp increase in uncertainty and contraction in some sectors, leading to more insolvencies and unemployment.
- Physical disruption to economic activity and rapid depreciation or destruction of assets.
- Higher borrowing costs and reduced provision of vital services (lending and insurance).
- Increased spending pressures on government budgets.

Potential longer-term feedback and amplification effects, eg:

- Disruption to financing of the transition could make an orderly transition harder to achieve and increase physical risks.
- Disruption to financing of adaption increases the potential impacts of physical risks.

This accumulation of evidence points to climate risks to financial stability becoming more proximate, albeit with significant uncertainty about when and where they will crystallise. These risks have a lot in common with other financial vulnerabilities that we monitor. Accordingly, we are working to make climate risk assessment part our day-to-day financial stability analysis.

In order to do that, we are investing in our own risk assessment capabilities, using scenario analysis, among other things, to understand how climate factors interact with traditional risk drivers and to assess the materiality and proximity of risks under different transition and physical pathways¹⁶.

We are also developing the tools to assess and monitor the build-up of risks to financial stability over longer-term time horizons, for example through increasing physical impacts of climate change. A key channel here are changes in insurance protection, where lower coverage could transfer risks to households, businesses, banks and governments.

In the short-term, the impacts on households are likely to be cushioned by a combination of Flood Re - the joint Government-industry reinsurance scheme that improves insurance affordability and availability for some UK households – and high insurance coverage¹⁷.

But as physical risks intensify, cover could become harder or costlier to obtain, and the protection gap could widen. Today 6.3 million properties in England are in flood risk areas, rising to about 8 million by mid-century¹⁸. Flood Re also ends in 2039 and has a statutory objective to manage the transition of the market to risk reflective pricing. Longer-term, households could face materially higher insurance premia or repair bills, lower house prices and difficulty remortgaging.

Corporates could face potential capital losses and banks higher credit losses¹⁹. For the Bank of England, understanding those interactions will be vital²⁰, as will assessing how actions on physical adaptation and resilience (eg. better defences or smarter land-use) can reduce risks to financial stability.

Supervision – from principles to day-to-day practice

The supervision of banks and insurers is where our climate work is most developed. Having focused on developing our understanding and supervisory capabilities in recent years, our priority going forward is on supporting firms to develop the tools and drive capabilities they need to manage these risks in a way that works for them.

We started a decade ago with insurance, showing how physical risks could feed through underwriting, claims and asset exposures²¹. We then broadened the focus to include banking, setting expectations on governance, risk management, scenario analysis and disclosure in [supervisory statement 3/19](#) - the first of its kind by a prudential regulator²².

Our supervisory expectations mattered. Boards and senior management were expected to treat climate as a financial risk - with clear accountability, risk monitoring and regular oversight through existing governance and risk-management structures. From 2022, we moved from setting expectations to integrating climate into normal supervisory engagement with firms.

Since the expectations were issued, banks and insurers have taken concrete and positive steps²³. However, firms' level of readiness to manage climate-related risk vary and our overall assessment was that all firms needed to make further progress.

By 2024, the feedback from both firms and supervisors was clear: the work we had done was helpful, but more clarity and practical detail was needed²⁴. While our work was cutting-edge in 2019, thinking had moved on – both internationally and domestically.

In April 2025 we consulted on enhancements to our expectations, and in December 2025 we published a [policy statement](#) with an updated [supervisory statement \(SS5/25\)](#). Our approach is proportionate, risk-based and pragmatic. It recognises that materiality depends not only on a firm's size, but also on its business model and geography²⁵. This allows firms to scale their response to reflect the risks they actually face.

We want banks and insurers to have the capabilities – and the senior level engagement – needed to treat climate-related risks like any other operational or financial risk and manage them through their existing governance and risk management arrangements. That means clear senior ownership, information flowing to the board, and evidence that climate considerations are shaping strategy and day-to-day decisions. That is why we have provided clear expectations on how firms should identify, assess, monitor and manage climate-related risks in a decision-useful way.

The aim is a more consistent and credible standard of practice across the industry, while still allowing flexibility in how firms get there. At the core of our approach is a robust, credible assessment of risk. We've tried to strike a balance – with more detailed expectations, where needed, while allowing flexibility and innovation and avoiding a one-size-fits-all burden for firms with limited exposures.

Climate scenario analysis is a good example of this. Our expectation is that firms begin with the question they are trying to answer, whether that is portfolio resilience or how risks evolve over different time horizons, and then pick

and tailor the scenarios accordingly. Done well, scenarios help boards and risk committees spot vulnerabilities, set priorities and inform strategy, particularly where historical data or backward-looking models fall short.

We also recognise that firms are building capability in an area where methods, data and best practice are still evolving. That is why, together with the FCA, we co-convene the Climate Financial Risk Forum (CFRF), which works in partnership with industry to provide practical guidance, case studies and tools to help firms accelerate their capabilities and support better decision-making²⁶.

Risk management of the Bank of England balance sheet

We expect the firms we supervise to both manage and disclose their climate-related risks. So, we are holding ourselves to the same standards.

First of all, we need to manage the risk on our own balance sheet. In order to help protect against climate-related financial risks, we have increased the insurance – or so called ‘haircuts’ – and tightened the criteria for, the mortgage-loan collateral we take in our lending operations²⁷.

This is designed to protect our balance sheet from any potential losses on these assets arising from energy price shocks and flood risks and to ensure that buy-to-let mortgage collateral meets the government’s energy efficiency standards²⁸. Taken together these measures cover more than three quarters of the collateral underpinning lending in the Sterling Monetary Framework (SMF)²⁹.

We have also conducted extensive work to better understand – and where appropriate manage – climate risks to our financial counterparties as well as the assets we own outright as part of our circa £500 billion sovereign bond holdings³⁰.

Second, the Bank of England publishes an annual climate-related financial disclosure, aligned with the [TCFD framework](#), covering governance, strategy, risk management, metrics and targets. The [2025 disclosure](#) covers each of these areas, including analysis of the climate-related risks to our financial operations, including sovereign holdings and collateralised lending. Publishing a stand-alone climate disclosure aligns the Bank with our own updated supervisory expectations.

Where next?

We've achieved a lot in the past decade or so, but climate change isn't standing still, so neither are we. Going forward, our aim is to mature and evolve our work through the cycle of repeated challenge, analysis and implementation. We've done the foundational work to assess how climate change impacts central bank objectives. A lot of what's to come is about ensuring it's embedded in the 'business as usual' of what we do.

We have further to travel on monetary policy. This work is important against the backdrop of the shocks we have experienced in the UK over the past few years. Repeated and persistent supply shocks have previously pushed up food and energy prices. These pressures were driven largely by geopolitical events, but they underline how future shocks - including those linked to climate change - could also influence the path of inflation.

While we expect inflation to return to target later this year, our challenge won't necessarily get any easier as our climate changes. My colleague [Megan Greene](#) noted that "*the supply side demands more attention*" and the [Governor](#) has recently flagged four headwinds to growth.

Climate shocks are squarely on both lists. As we move forward, like any other shock, the challenge is to judge persistence early, explain our reasoning clearly, and keep expectations anchored, particularly where temporary weather-related disturbances morph into longer-term structural trends.

The need to assess more frequent climate shocks also reinforces the value of scenario analysis. Physical hazards, transition policies, and policy uncertainty all shift the distribution of risks around the baseline. One of the recommendations of the recent Bernanke review of forecasting at the Bank of England is to make more systematic use of scenarios for monetary policy.

We have begun to include such scenarios as part of the MPC's regular communications. In the future, as our modelling of climate-related risks improves, these insights could increasingly feed into how we calibrate monetary policy in an uncertain world.

On the financial stability side, we will also continue to use scenarios and system wide analysis to run targeted deep dives, so we can improve our understanding of where risks might build or spill over. We also need more and better data on these risks.

Last year we did a targeted data collection to improve our understanding of the materiality of banks' exposures to physical and transition risks, and we are now considering how such risks should best be captured within our regular stress testing framework.

Following the publication of our recent supervisory statement at the end of last year, our focus is turning to implementation. A key next step – for firms and for us – is investment in climate scenario analysis capabilities, tools and best practice. The ask is not to run scenarios for their own sake, but to use them as a meaningful decision tool, supported by strong governance, clear objectives, and a proper understanding of their limitations. In doing so, firms should remain strategically ambitious as they continue to evolve their capabilities to address climate-related risks.

We know from experience that maintaining financial stability is much more than the sum of its parts. Ensuring individual firm resilience is important, but we want to make sure the financial system provides vital services – like payments, credit and insurance – to households and businesses reliably in all states of the world. That creates a genuine, and legitimate tension for insurers and regulators.

Insurers must manage their own risk prudently, but if they decide to increase pricing or withdraw cover so that losses are no longer insured, impacts can spill over into the rest of the system. Our role is not to tell insurers how to underwrite. Rather it is to understand and monitor these interlinkages while promoting proportionate safety and soundness, and innovation. Both of which are directly relevant to the PRC and FPC.

As we make progress across each of these areas, it helps to embed climate-risk assessment into everyday practice across the Bank. But there are also important feedback loops too. More effective supervision – clearer governance, better data, improved modelling and decision-useful scenario practice – will help support our system-wide risk monitoring.

Likewise, our work to manage our own climate exposures helps shape the climate scenarios we use. And our efforts to improve the quantification of macroeconomic impacts of climate change can refine the questions we ask of ourselves, as policymakers, and as supervisors, of firms.

Of course, as the impact of climate evolves - so too will our thinking – especially as we look to also learn from the experience of others, drawing on expertise including across climate science and economics.

My main message today is that we're doing the work and analysis to understand the impacts of climate on our mandate and we're working out how to respond to it. We're increasingly learning from others and our plan is to

‘Measure, Model, Tackle, Tailor’. In doing so, we’re not going beyond our mandate, we’re making sure we achieve it. We’re not trying to shape the path of climate transition policies; that’s for elected officials.

But if climate shocks and the transition affect the economy and financial system, then we need to understand their impacts, just like any other shock. In doing so, we can make sure that the financial system remains stable and that price stability is maintained. That is the best contribution that we can make to the climate transition. ■

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Endnotes

1. [NGFS memberships as of the 05 January 2026](#).
2. [Copernicus: Global Climate Highlights 2025](#).
3. [IPCC Sixth Assessment Report \(AR6\)](#).
4. [Results of the 2021 Climate Biennial Exploratory Scenario \(CBES\) | Bank of England](#).
5. [The heat is on: why monetary policy makers are increasingly focusing on the impact of climate risks - speech by James Talbot](#).
6. [The world today – remarks by Andrew Bailey | Bank of England](#).
7. [Faccia et al 2021 and IEA: Energy and climate are inextricably linked](#).
8. [ECB Working Paper Series: The impact of global warming on inflation: averages, seasonality and extremes](#).
9. [ECB Working Paper Series: The impact of global warming on inflation: averages, seasonality and extremes](#).
10. [Department for Transport: Climate Change Adaptation and Transport Infrastructure, 2022](#).
11. [De Winne and Peersman 2021](#).
12. [Climate Change Committee: Seventh Carbon Budget](#). Total investment figure includes both business and public investment.
13. [Srivastava et al 2026](#).
14. [Copeland et al 2025](#).
15. [Financial Stability Report – December 2025 | Bank of England](#).
16. [Financial Stability Report - November 2024 | Bank of England](#).
17. [Financial Stability Report – December 2025 | Bank of England](#).
18. [Environment Agency: National assessment of flood and coastal erosion risk in England 2024](#).
19. [Financial Stability Report – December 2025 | Bank of England](#).
20. That is also why we welcome the publication of [FSB's analytical framework](#), which helps illuminate how climate-related vulnerabilities emerge and propagate through the global financial system. This framework builds on the existing

FSB Financial Stability Surveillance Framework and focuses on assessing climate-related vulnerabilities holistically, particularly from a crossborder and cross-sectoral point of view.

21. [The impact of climate change on the UK insurance sector.](#)

22. [Climate-related financial risk management and the role of capital requirements.](#)

23. [Thematic feedback on the PRA's supervision of climate-related financial risk and the Bank of England's Climate Biennial Exploratory Scenario exercise.](#)

24. [SS5/25 - Enhancing banks' and insurers' approaches to managing climate-related risks.](#)

25. [PS25/25 – Enhancing banks' and insurers' approaches to managing climate-related risks – Update to SS3/19](#) | Bank of England.

26. [Climate Financial Risk Forum](#) | Bank of England.

27. [Updates to eligibility of residential mortgage collateral in the Sterling Monetary Framework - Market Notice 23 May 2024](#) | Bank of England.

28. [The Bank of England's climate-related financial disclosure 2024.](#)

29. [Residential mortgage collateral makes up over three quarters of collateral delivered to the Bank.](#)

30. [Report on the Bank's official market operations March 2024–February 2025](#) | Bank of England.

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Five reasons why attacking the EU carbon market is economic self-sabotage

The ETS is the EU's key climate policy instrument. Simone Tagliapietra and Georg Zachmann write that when discussing the emissions trading system policymakers should remember five risks of undermining the system

The last few weeks have witnessed mounting attacks on the European Union's key climate policy instrument: the emissions trading system (ETS). A major push has come from energy-intensive industries, but also from several European governments, including Italy, which has even [called for a suspension of the system](#).

However, watering-down the ETS would not save European industry; rather, it would be a blow to both fiscal stability and long-term economic resilience. This debate will continue as EU leaders convene at the European Council on 19–20 March in Brussels to discuss the future of European competitiveness. The following five points show how undermining the ETS would harm – not benefit – EU economic competitiveness.

1. The ETS is a remedy for electricity price volatility, not the cause of it

The current political debate often proceeds as if European electricity prices are still at crisis levels. In reality, prices have largely stabilised at pre-crisis levels, even accounting for the jump in electricity prices following United States-Israel action against Iran. Yet the misconception persists that the ETS drives higher electricity costs. Natural gas – not the carbon price – is the dominant factor in setting marginal electricity prices.

The only sustainable way to lower electricity costs is to reduce the number of hours during which gas sets the marginal price. This entails accelerating the deployment of renewables. Watering-down the ETS would disrupt confidence in the system, deter private investment and prolong dependence on expensive and geopolitically risky imported gas.

2. Policy reversals create a 'laggard's dividend' at the expense of innovators

Europe's industrial competitiveness problem is not a result of carbon pricing, but rather of a broader failure to manage technological transformation. If policymakers reverse course on the ETS, they will effectively penalise the frontrunners who invested early in decarbonisation while rewarding the laggards who resisted change.

If companies believe that political pressure can simply 'wave away' the cost of carbon, they will stop investing in the low-carbon technologies of the future. To borrow [Mario Draghi's words](#), this would condemn EU industrial competitiveness to prolonged 'slow agony'.

3. The hidden fiscal cost of watering down the carbon price

Weakening the ETS would bring two fiscal penalties that its proponents appear to overlook. First, it would directly reduce the auction revenues that EU countries can and should use to fund industrial transition and social support. Since inception, ETS auctions have raised over [€258 billion in revenues](#), an amount that will keep growing as the carbon price increases.

Europe's industrial competitiveness problem is not a result of carbon pricing, but rather of a broader failure to manage technological transformation

Second, because many renewable energy projects are supported through instruments called [contracts for difference](#), a lower carbon price often forces electricity prices down in the short term, which paradoxically increases the subsidy gap governments must fill. For Germany alone, a 10% reduction in wholesale electricity prices would increase the cost of renewables support by some €3 billion to €4 billion per year. By attacking the ETS, policymakers are inviting adverse impacts on their own national budgets.

4. Preventing a rent shift to fossil-fuel exporters

Perhaps the most overlooked economic benefit of the carbon price is its role in aggregating EU demand for fossil-fuel imports. By making carbon-intensive energy more expensive, the ETS reduces gas consumption across a massive market. Because the EU imports huge volumes of gas, primarily as liquified natural gas (LNG), this reduced demand puts downward pressure on global LNG prices, meaning that part of the carbon 'tax' is effectively paid by the exporters.

Dropping the ETS would signal to consumers that they do not need to reduce consumption, and to other importers that they should also subsidise their gas consumers, putting upward pressure on global gas prices. The carbon market revenues that previously went to European budgets would then be sent abroad as pure profit for LNG exporters.

5. Undermining a valuable institution has long-term cost

The ETS is a mature, unified, market-based framework that ensures a level playing field across the EU's single market. Undermining this would trigger dangerous fragmentation, forcing EU countries to revert to a patchwork of national subsidies and contradictory regulations, causing major market distortion.

The ETS is an ally, not an enemy, of Europe's competitiveness. Rather than dismantling it, EU leaders should strengthen the system as the central pillar of clean industrial policy. While adjustments are possible, the system's long-term credibility must be protected.

Any watering down of the carbon price signal would destroy the investment certainty that frontrunners and innovators rely on. Strengthening the ETS first and foremost requires making strategic use of the scheme's multi-billion euro revenues to secure Europe's future prosperity. ■

Simone Tagliapietra and Georg Zachmann are Senior Fellows at Bruegel

This article is based on a [Bruegel First Glance](#).



Nature in decline, economy on the line

Nature is the economy's life support system, and it is under strain. Frank Elderson calls for stronger global cooperation to tackle nature related financial risks

We are living in unprecedented, turbulent times. Almost by the week, we see the proliferation of conflicts, an erosion of the international rule-based order and collapsing international cooperation across several domains. In the face of multiple challenges, the very urgent often overtakes the vitally important. It is tempting, and quite frankly a natural human reaction, to focus on the most immediately visible issues.

With numerous severe challenges vying for our attention, this event – where we are welcoming representatives from all six continents to focus on the ongoing climate and nature crises – conveys a powerful and hopeful message. It shows that coming together, cooperating and engaging with one another across borders is possible and indeed imperative in times of profound disruption and volatility.

At a time when some question the value of international cooperation, interest in the coordinated, pragmatic and evidence-based work of the central banks' and supervisors' Network for Greening the Financial System (NGFS) remains high – as participation shows¹. This is a testament to the undeniable significance of the climate and nature crises for the economy and for the financial system – and hence our mandates as central bankers and supervisors². The NGFS is well-established as the go-to forum for exchanging good practice, consolidating knowledge and helping supervisors maintain forward momentum.

Growing evidence of nature affecting the economy

Nature is the life-support system on which our economies depend. The World Bank estimates that as much as half of the world's GDP relies on biodiversity, nature capital and ecosystem services³.

In the euro area, nearly 75% of banks' corporate lending goes to firms that are highly dependent on at least one ecosystem service⁴. To take a very specific example: over half of essential medicines like antibiotics and painkillers depend on plants and other natural resources⁵.

And yet while nature sustains us, we continue to strain it: intensive land use, climate change, pollution, overexploitation and other anthropogenic pressures are critically depleting our planet's resources at a rapid pace. We are running an ecological deficit by using natural resources 1.7 times faster than ecosystems can regenerate them. Put simply: we are in a structural deficit with nature, year after year.

Put bluntly: if we keep destroying nature, we keep destroying economic activity. And this leads to risks surging, prices rising and instability spreading to every part of society and across borders

What's more, degraded nature also impedes our ability to mitigate the climate crisis and strips away our capacity to adapt to its effects. Healthy nature acts as our first line of defence against global heating and related extreme weather events. Take, for instance, marine and terrestrial ecosystems, such as swamps, oceans or forests; they act as natural carbon sinks, absorbing roughly half of all human-induced carbon emissions⁶.

Or consider another example: wetlands around rivers act as giant sponges, storing excess rainwater and releasing it slowly, which protects urban infrastructure and agricultural land from flooding and prevents widespread business disruption.

Accounting for nature in banking supervision

If nature degradation continues at its current pace, business revenues will be even more starkly affected than they are now. This will impede loan repayments from firms, take a toll on bank balance sheets and may ultimately put financial stability at risk. In this context, it is no surprise that many supervisors have taken action to incorporate nature-related risks into their prudential oversight⁷.

Take Brazil, for example, where 46% of corporate credit portfolios in the banking sector are allocated to companies that are highly or very highly dependent on one or more ecosystem services⁸. Back in 2021, Brazil's central bank drafted a social, environmental and climate risk document with the goal of collecting relevant information from financial institutions.

Or think of Hungary, where the central bank launched a two-year project with the OECD aimed at mapping the financial risks arising from declining biodiversity⁹. Or look at the Swiss Financial Market Supervisory Authority, which has published a new circular on climate and nature-related financial risks with proportional timelines for implementation¹⁰.

Later this month, the NGFS will publish a guide that includes clear recommendations designed to help supervisors and financial institutions address nature-related risks. In addition to providing practical advice on metrics, data and risk monitoring, the guide also stresses the importance of forward-looking tools like scenario analyses and stress testing. With the foundational toolkit developed by the NGFS, all central banks and supervisors around the world can get started, go deeper and move further when it comes to good practices on nature.

At the ECB, in our role as banking supervisor, we already began taking action some time ago¹¹. Since 2020 and the very start of our supervisory engagement with banks on climate and nature, we have been consistent in our clear expectation that banks under our supervision not only manage climate risks, but also material nature-related risks.

In 2022 almost 40% of banks had no defined approach to managing nature-related risks, whereas today 75% of banks have quantitative approaches to assess nature-related risks as part of their materiality assessment.

Despite this progress, most banks do not yet systematically link their materiality assessment to a risk management response – there is clearly more work required to move from risk awareness to risk preparedness.

Even if banks' practices to manage climate-related risks are still more advanced, we are also seeing many banks across Europe adopting a growing set of good practices in the area of nature-related risk. This is the case, for example, in scenario analysis, real estate collateral and capital calculations.

To further support banks, we will also include good practices on nature-related risks in the updated compendium that will be published in May this year.

Improving risk assessments related to ecosystem services

Admittedly, accounting for nature and ecosystem services is not an easy task. Unlike for the climate crisis – which can be quantified through carbon emissions and their direct links to rising temperatures – there is no single obvious metric that can be used to quantify the wide range of ecosystem services.

Encouragingly, a range of stakeholders – in academia, firms, banks, central banks and supervisory authorities – are taking action to better account for the implications of ecosystem degradation for variables of economic interest like growth, inflation and financial risks.

To that end, the ECB has teamed up with experts from the University of Oxford and the London School of Economics with the objective of improving our understanding of how much economic activity is actually at risk from nature degradation.

Our analysis finds that too much water, too little water or polluted water pose the most urgent risk to economic output in the euro area from a value-added perspective. Surface water scarcity alone could put up to 24% of euro area economic output at risk.

Using AnaCredit data covering about €4.4 trillion of bank loans, we found that 19% are exposed to surface water scarcity, rising to 22% when also considering groundwater scarcity. The economic sectors most affected are real estate, manufacturing and trade. This tells us that worsening water scarcity and declining water quality could become material sources of credit risk, potentially amplifying systemic vulnerabilities in the euro area financial system.

In the coming months we will publish research that analyses in detail how much banks' credit portfolios will deteriorate in the economic sector most affected by dwindling ecosystems.

The Banque de France recently published a study that shows how ecosystem service disruptions in France could drive up food prices by over 2% and add about 0.5% to inflation¹², highlighting once again the relevance of nature degradation for central banks' price stability mandate¹³.

Work by the Banco de España shows that a combination of extreme weather events and environmental degradation in the Mar Menor – Europe's largest saltwater lagoon – has resulted in real estate losses of more than €4 billion. Strikingly, this figure is ten times higher than the amount earned over the last 20 years from converting the surrounding land into irrigated farmland, which is one of the main drivers of the environmental degradation¹⁴.

And a nature stress test conducted by McKinsey on five African banking systems – in Ghana, Mauritius, Morocco, Rwanda and Zambia – found that an orderly transition scenario could significantly reduce credit risk in most countries. In the case of Zambia, losses would be reduced by almost 20% by 2050¹⁵.

Close cooperation is more important than ever

Clearly, the effects of nature degradation are far-reaching and material, and the contribution nature can make to our economies – and our way of life – is steadily diminishing.

Today around 80% of arable land worldwide is affected by soil erosion, salinisation and biodiversity loss¹⁶. These pressures are projected to reduce global food productivity by 12% by 2040, increasing food prices by up to 30%¹⁷.

In its recent landmark report, approved by more than 150 member governments, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) warns that biodiversity loss is among the most serious threats to businesses¹⁸.

Put bluntly: if we keep destroying nature, we keep destroying economic activity. And this leads to risks surging, prices rising and instability spreading to every part of society and across borders.

Therefore, all of us – central banks, supervisors, banks and the research community – must work closely together in lockstep with the latest scientific evidence to further develop practices for addressing nature-related risks. The NGFS is really the place where all these initiatives and actions come together to better grasp risks and ultimately keep financial systems resilient in the face of the accelerating nature crisis.

Working together within the NGFS we can make sure that a foundational climate and nature toolkit for central banks and supervisors is readily available for whoever wants to get started and make further progress in this field.

So let us keep moving forward. Let us refine our approaches and continue sharing sound practices. Let us shape solutions that match the scale of the task at hand. Because in the face of the ongoing nature crisis, inaction is never neutral.

Where fragilities form, where risks rise, where resilience recedes, we must continue to act. ■

Frank Elderson is a Member of the Executive Board and Vice-Chair of the Supervisory Board of the European Central Bank

Endnotes

1. Despite political headwinds, the NGFS today is a global coalition of 149 members and 24 observers.
2. Central banks and supervisors are not nature policymakers, rather they are policy-takers. Preventing nature degradation is the responsibility of elected governments, as they set environmental policy. For our part as central banks and supervisors, we must take nature-related risks into account in the pursuit of our price stability and financial stability mandates.
3. World Bank (2025), [Mainstreaming Nature into World Bank Macroeconomic Models: Overview Report](#), Washington, DC.
4. For dependency analysis, see Boldrini, S et al (2023), [“Living in a world of disappearing nature: physical risk and the implications for financial stability”](#), Occasional Paper Series, No 333, ECB.
5. World Health Organization (2025), [“Biodiversity”](#), Fact Sheets, 18 February.
6. According to the [2025 carbon budget assessment](#), land and ocean have drawn down 21% and 29% of human-induced CO₂ emissions in the past decade. Owing to the effects of climate change and deforestation, land and ocean CO₂ sinks are 25% and 7% smaller, respectively, than they would otherwise have been. Combined, this is equivalent to the total sink (land and ocean) being nearly 20% smaller than it should be.
7. In doing so, many supervisors took inspiration from the [NGFS conceptual framework on nature-related risks](#) that details how nature degradation can create physical and transition risks.
8. Financial Stability Board (2024), [“Stocktake on Nature-related Risks – Supervisory and regulatory approaches and perspectives on financial risk”](#), 18 July.
9. Magyar Nemzeti Bank (2024), [“The joint biodiversity project of MNB and OECD with the support of the European Commission”](#).
10. Swiss Financial Market Supervisory Authority FINMA (2024), [“FINMA publishes new “Nature-related financial risks” circular”](#), press release, 17 December.

11. In addition to the steps taken from a supervisory perspective, the ECB takes nature degradation into account equally seriously in the pursuit of its price stability mandate. See Elderson, F (2025), [“Deepening our commitment to confronting the climate and nature crises”](#), welcome address at the International Monetary Fund OEDNE/World Bank Group EDS19 Constituency Meeting, Luxembourg, 4 July; and Lagarde, C (2025), [“Strategy assessment: lessons learned”](#), introductory speech at the opening reception of the ECB Forum on Central Banking, Sintra, 30 June.
12. It finds that a one-off shock to major crop yields could raise food inflation by over 2 percentage points and add about 0.5 percentage points to headline CPI inflation (within one to two years) in France. Repeated or intensified shocks would risk more persistent inflation. See Wegner, O et al (2025), [“Seeds of Inflation: Macro Modelling of Nature-Related Risks through Agricultural Prices”](#), Working Paper Series, No 1006, Banque de France, Paris, 29 July.
13. Considering the pivotal role of nature in fulfilment of the price stability mandate, the ECB’s Governing Council – in its latest strategy assessment – committed, within its mandate, to ensuring that it fully takes into account the implications of both climate change and nature degradation for monetary policy and central banking. See ECB (2025), [“ECB’s Governing Council updates its monetary policy strategy”](#), press release, 30 June.
14. Lamas, M and Pérez Quirós, G (2024), [“What is the economic impact of climate change and environmental degradation? The case of house prices in the Mar Menor area”](#), Banco de España Blog, Banco de España, 20 June.
15. FSD Africa and the African Natural Capital Alliance (2024), [Nature stress test: Assessing exposure of five African banking systems](#), McKinsey & Company, July.
16. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) estimates that between USD 235 billion and USD 577 billion worth of annual global food production is at risk due to the decline of pollinators, as outlined in IPBES (2025), [The assessment report on pollinators, pollination and food production – summary for policymakers](#).
17. Wegner, O et al (2025), op. cit.; United Nations Environment Programme (2021), [Becoming #GenerationRestoration: Ecosystem restoration for people, nature and climate, Nairobi](#); Kopittke, PM et al (2019), “Soil and the intensification of agriculture for global food security”, *Environment International*, Vol. 132, Elsevier, Amsterdam, November.

18. Jones, M et al (2026), [IPBES Business and Biodiversity Assessment: Summary for Policymakers](#), United Nations, Manchester, United Kingdom, 8 February.

This article is based on opening [remarks](#) delivered at the NGFS Annual Plenary Event panel discussion on 'Incorporating nature into supervisory practices', Pretoria, 9 March 2026.

Has the global minimum tax survived Trump?

It is accepted that international tax competition is harmful. Pascal Saint-Amans writes that US objections have not killed off the 15 percent global minimum tax, but they have altered it and given the US a competitive advantage

One of Donald Trump's first acts in his second term as United States President was to issue a 20 January 2025 executive order¹ rejecting application in the US of a global tax deal brokered in 2021 by the Organisation for Economic Co-operation and Development. The deal's so-called Pillar 2, which established a global minimum tax of 15 percent on corporate profits, had *"no force or effect in the United States,"* according to the order.

A year later, Trump seems to have got his way. The 147 jurisdictions² that agreed the global deal with the OECD/G20 Inclusive Framework (IF) have agreed on a tax package establishing a 'side-by-side' mechanism that grants special treatment to the US³.

Trump's Treasury Secretary Scott Bessent called the updated agreement a *"historic victory preserving US tax sovereignty"*⁴. However, the agreement does not amount to a full dismantling of Pillar 2. It preserves the minimum tax architecture. Differentiated treatment for the US is regrettable but the US has its own minimum tax, which, with a 14 percent rate, is only slightly below the global rate but which applies a much narrower base.

Reality is therefore more nuanced than US victory claims, which may explain why all IF members, even China, India and developing countries more broadly have signed the new agreement, despite reservations about an asymmetrical deal twisted in favour of the US.

International tax coordination has thus proved at least somewhat resilient at a time when multilateral agreements have become increasingly rare. This is important as the implementation of the global minimum tax requires a multilateral infrastructure, comprising common forms, in-depth information exchange and peer review mechanisms.

In addition to the side-by-side system for US companies, the updated deal brings new rules on the treatment of tax benefits and various simplifications. While simplification is welcome for an unprecedentedly complex regime, the implications of the first two elements require closer examination.

It is doubtful the US will ever agree a multilateral solution on digital tax, which would give jurisdictions taxing rights over some of the profits of the most successful US companies. It is equally doubtful that the US will not push back against any jurisdictions that continue to apply unilateral measures

Box 1: How the global minimum tax works

The global minimum tax (Pillar 2) is intended to ensure that large multinational enterprises (MNEs) pay an effective tax rate of at least 15 percent wherever they operate. If profits are taxed below that threshold in a given country, a top-up tax can be applied, either by the multinational's home jurisdiction (known as the Income Inclusion Rule, IIR), or, if the home country does not act, by other jurisdictions where the group operates (known as the Undertaxed Profits Rule, UTPR). To ensure first place in the queue, jurisdictions where profits are earned may also implement a top-up tax (the Qualified Domestic Minimum Top-Up Tax, QDMTT).

So far, more than 55 jurisdictions including the European Union have implemented Pillar 2. The US objection is that application of the UTPR to US headquartered groups would be extraterritorial, even if the profits of US MNEs are undertaxed abroad.

The side-by-side system provides US companies a competitive advantage

The side-by-side system shelters US companies from the UTPR but subjects them to the US minimum tax, formerly known as GILTI (Global Intangible Low Tax Income) and now as NCTI (Net CFC Tested Income), which was brought to 14 percent by Trump's July 2025 One Big Beautiful Bill Act.

However, the divergence from the global minimum tax goes beyond the 1 percent rate difference. NCTI captures foreign profits of US companies only when they are below 14 percent as a worldwide average, and not on a country-by-country basis, as is the case with Pillar 2. Therefore, US multinationals that blend profits earned in low-tax jurisdictions with profits earned in high-tax jurisdictions may avoid triggering the US minimum tax – and will be sheltered from Pillar 2.

However, US companies are not fully exempt from Pillar 2. Domestic minimum top-up taxes (the QDMTT) will apply first. The profits of US companies in low-tax countries that implement a QDMTT will therefore be subject to the 15 percent minimum tax. To date, 46 jurisdictions have implemented a QDMTT, including most low and no-tax jurisdictions⁵.

In addition, mechanisms are embedded in the new agreement to encourage countries to adopt QDMTTs, thus ensuring them first place in the queue to apply the tax. This contradicts US Treasury claims (footnote 4) and may not please the US Congress, as estimates done for NCTI did not factor in such broad adoption of QDMTTs, or that they would apply first.

From this perspective, the new agreement consolidates the central role of QDMTTs and reinforces their integrity. Meanwhile, without the deal, the minimum tax could have unravelled following US withdrawal. Instead, it has been preserved, though in an explicitly asymmetric form.

The trouble with tax benefits

The new side-by-side agreement also modifies Pillar 2 on tax benefits. Pillar 2 was designed to put a 15 percent floor on tax competition and under the original Pillar 2 rules, tax breaks were considered to reduce covered taxes for the purpose of computing the effective tax rate. The only exception was refundable tax credits, which were considered to increase taxable income but not reduce the effective tax rate.

Abandoning this strong rationale, the new agreement introduces a category of 'substance-based tax incentives' that may be granted without reducing the effective tax rate for Pillar 2 purposes. These incentives are limited to activities linked to real economic substance and are capped at either 5.5 percent of payroll or depreciation, or 1 percent of net tangible assets.

Regrettably, no comprehensive impact assessment of the impact of this has been done and it is difficult to determine how much tax competition this adjustment may reintroduce into the system. What is clear is that it modifies the original intention of Pillar 2. It will also largely benefit the US, which traditionally uses non-refundable tax credits, unlike European countries, which apply subsidies and refundable tax credits.

This new regime has been designed largely to shield the undertaxed profits of US subsidiaries of foreign groups from being picked up under the IIR (Box 1) in home jurisdictions. For example, a US subsidiary of a German multinational benefitting from generous US R&D tax credits could fall below the 15 percent threshold without triggering a top-up tax in Germany.

Beyond developed economies, the implications of this for developing countries are significant. Pillar 2 was intended, in part, to protect these jurisdictions from inefficient tax incentives by allowing them to reclaim revenue through a domestic top-up tax. Many lack the fiscal capacity to grant refundable tax credits and may now face renewed pressure to offer non-refundable incentives. This adjustment risks re-unleashing dynamics that the minimum tax sought to contain.

Impact on Europe

To resist US pressure on the side-by-side deal, the European Union could have argued that it could not gather unanimity (a requirement for EU tax rules) to change the EU directive that implements Pillar 2 (Directive (EU) 2022/2523). The EU directive states explicitly that the US system is not compatible with the agreed international rules. As sufficiently large markets, EU countries should be in a position to apply the UTPR to the undertaxed profits of US companies operating within its territory.

Instead, in discussions on the new agreement, fear of US retaliation prevailed. The US Congress included a retaliatory measure, known as section 899, in the draft One Big Beautiful Bill. Countries implementing the UTPR against US companies would have been severely sanctioned with massive withholding taxes on US-sourced income. The threat was suspended⁶ only when France and Germany in June 2025 fell in line with US requests, opening the way to the side-by-side system.

The new agreement results in an arrangement framed as a 'safe harbour', allowing the European Commission to argue that no formal amendment of the directive is required, as the EU minimum tax directive (Article 32) refers to OECD-agreed safe harbours.

The agreement allows the US to enhance its competitive position, with potential implications for aggressive tax planning and the attraction of foreign investment. These risks would be more acute if the US were to evolve towards an even lower tax model. While this is not currently the case, as the federal corporate tax rate remains at 21 percent, any expansion of the use of tax incentives, or any shift away from direct taxation toward greater reliance on tariffs, should be monitored.

Nevertheless, Europe and its partners can claim to have preserved the global minimum tax framework, albeit under constrained circumstances. Whether this accommodation proves temporary or becomes a lasting feature of the system will depend on future political and fiscal developments.

Finally, the agreement opens the door for the US to re-engage in the discussion of the taxation of the digital economy. Scott Bessent has concluded his statement on the side-by-side deal by saying the US will *"move toward a constructive dialogue on the taxation of the digital economy"* (footnote 4).

Taxation of the digital economy was the subject of Pillar 1 of the 2012 global tax deal. President Trump's 20 January 2025 executive order also suspended US participation in the negotiations on a multilateral convention to implement Pillar 1. The multilateral convention would have provided a solution enabling market countries to take a share of the profits of the largest multinational companies, including digital platforms⁷.

Does the more conciliatory US language mean Pillar 1 is back on track? It is doubtful the US will ever agree a multilateral solution on digital tax, which would give jurisdictions taxing rights over some of the profits of the most successful US companies. It is equally doubtful that the US will not push back against any jurisdictions that continue to apply unilateral measures.

However, the US will continue to bundle its concerns on unilateral tax measures together with those on EU-wide non-tax digital economy regulation. It will be extremely interesting to watch, in the coming months, how the revival of the discussion on Pillar 1, especially between the US and Europe, unfolds. ■

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Endnotes

1. The White House, *'The Organization for Economic Co-operation and Development (OECD) Global Tax Deal (Global Tax Deal)'*, 20 January 2025.
2. For a list, see OECD, *'Members of the OECD/G20 Inclusive Framework on BEPS'*, 28 May 2024.
3. See OECD press release of 5 January 2026, *'International community agrees way forward on global minimum tax package'*.
4. See US Department of the Treasury press release of 5 January 2026, *'Treasury Secures Agreement to Exempt U.S.-Headquartered Companies from Biden Global Tax Plan'*.
5. See OECD, *'Central Record for purposes of the Global Minimum Tax'*.
6. John Towfighi, *'The 'revenge tax' is dead before it even started'*, CNN, 27 June 2025.
7. The US also threatened countries, including France, Italy, Spain and the United Kingdom, that adopted unilateral solutions such as digital services taxes. See for example Eliza Gkritsi and Jacob Wendler, *'Trump threatens 'substantial' new tariffs against countries with 'discriminatory' digital rules'*, Politico, 26 August 2025.

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