

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
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1 Warwick Rd, Borehamwood, Hertfordshire, WD6 1GS, United Kingdom.

Registered Office (WI), Euro Exim Bank Ltd, Office 2, 1st Floor, La Place
Creole Bldg, Rodney Village, Rodney Bay, Gros-Islet, St. Lucia, West Indies.

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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. ■

PHOENIX MULTIMEDIA
NR35 1PU
United Kingdom

worldcommercereview.com

Email: info@worldcommercereview.com



PUBLISHER
Tom Forster

EDITOR
Cassandra Evans

EDITORIAL
Karen Ferns

PRODUCTION
Michael Day

CIRCULATION
Andrew Kilby

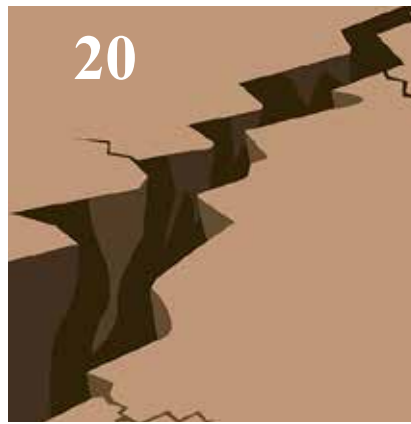
SALES DIRECTOR
David Willocks

SALES TEAM
David Thompson
John Mayes

DESIGN AND PRODUCTION
West Riding Media Solutions

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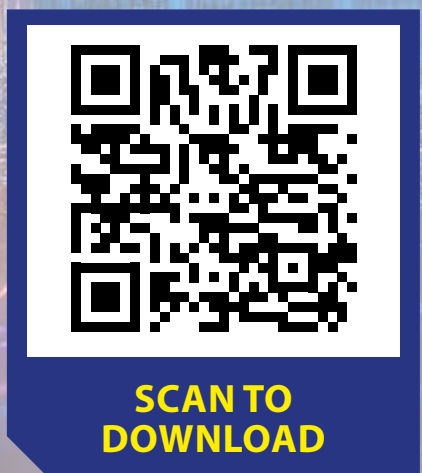
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The world today

Andrew Bailey is the Governor of the Bank of England

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 safehaven 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.

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

“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”

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. ■

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

Piero Cipollone is a Member of the Executive Board of the European Central Bank

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.

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

“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”

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. ■

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, Gerinovic, 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 (ERPB) technical workstream, October.
22. ECB (2025), Fit of the digital euro in the payment ecosystem – Report on the dedicated Euro Retail Payments Board (ERPB) 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. A 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.
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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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The sane insanity of digital sovereignty

Matthew Kilcoyne is a Policy Analyst at the Information Technology and Innovation Foundation's Center for Data Innovation, and focuses on data, AI, and digital policy in the UK and EU

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.

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

“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”

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. ■



The end of the world order

Mark Carney is Prime Minister of Canada

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 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

“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”

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 hegemons and hyper-scalars.

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. ■

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.



AI risks for employers and employees

Aida Ponce Del Castillo is a Senior Researcher at ETUI's Foresight Unit

AI-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.ai¹ 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 documentation², 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 processed³ 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.

- 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 Framework⁴ 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-06911⁵). 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.

Computerworld⁶ framed the lawsuit as part of a 'wider reckoning' for enterprise AI note-taking apps. The legal claims include violations⁷ 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 surveillance⁸ has already shown the (European Parliament Think Tank 2020).
- **Accuracy and bias:** errors in AI transcription⁹ 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:

“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”

- 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. ■

Endnotes

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What will AI mean for the labour market?

Michael S Barr is Vice Chair for Supervision at the Federal Reserve

Artificial intelligence (AI)—and by this, I mean in particular the recent explosive growth of generative AI—looks increasing 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.

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

"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"

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. ■

Endnotes

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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 Santaralasci, 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).
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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 Krayer, 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 Demirel (2023), "The Impact of AI on Developer Productivity: Evidence from GitHub Copilot," working paper; Kevin Zheyuan Cui, Mert Demirel, Sonia Jaffe, Leon Musolf, 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 Sukharveksy, Lareina Yee, and Rodney Zimmel (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.



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 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.

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 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.

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 unfinished 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).

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.

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.

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.

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.

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.

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.

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

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.

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. ■

ABOUT THE AUTHORS

Anne Bucher is a Non-Resident Fellow at Bruegel, and Elizabeth Golberg was formerly Director of Better Regulation in the European Commission

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 http://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.

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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.

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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.

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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.

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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 XXXVIII(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.

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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



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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.

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.

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The cause of economic stagnation

Patrick Minford is Professor of Applied Economics at Cardiff University

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% |

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.

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

Figure 1. UK GDP per capita versus alternative Doppelgänger

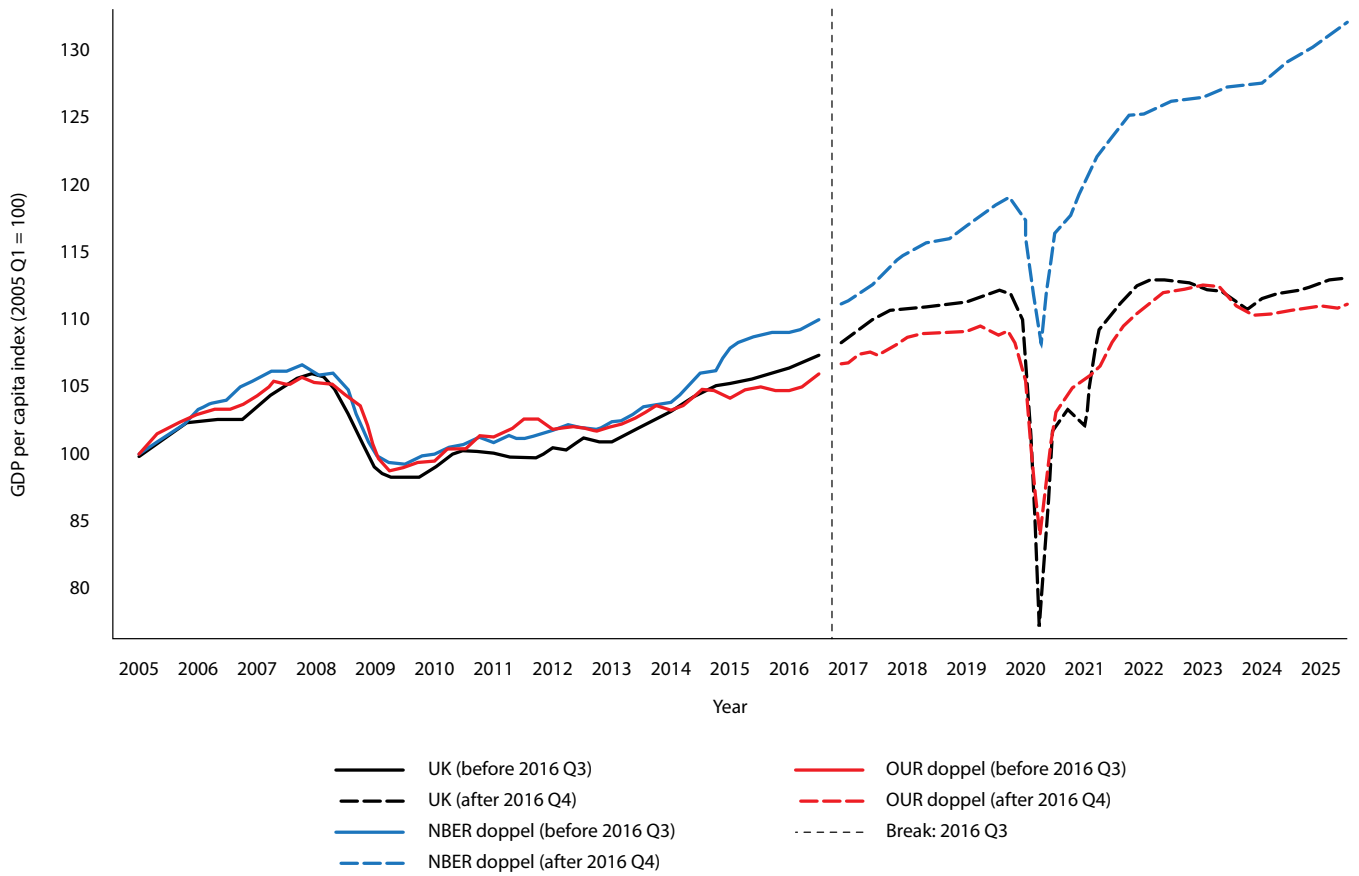
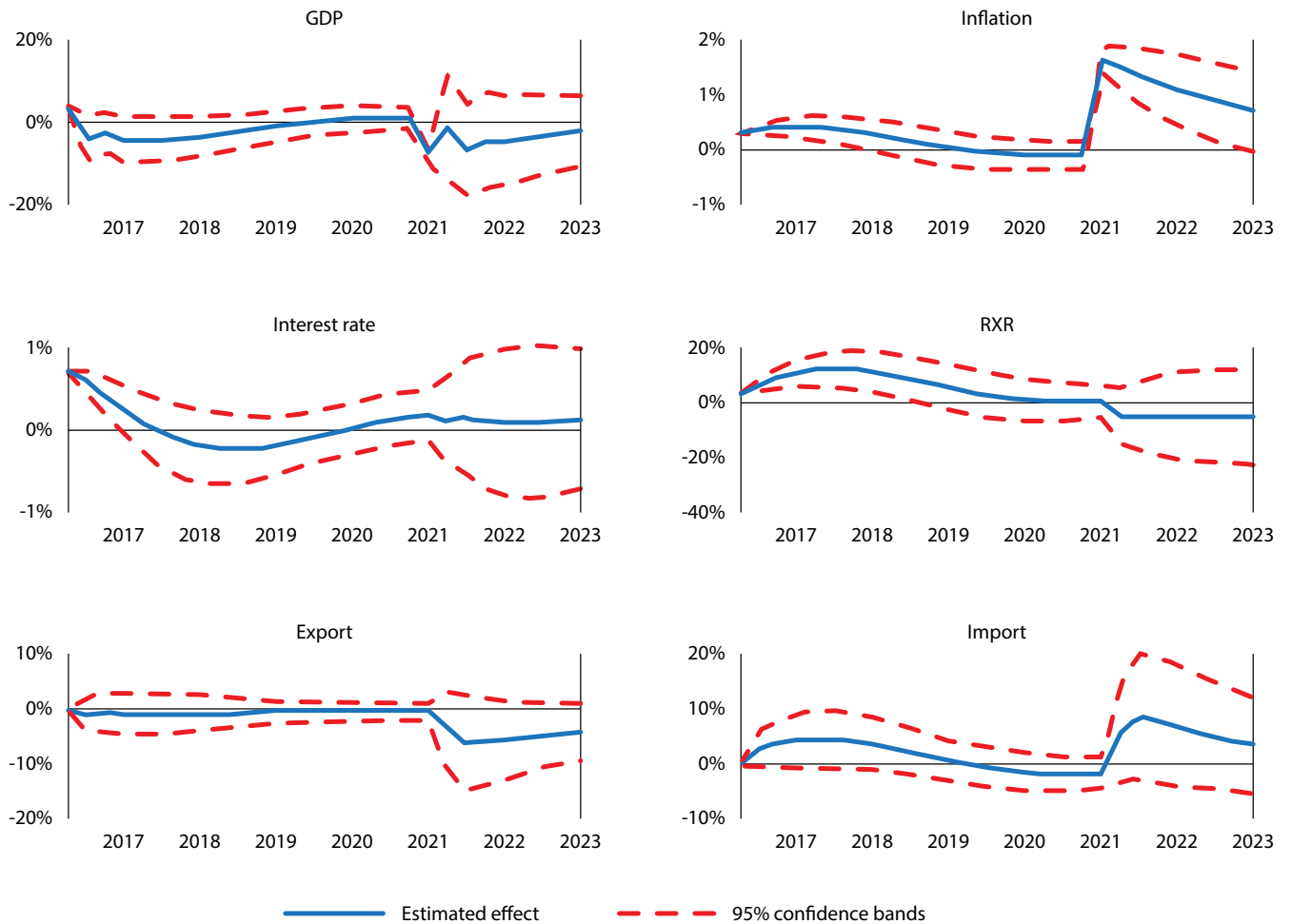


Figure 2. Diagrams of effects of Brexit from analysis of shifts in relationships at times of Brexit (red lines are 95% confidence limits)



“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”

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.

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.

Figure 3. Per capita GDP for UK, France and Germany

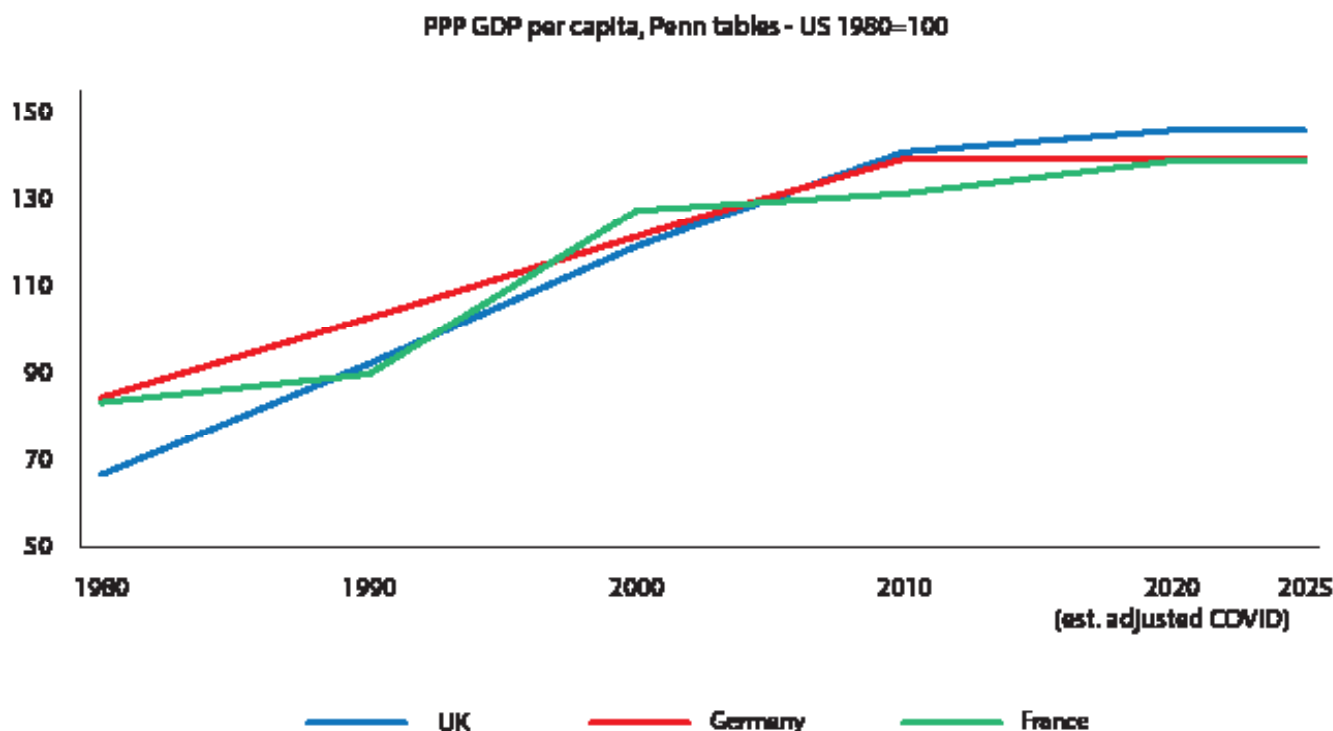
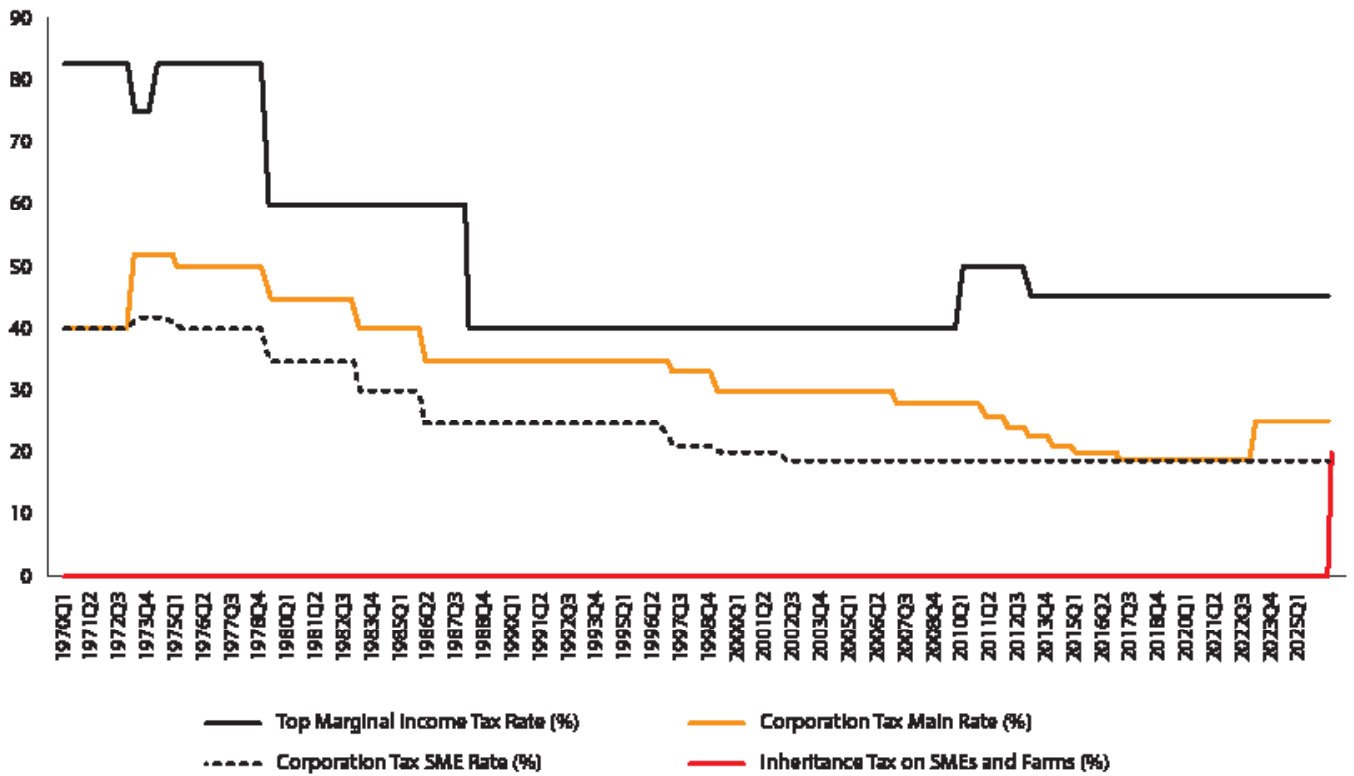
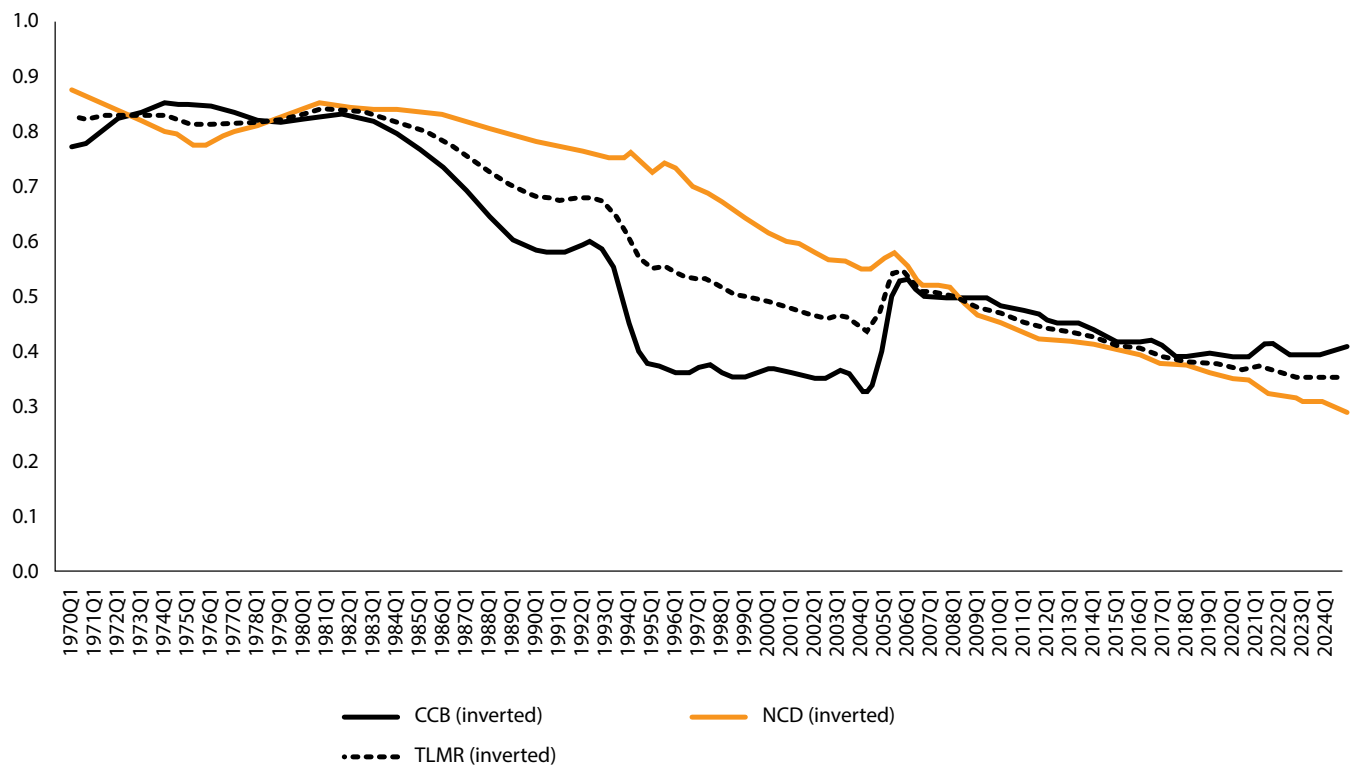


Figure 4. Key marginal tax rates for entrepreneurs 1970-2025



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



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.

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.

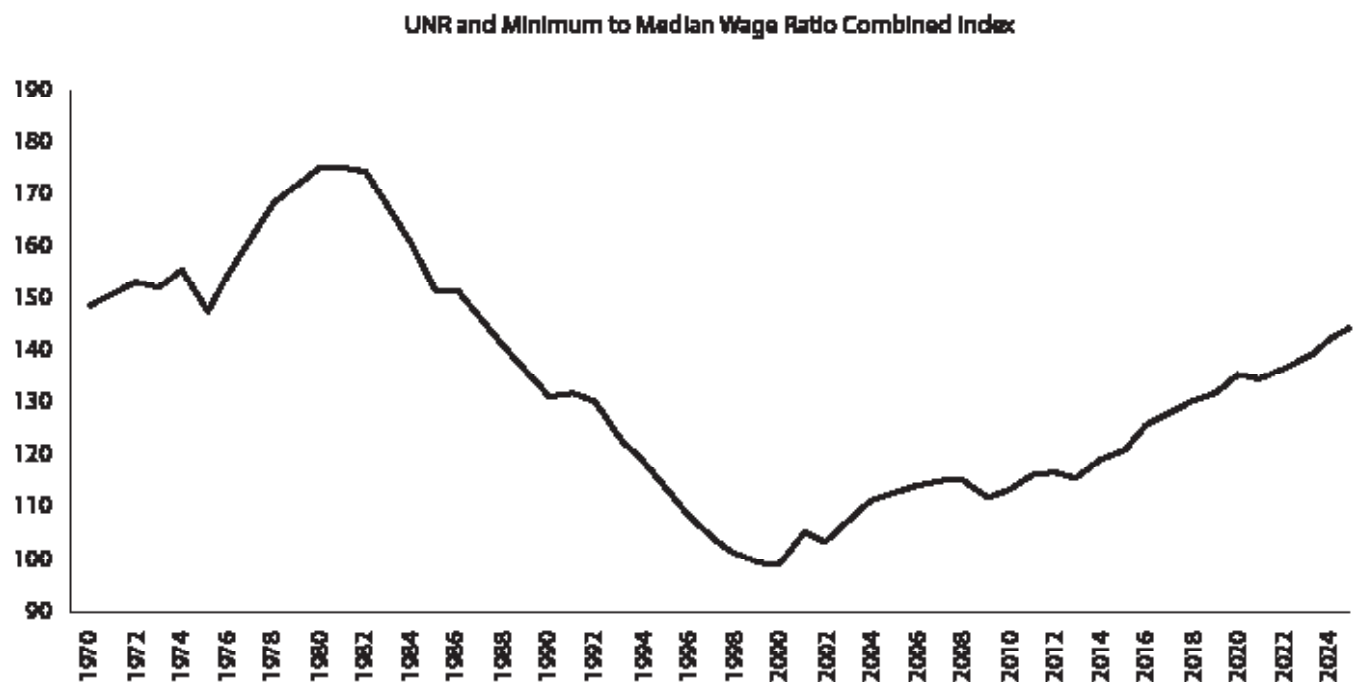
Brown's main political aim however was to raise public spending; this, deferred for three years after the 1997 election as part of Labour's campaign to win public trust for its fiscal responsibility, required rising taxes. As part of this programme, the top rate of income tax was put up to 50%, having 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.

Figure 6. Unionisation up to 1999 and the minimum wage ratio from 1999





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.

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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Addressing Europe's services dependencies



STRATEGY



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.

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

“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”

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. ■

ABOUT THE AUTHORS

Agnès Bénassy-Quéré is Deputy-Governor of the Banque de France, Distinguished Fellow at Centre for Economic Policy Research, Professor (on Leave) at Pantheon-Sorbonne University, and Professor (on Leave) at Paris School of Economics (PSE); Giancarlo Corsetti is the Pierre Werner Chair and Joint Professor, Department of Economics and Robert Schuman Centre for Advanced Studies at European University Institute; and Giulia Sestieri is Deputy Director European and Multilateral Policies at the Banque de France.

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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.
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Measure, model, tackle, tailor

James Talbot is Executive Director for International at the Bank of England and Chair of the NGFS workstream on monetary policy

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.

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

"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"

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.

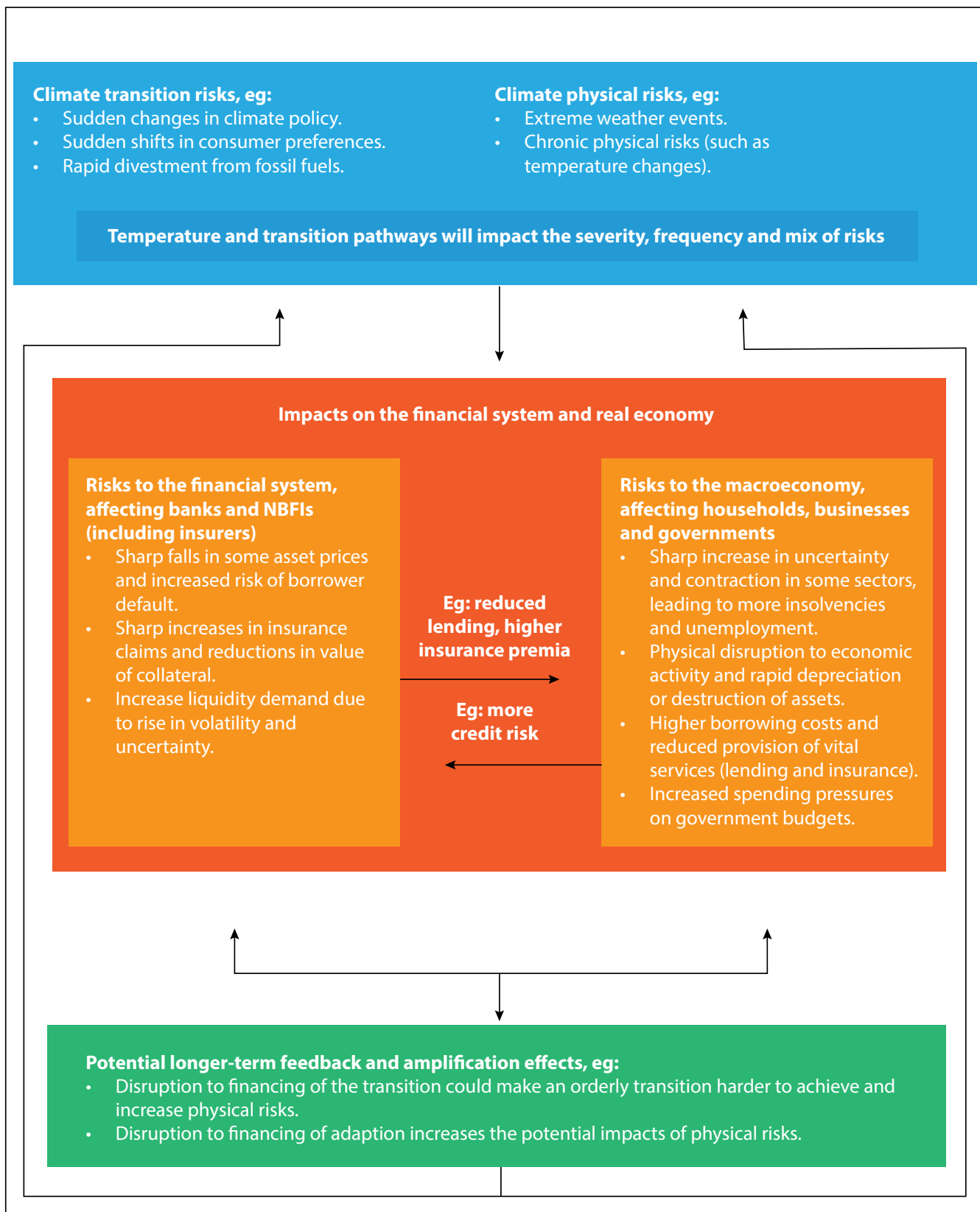
The financial system – sizing the risk

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

Figure 1. Framework from the November 2024 Financial Stability Report showing how climate-related risks could impact the financial system and the real economy



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 exercise¹⁵.

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 of 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 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. ■

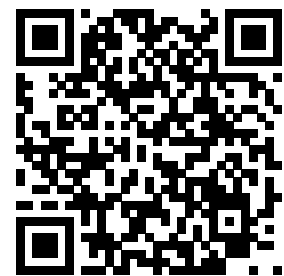
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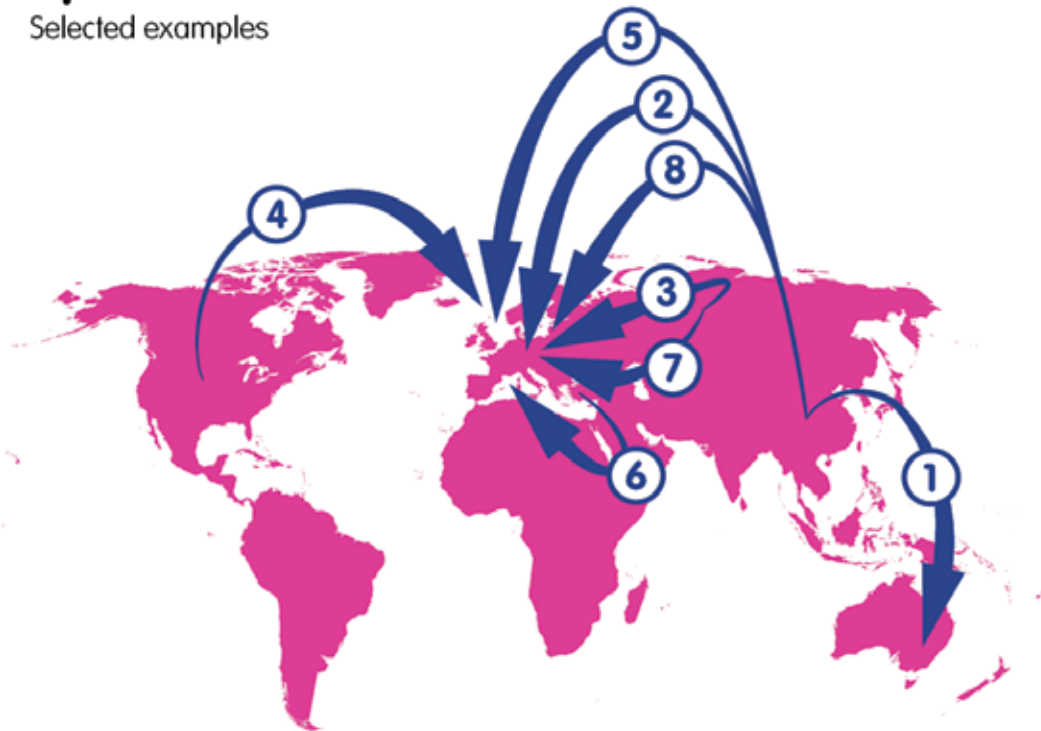


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Selected examples



1. Chinese curb on Australian exports to push back against an investigation into the origins of covid-19 (2020)

2. Chinese threat of car tariffs to pressure Germany into accepting Huawei's 5G infrastructure (2019)

3. Russian ban on Polish imports of fruit and vegetables following EU sanctions over the war in Ukraine (2014)

4. US threat of section 301 tariffs to prevent France and other European countries from levying taxes on digital services (2020)

5. Chinese 'popular boycott' of EU companies (such as Adidas and H&M) following EU sanctions on Chinese officials involved in human rights violations in Xinjiang (2021)

6. Turkish boycott of French-labelled goods following President Emmanuel Macron's announcement of policies to combat extremism (2020)

7. Russian threat to ban Czech beer imports following Czech government's declaration of links between Russian intelligence services and the 2014 Czech warehouse explosions (2021)

8. Reported Chinese suspension of rail freight to Lithuania and block on export permits for Lithuanian producers in reaction to the announcement that a Taiwanese Representative Office would open in Lithuania (2020)

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